US Army Corps
of Engineers
Walla Walla District

Dworshak Reservoir
Public Use Plan
Ahsahka, Idaho

Supplement to Design Memorandum No. 10

Public Use Plan
For the Development and Management of Public Access at Dworshak Reservoir

Authority: Section 201, Flood Control Act of 1962

February 2011

CENWW-PM-PD-PF (1105) 24 February 2011

MEMORANDUM FOR Chief, CENWW-OD

SUBJECT: Dworshak Dam/Dworshak Reservoir Public Use Plan

X I approve of subject public use plan.

_____ I approve of subject public use plan with comments.

_____ I do not approve of subject public use plan.

Encl.

DAVID A. CALDWELL
LTC, EN
Commanding

CENWW-OD (1105)

MEMORANDUM FOR Commander, Walla Walla District

SUBJECT: Dworshak Dam/Dworshak Reservoir Public Use Plan

1. The Dworshak Dam/Dworshak Reservoir Public Use Plan is submitted for approval. The format and content of the Public Use Plan were prepared in part following the format of a Master Plan in accordance with ER 1130-2-550.

2. The Dworshak Public Use Plan was developed by the Walla Walla District to address management changes necessary to accommodate current conditions at Dworshak Reservoir. The original design memorandum, DM-10, was developed in 1970. Since 1992, the reservoir has been drafted approximately 80-feet each summer to provide cold water for juvenile salmon migrating in the Snake River. This change in reservoir elevations has resulted in decreasing use of designed recreation facilities, and increasing requests for alternative forms of recreational access to the reservoir.

3. In order to fully authorize a change in facilities and use, a Master Plan must be developed to analyze recreational use, demand, and carrying capacity, as well as environmental and social effects of proposed actions, including cumulative effects. In the past, budget limitations and higher priority work have prevented the Walla Walla District from conducting a full Master Planning effort. The Walla Walla District recognizes this report does not fulfill all requirements of a Master Plan. However, it is considered a significant step toward completion of a Master Plan, and should readily fold into the analysis for a future plan. The Walla Walla District is committed to fulfilling Master Planning obligations, and is strategizing a Master Planning program for implementation in the future.

4. All National Environmental Protection Act (NEPA) guidelines have been followed. An Environmental Assessment has been prepared for this plan.

5. The enclosed public use plan is recommended for approval.

Richard D. Werner

Encl

RICHARD D. WERNER, P.E.
Chief, Operations Division

Preface

The Dworshak Public Use Plan was developed by the Walla Walla District to address management changes necessary to accommodate current conditions at Dworshak Reservoir. The original design memorandum, DM-10, was developed in 1970. Since 1992, the reservoir has been drafted approximately 80 feet each summer to provide cold water for juvenile salmon migrating in the Snake River. This change in reservoir elevations has resulted in decreasing use of designed recreation facilities, and increasing requests for alternative forms of recreational access to the reservoir.

In order to fully authorize a change in facilities and use, a Master Plan must be developed to analyze recreational use, demand, and carrying capacity, as well as environmental and social effects of proposed actions, including cumulative effects. In the past, budget issues have prevented the Walla Walla District from conducting a full Master Planning effort. The Walla Walla District recognizes that this report does not fulfill all requirements of a Master Plan. However, it is considered a significant step toward completion of a Master Plan, and should readily fold into the analysis for a future Plan. The Walla Walla District is committed to fulfilling Master Planning obligations, and is strategizing a master planning program for implementation in the future.

Analyses required for a Master Plan that are not included in this document, or require expanded analysis, include:

- regional analysis of recreational and ecosystem needs
- project resource capabilities and suitability
- recreation program analysis
- National Environmental Policy Act (NEPA) compliance (assumed at this stage to be an Environmental Analysis)
- Cumulative Effects Assessment

The Master Plan also feeds directly into the project Operational Management Plan, a specific, 5-year plan for operations at Dworshak. In the interim, this Public Use Plan will serve as the lead planning document for Dworshak until a full Master Plan is completed.

U.S. Army Corps of Engineers, Walla Walla District
Dworshak Reservoir
Public Use Plan
Ahsahka, Idaho
Supplement to Design Memorandum No. 10

Table of Contents

Table of Contents (continued)

Table of Contents (continued)

Table of Contents (continued)

Table of Content (continued)

Table of Contents (continued)

LIST OF PHOTOS

LIST OF TABLES

Table of Contents (continued)

LIST OF FIGURES

LIST OF PLATES

LIST OF ACRONYMS

°C	Degrees Celsius
°F	Degrees Fahrenheit
ATV	All-Terrain Vehicle
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
CAA	Clean Air Act
CatX	Categorical Exclusion
CFR	Code of Federal Regulations
Corps	US Army Corps of Engineers
CWA	Clean Water Act
DM	Design Memorandum
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EM	Engineer Manual
EMRI	Ecosystem Management Research Institute
EO	Executive Order
EOP	Environmental Operating Principle
EP	Engineer Pamphlet
ER	Engineer Regulation
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
GIS	Geographic Information System
IDFG	Idaho Department of Fish and Game
IPIF	Idaho Partners in Flight
km^2	Square Kilometers
LCU	Land Classification Unit
MBTA	Migratory Bird Treaty Act
mi^2	Square Miles
MSA	Magnuson-Stevens Fishery Conservation and Management Act
msl	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

List of Acronyms (continued)

NMFS	National Marine Fisheries Service
NRCS	National Resources Conservation Service
OHV	Off-Highway Vehicle
OMP	Operational Management Plan
ORDC	Outdoor Recreational Data Center
PL	Public Law
Reclamation	US Bureau of Reclamation
RV	Recreational Vehicle
USFS	US Forest Service
USFWS	US Fish and Wildlife Service

1. INTRODUCTION

1.1 PROJECT DESCRIPTION

Dworshak Dam and Reservoir (Photo 1-1), constructed in the 1970s by the US Army Corps of Engineers (Corps) is located at River Mile (RM) 1.9 on the North Fork Clearwater River in Clearwater County, Idaho (Plate 1). The town of Ahsahka is the closest community, and the City of Orofino lies 4 miles to the east. The larger communities of Lewiston, Idaho, and Clarkston, Washington, are located 45 miles west of the project. Moscow, Idaho, and Pullman, Washington, are located 60 miles northwest.

Photo 1-1. Aerial View of Dworshak Dam and Reservoir

Dworshak Reservoir lies within the steep, narrow canyon of the North Fork Clearwater River. At full pool elevation (1,600 feet msl), the reservoir extends 53.6 miles upstream on the North Fork, with a shoreline of 175 miles. The widest sections of the reservoir are in the lower third of its length, where the widths generally range from about ½ to 1 mile, with the widest point (at the mouth of Elk Creek) being nearly 2 miles. The upper two-thirds of the reservoir is much narrower, ranging between 1,000 and 2,000 feet. Two major tributaries, Elk Creek and Little North Fork, enter on the north shore of the reservoir.

The project's primary purpose is to provide flood damage reduction for the lower Clearwater area (Ahsahka to Lewiston Idaho), and contribute to flood damage reduction on the lower Snake River. Other authorized project purposes include navigation, fish and wildlife, hydropower, and recreation. The project is composed of four major units: 1) Dworshak Dam; 2) Dworshak Reservoir; 3) the powerhouse; and 4) Dworshak National Fish Hatchery.

Dworshak Dam and Reservoir is owned by the Federal Government, and the Corps is responsible for its operation and maintenance. The project was completed in 1973, and has the capacity to protect surrounding lands up to a 1-percent, (i.e. 100-year), flood event. Public access and recreation facilities can be found at many locations along the reservoir. The largest recreation areas are Big Eddy, Dworshak State Park, and Dent Acres. Last year, close to 150,000 visitors enjoyed the project's unique beauty and recreational opportunities (see photos 1-2 and 1-3).

Photo 1-2. Boating on Dworshak Reservoir

Photo 1-3. Camping at Dworshak

The reservoir was originally designed to maintain a pool level around 1,600 feet above sea level during the recreation season. In 1992, Snake River Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*Oncorhynchus mykiss*) were listed as endangered species under the Endangered Species Act (ESA). As a result, the Corps is required to draw on cold water from Dworshak Reservoir to facilitate fish migration on the Snake River. This drawdown typically begins after July 4 each year, and drops the pool level from 80 to 155 feet (see photos 1-4 and 1-5) below full pool.

Photo 1-4. Dworshak Reservoir at high pool

Photo 1-5. Dworshak Reservoir at low pool

plate 1

1.2 PROJECT AUTHORIZATION

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

1.3 PROJECT PURPOSES

Dworshak Reservoir is a major storage project in the Columbia River system. It has sufficient storage to provide regulation for downstream flood damage reduction; power generation for use in the Northwest hydropower system; and regulation for water quality, recreation, and other downstream requirements. The operation of Dworshak Reservoir in conjunction with the total system of Columbia River reservoirs is essential in order to meet ESA requirements for fish, power system load requirements, and flood regulation on the lower Columbia, lower Clearwater, and lower Snake Rivers.

1.3.1 Flood Damage Reduction

The primary purpose for the construction of Dworshak Dam and Reservoir was flood damage reduction. The project was designed so that it could be operated for both local flood damage reduction on the Clearwater River and the regulation of lower Columbia River flows. Water levels in the reservoir are drawn down in July, and continue to drop through mid-September. This provides cool water to the mainstem Snake River for migrating salmonids in the summer, and allows for flood storage behind the dam through the winter and early spring run-off season. Storage capacities are evaluated throughout the winter, and reservoir levels are adjusted based on snow levels. The reservoir refills from April to July.

1.3.2 Navigation

Dworshak Dam was originally authorized to provide navigation for the movement of harvested timber from the upper North Fork Clearwater basin. The regional logging industry no longer transports timber using this method, and the log dumps along the reservoir are no longer used, however this remains an authorized project purpose.

1.3.3 Hydropower

Water released from the reservoir is typically passed through turbines for the generation of electrical power. Throughout the year, daily operation reflects hydropower needs and constraints. However, water is also released on a seasonal basis to meet flood risk management and ESA requirements.

1.3.4 Fish and Wildlife

Fish and wildlife are a high priority on all project lands. Project lands classified as either "Operations" or "Recreation" are managed for either direct or incidental benefit to fish and wildlife through a variety of techniques, including vegetative management. The remaining project lands are also managed to enhance and benefit fish and wildlife species.

1.3.5 Recreation

Dworshak Reservoir is managed to provide a high-quality outdoor recreation experience with plenty of diversity. Recreation at Dworshak Reservoir is predominantly water-based, with boating and fishing as the major activities. In addition, a significant amount of hunting takes place on project lands. Recreation areas range from boat accessible mini-campsites to highly developed and extensively used campgrounds.

1.4 PURPOSE AND SCOPE OF THE PUBLIC USE PLAN

1.4.1 Purpose

The Public Use Plan defines management strategies for acceptable public use and access for lands and waters of Dworshak Reservoir. The actions outlined in this plan will replace those presented in Design Memorandum No.10, *Public Use Plan for Development and Management of Dworshak Reservoir, North Fork Clearwater River, Idaho* (DM 10; Corps, 1970). Since the completion of DM 10 in 1970, land management philosophies, as well as the scientific knowledge base for multiple resource management, have changed dramatically. New concepts and principles are being put into effect by neighboring natural resource agencies. Changing land ownership, Corps policies, and reservoir operations require a re-evaluation of resource management considerations.

The purpose of this updated Public Use Plan is to serve as a continuing guide for orderly, sensitive, and wise development and management of water and associated lands around Dworshak Reservoir. The plan provides concepts for proposed design features that will allow for changing recreational need, methods, and site conditions. When the Dworshak Master Plan is updated, this plan will be rolled into the larger Master Plan.

The Public Use Plan will update the existing land classifications for Dworshak Reservoir, replacing land classifications that may be out of date or out of compliance with current Corps regulations, and needing to address current site conditions. Updated land classifications will provide for appropriate and proper use of the area’s natural resources.

1.4.2 Goals

The goal of the plan is to provide conceptual and adaptable guidelines and criteria for future recreation developments at various sites around the reservoir. These guidelines and plans will focus primarily on land-based recreational opportunities, although expanded water-based opportunities will be considered as well.

The plan seeks to provide public access and recreational opportunities that balance public input and desire with the protection of the natural resources surrounding Dworshak Reservoir (Figure 1-1). It focuses on recreational opportunities that address the issues associated with fluctuating reservoir levels, which were not anticipated in the original design memorandum.

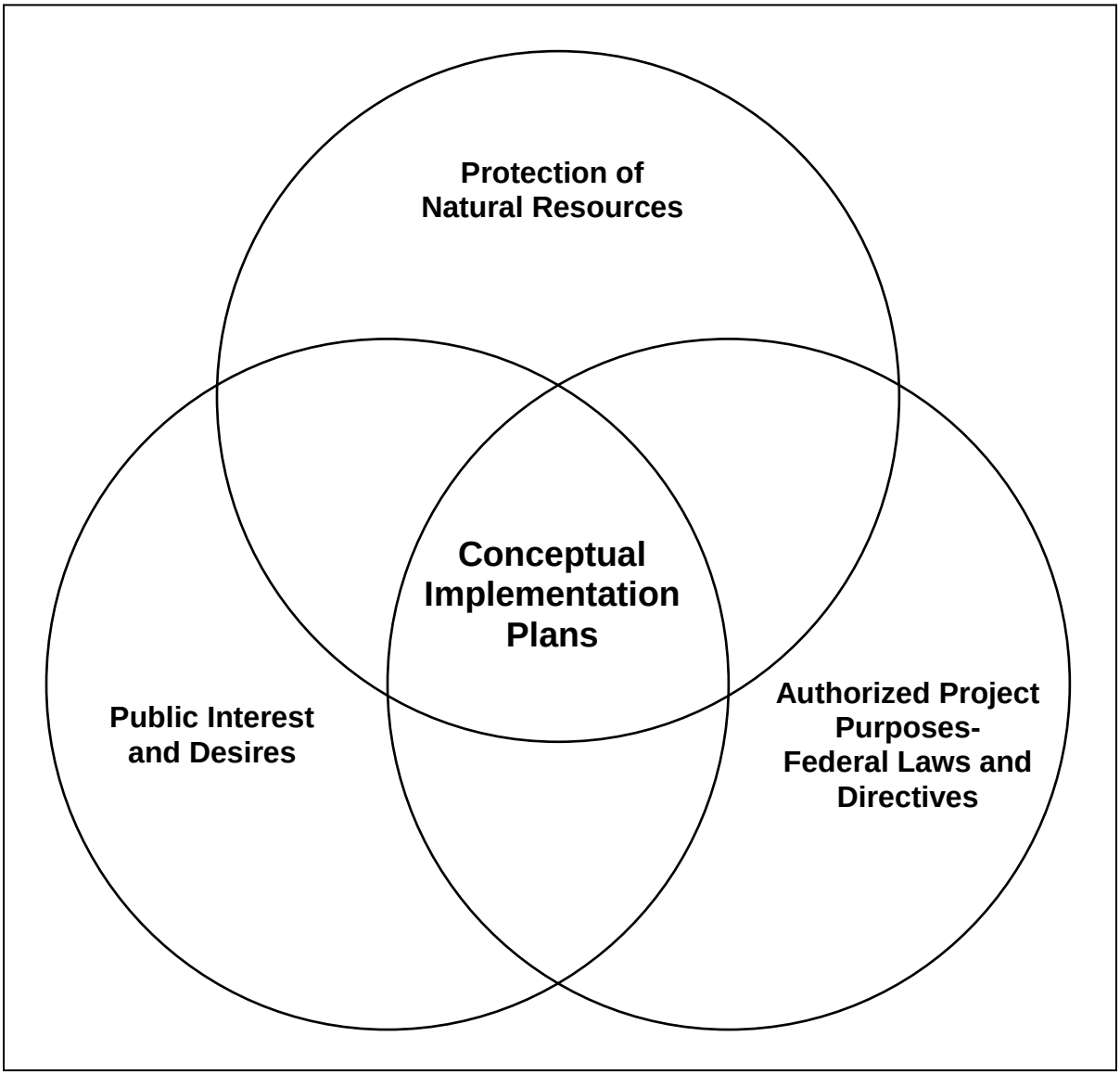


Figure 1-1. Goal of Conceptual Implementation Plans

1.4.3 Scope

The Dworshak Public Use Plan will present land use classifications, conceptual land use and recreational development, and guidance for lands and waters owned and managed by the Corps at Dworshak Reservoir in Clearwater County, Idaho. The updated recreation plan is conceptual to allow for future revisions that may be necessary due to changing needs and conditions.

1.5 Planning Process

The Corps follows a six-step planning process. These steps are:

1. Identification of problems and opportunities
2. Inventory and forecast conditions
3. Formulate alternative plans
4. Evaluate alternative plans
5. Compare alternative plans
6. Select a plan

Dworshak staff and the recreating public identified problems related to access of recreation sites due to fluctuating reservoir levels immediately after drawdowns began. Scoping meetings in support of the master plan and the public use plan updates provided the public with opportunities to identify further problems and issues. Scoping meetings, along with recommendations from the working groups, helped Corps planners identify opportunities for recreation under a fluctuating water regime. Those recommendations ultimately helped in the formulation and evaluation of proposed plans. Figure 1-2 is an illustration of the planning process used for the Dworshak Public Use Plan.

In order to update DM 10, a detailed resource and recreation inventory was gathered and analyzed. This information is used in the decision-making processes for both the updated land classifications and the conceptual implementation plans for future recreation use at the project.

The information gathered in the scoping meetings and work groups was combined with the detailed project inventory to form a list of opportunities, constraints, and other influencing factors for future recreation development and management at Dworshak Reservoir. This information is presented in Sections 2, 3, and 4 of this report.

From this inventory and input, updated land classifications were developed. After addressing comments on these proposed classifications, a final land classification map was created. This map will be used for management zoning on Dworshak project lands to determine the location and type of appropriate development and management actions in a given location.

Conceptual implementation plans were created by addressing public input, resource inventory, and the updated land classifications. These conceptual plans are designed to be a guide for the future development and management of Dworshak Reservoir. The intent of these conceptual plans is to provide public access and recreational opportunities that meet public desire and are compatible with the natural resources stewardship values at the Dworshak project.

Lastly, the conceptual implementation plans were reviewed and finalized. Natural Resources staff at Dworshak Reservoir will be able to prioritize these plans and implement them as funding becomes available. Each of the recommended actions must be reviewed for environmental impacts and compliance with the National Environmental Policy Act (NEPA) prior to implementation.

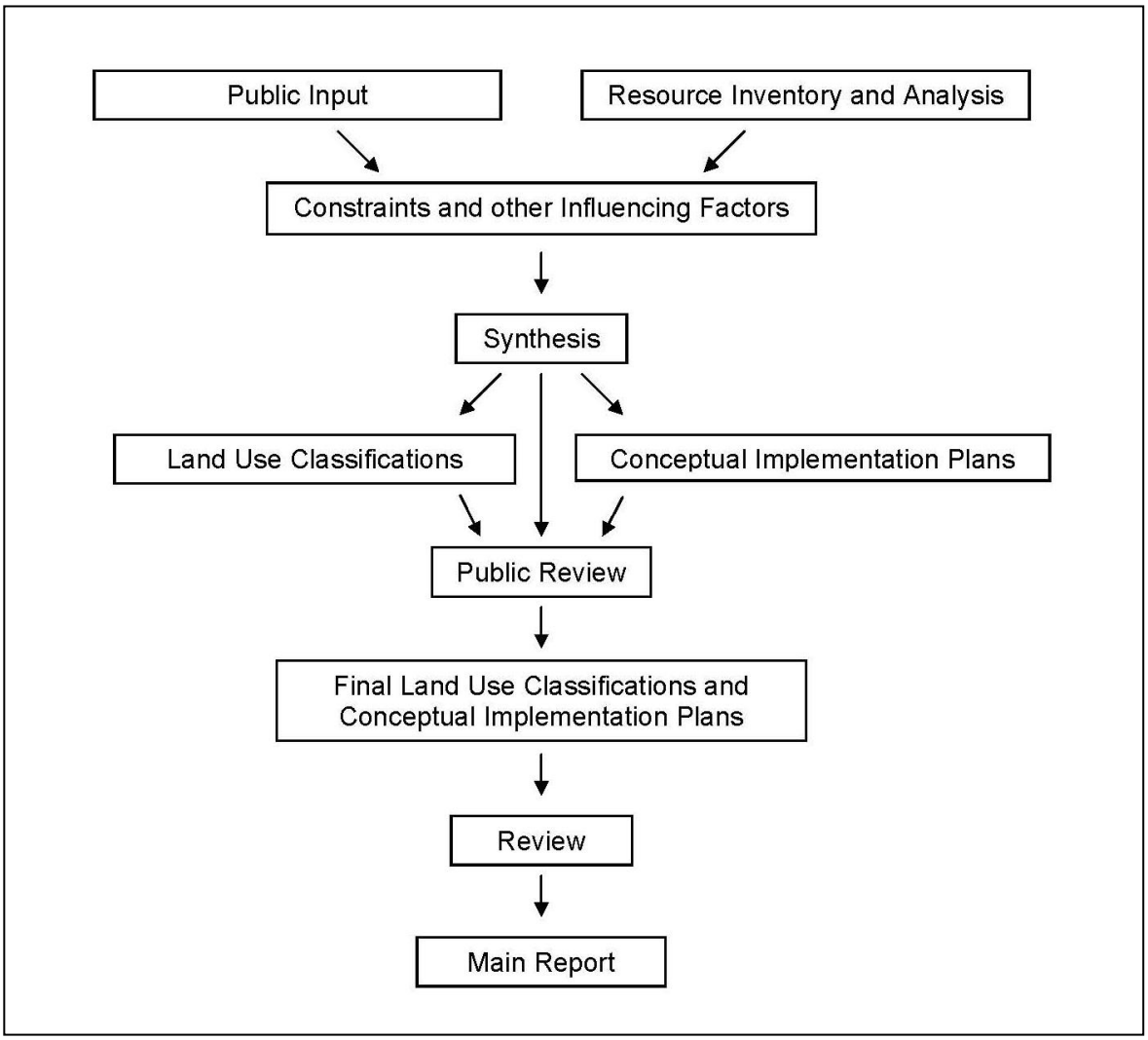


Figure 1-2. Dworshak Planning Process

1.5.1 Public Involvement

Public involvement is an important part of the planning process. Public comments gathered from scoping meetings and various other sources have been used in the creation of updated land classifications and conceptual implementation guidelines. The draft Public Use Plan also went through a 90 day public review and comment process before the report was finalized.

The working groups were an important source of ideas and information for this Public Use Plan. They spent several years learning about challenges and management requirements at Dworshak, and contributed ideas they felt would be appropriate for implementation at Dworshak. The results of this work were reported in *Dworshak Reservoir; Consolidated Master Plan Revision Consensus Recommendations* (Corps, 2007). Those recommendations were evaluated, and contributed to the formation of this plan.

The public will continue to play an active role in the planning process as the conceptual development plans are implemented. In addition to receiving public comment as part of the NEPA process, Dworshak staff anticipates forming partnerships with other recreational entities [e.g., Idaho Department of Parks and Recreation (IDPR) and Public Lands Access Year-Round (PLAY)] to enhance recreational opportunities in the future.

1.5.2 Other Agency Involvement and Coordination

All development will be continuously coordinated with appropriate federal, state, and local agencies throughout the planning process. This is particularly critical, as the Dworshak area of influence includes two states; five counties; several city, county, state, tribal, and federal agencies; and many special interest groups.

Dworshak provides varied recreational opportunities and important wildlife habitat to the region. The lands surrounding Dworshak Reservoir are owned and managed by other public and private agencies, each with their own regulations and policies. Coordination with these adjacent land owners is important to the success of future planning efforts. Such coordination will help to ensure that future recreation activities and facilities are compatible with adjacent land use, and will also minimize resource degradation and conflicts. Development will be planned, within resource capacities, for each individual site.

1.6 PROJECT-WIDE RESOURCE OBJECTIVES

The function of the Dworshak Public Use Plan is broader than the construction and use of recreational facilities. The public use plan also includes the stewardship of project resources, both natural and manmade. Sound stewardship requires the development and management of project resources for the public benefit, consistent

with resource capabilities. An important component of this approach is the establishment of viable resource objectives.

The vision of the resource objectives is to:

- Manage vegetation along Dworshak Reservoir in accordance with ecosystem management principles, to ensure the continued viability of ecosystems, to enhance elk habitat, and to protect habitat for threatened, endangered, and sensitive species in concurrence with the Idaho Department of Fish and Game and the U.S. Fish and Wildlife Service.

- Manage the reservoir to maintain a full range of recreational opportunities, ranging from a few highly developed full-service campgrounds and marinas to natural sites with minimum facilities, while maintaining the general forest environment at all locations and maintaining the remote nature of much of the upper reservoir area.

- Develop a plan for motorized and non-motorized recreational users and work with adjacent land owners to provide trail systems for the public. Work with user groups to develop education and enforcement plans and maintain roads and trails.

Resource objectives are realistically attainable goals for the use, development, and management of natural and manmade resources. They are guidelines for obtaining maximum public benefits while minimizing adverse impacts and protecting and enhancing environmental quality. They are developed with full consideration of authorized project purposes, applicable Federal laws and directives, resource capabilities, regional needs, plans and goals of regional and local governmental units, and expressed public desires. The over-arching, project-wide resource objective for Dworshak Reservoir is to continue to safely, effectively, and efficiently provide benefits to the public from the congressionally-authorized purposes of Flood Damage Reduction, Hydropower, Recreation, Fish and Wildlife, and Navigation. Navigation, originally authorized for the purpose of log transport, is not presently used.

The design and management concepts necessary to meet the over-arching resource objectives are contained in the sections 1.6.1 – 1.6.11. They are intended to provide the best possible combination of responses to regional needs consistent with authorized project purposes. The resource objectives should provide a high degree of regional recreation diversity, emphasize the special characteristics of the project, and be consistent with national objectives and regional goals.

1.6.1 Resource Objective: Access Management

- Actively address unauthorized motorized access along the project boundaries to reduce negative impacts to fish and wildlife habitat and conflicts with non-motorized recreational users.
  - Public outreach and education regarding Federal property boundaries.
  - Enforcement of Title 36, Code of Federal Regulations, Part 327.
  - Construct, install, and maintain access devices designed to prevent unauthorized access.
- Seek new opportunities for improved access for approved transportation methods (motorized, horse, hike, bike, etc) where appropriate.
- Work to improve existing access and prevent degradation of natural resources.
- Respond to customer requests with an analysis of those requests and their compatibility to the resource objectives.

1.6.2 Resource Objective: Boundary Management

- Prevent unintentional trespass and negative impacts associated with timber trespass and other unauthorized use of government property by visually identifying property ownership.
- Continue efforts to monument the Project boundary and cooperate with adjacent landowners.
  - Develop cooperative boundary plans with landowners adjacent to Corps land.
  - Share survey data and GIS data, where applicable.

1.6.3 Resource Objective: Cultural Resource Management

- Carry out legal requirements of the National Historic Preservation Act in support of ongoing work on Dworshak Project lands.
- Cultural resource review will be coordinated with District specialist for final approvals.

1.6.4 Resource Objective: Fire Management.

The goals of fire management are two-fold: 1) minimize the negative effects of wildfires; and 2) use prescribed burning as a tool to enhance vegetative conditions.

- Minimize the potential for negative effects of wildfires, including impacts to the recreating public and to federal property, by maintaining a fire protection system capable of providing wildland fire prevention, detection, pre-suppression, and suppression.
- Use prescribed burning as a tool to help meet the ecological, wildlife, and forest health objectives of the project.

- Continue to operate the fire protection system through a contract with a local fire protection association. Maintain several employees who are trained fire suppression to support the previous 2 objectives.

1.6.5 Resource Objective: Forest Management

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

1.6.6 Resource Objective: Road Management

- Manage the road system within Project boundaries to meet transportation needs and prevent resource damage through inventory, assessment, construction, demolition, and maintenance of all roads.
- Classify all existing roads based on existing and desired future use, and maintain accordingly.
- Review property boundaries and potential points of new access, and post property ownership and/or rules accordingly. Numerous old logging and homestead roads exist throughout the Project. Many of these old roads are essentially closed, and not authorized for motorized use. Some old roads are discovered and used by the public when timber harvest activities occur near the Project.
- Consider and evaluate opportunities for future use and development.

1.6.7 Resource Objective: Weed Management

- Minimize negative impacts to the native flora and fauna by reducing and/or eradicating noxious weeds on Project lands.
- Establish prioritization of noxious weeds for treatment through a cooperative effort with regional stakeholders.
- Manage noxious weeds through inventory, assessment, and treatment efforts, including herbicide treatment, bio-control releases, and seeding with native plant species.

1.6.8 Resource Objective: Wildlife Habitat Management

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

1.6.9 Resource Objective: Wildlife Species Management

- Monitor population trends and animal habitat utilization for select species and/or guilds, as deemed important for habitat management.
- Locate, map and collect site information for important habitats and features (nests, dens, breeding areas, and roosts etc.) associated with threatened, endangered, special status, and regionally important species on all Project lands.

1.6.10 Resource Objective: Fisheries

- Continue to work with Idaho Fish and Game and other possible partners to improve the aquatic ecosystem. Seek creative solutions and partnerships to improve the fishery.
- Improve access and opportunities for shoreline/bank fishing both on the reservoir and below the dam.

1.6.11 Resource Objective: Recreation

- Seek creative solutions to current recreation issues by determining the best use of the resource for the public at any given water level.
  - The recreation facilities were originally designed for a nearly full pool during the summer months. The Federal Columbia River Power System (FCRPS) ESA Biological Opinion for the recovery of salmon has changed that condition and, as a result, recreation opportunities that depend on full pool have been significantly impacted. Alternatives to facilities usable only at near-full pool

must be explored, including recreation docks, improved fishery, low water boat ramps and parking, expanded marina facilities, motorized access to minicamps, and trail connections to regional trails.

- Seek regular community involvement in recreation planning, and listen to user demands and use desires. Pursue opportunities for recreational development where and when feasible.
- Maintain and improve existing Project recreation facilities.
  - Evaluate present recreation facilities for efficiency and effectiveness. Are facilities meeting current demands? Can they be made more effective? Can they be maintained more efficiently? Should services be expanded, reduced, or facility closed/removed?
  - Seek partnerships in recreation maintenance and enhancement.
- Seek balance of project resources and developments. Recognize and acknowledge that the resource cannot support all activities desired by the public in all locations.
  - Balance demand and cost to operate.
  - Balance demand and impact to environment.
  - Balance demand and user conflict.
  - Recognize unique recreation niche of boat-only access to much of the Project. Preserve where practical, and expand alternative methods of access where practical.
- Seek recreation opportunities and development to expand the user seasons, and resource usability for more people. Broaden the recreation niche where feasible.
- Provide community outreach through interpretive displays and programs at the Visitor Center, campgrounds, community organizations, Chamber of Commerce, outdoor shows, press releases, etc. Interpretive displays and programs should highlight one or several of the following subjects:
  - The Corps
  - Project authorized purposes and public benefits
  - Impacts of the Project (historical, cultural, ecological)
  - Project benefits to the nation, region, and local community
  - Recreation opportunities
  - Wildlife and fish associated with Project lands and waters and opportunities to passively and actively utilize
  - Water safety
  - Ongoing management activities
  - Challenges and possible solutions
- Seek long term solutions to long term problems, such as:
  - Unauthorized cattle grazing
  - Unauthorized All-Terrain Vehicle (ATV) use
  - Boundary identification and monumentation
  - Unauthorized camping areas

- Anticipate future resource conflicts with adjacent private property sales and developments surrounding project lands.
  - Inform and educate local authorities, agencies, businesses, developers, and property owners of Federal laws and Corps regulations.
  - Listen to issues and concerns
  - Develop partnerships where possible

1.7 ENVIRONMENTAL CONSIDERATIONS

This plan will evaluate the impacts of land use classification changes, and set conditions and parameters for future development. The implementation of each recommended recreation facility and development, as detailed in the Public Use Plan, will require separate environmental compliance evaluations.

1.7.1 Environmental Compliance Process

Before implementation of projects or actions that may result from the Dworshak Public Use Plan, the Corps is required to comply with numerous federal laws, rules, and regulations. There may also be additional requirements under state and/or local jurisdictions.

1.7.2 Environmental Laws and Regulations

The following is a list of the major federal laws and Executive Orders that may be applicable to project implementation. The list is not comprehensive but is provided to display some of the potential requirements that may need to be addressed before implementation of proposed projects.

1.7.2.1 The National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) of 1969 requires federal agencies to integrate environmental values into their decision-making process by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.

To meet NEPA requirements when undertaking a major federal action, federal agencies, including the Corps, must prepare one of three evaluations, depending on whether or not the proposed action could significantly affect the environment. The three levels of analysis are Categorical Exclusion (CatX); Environmental Assessment (EA); and Environmental Impact Statement (EIS).

A CatX is an action that, either individually or cumulatively, does not have significant environmental impacts. Although a CatX is exempt from NEPA documentation (i.e., an EA or EIS), the Corps does document CATX analyses, as well as compliance

with all other applicable laws. A number of federal agencies, including the Corps, have developed a list of actions normally categorically excluded from environmental evaluation under NEPA regulations. [See C.F.R. § 230.9: E.R. 200-2-2].

If an action is not categorically excluded from NEPA compliance, an EA is prepared to determine if the proposed action would significantly affect the environment. If the answer is negative, the Corps issues a Finding of No Significant Impact (FONSI). The FONSI may address measures the Corps will take to reduce or mitigate potentially significant impacts. In certain circumstances, federal agencies may choose to prepare an EIS without first preparing an EA.

If the EA determines that environmental consequences may be significant, a draft EIS is prepared. An EIS is a more detailed evaluation of the proposed action and alternatives. The public, other federal agencies, and outside parties may provide input into the preparation of an EIS. The Corps is required to make diligent efforts to involve the public in the NEPA process, including holding public meetings and allowing for a designated comment period.

A final EIS is prepared that incorporates public comments and the Corps' response to those comments. After a 30-day waiting period, the Corps issues a public Record of Decision addressing how the findings of the EIS, including consideration of alternatives, were incorporated into the decision-making process.

1.7.2.2 The Endangered Species Act (ESA)

The ESA establishes a national program for the conservation of endangered and threatened species and their habitat. In accordance with Section 7(a)(2) of the ESA of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed or proposed threatened or endangered species.

1.7.2.3 The Clean Water Act (CWA)

The CWA sets national goals and policies to eliminate the discharge of water pollutants into navigable waters, regulate the discharge of toxic pollutants, and prohibit the discharge of pollutants from point sources without permits.

1.7.2.4 The Clean Air Act (CAA)

The CAA of 1970, as amended, established a comprehensive program for improving and maintaining air quality throughout the United States. Its goals are achieved through permitting of stationary sources, restricting the emission of toxic substances from stationary and mobile sources, and establishing National Ambient Air Quality Standards (NAAQS). Title IV of the CAA includes provisions for complying with noise pollution standards.

1.7.2.5 The National Historic Preservation Act (NHPA)

Section 106 of the NHPA requires that federally assisted or federally permitted projects account for potential effects to sites, districts, buildings, structures, or objects included in or eligible for inclusion in the National Register of Historic Places.

1.7.2.6 The Native American Graves Protection and Repatriation Act

The protection of Native American and Native Hawaiian human remains and funerary objects is covered by NAGPRA. In addition, NAGPRA governs rights of ownership and control of Native American cultural items, human remains, and associated funerary objects to Native Americans. It also provides for the protection, and repatriation of Native American human remains, and funerary objects that have been culturally affiliated with a federally recognized Indian tribe.

1.7.2.7 The Magnuson-Stevens Fishery Conservation and Management Act (MSA)

As amended, the MSA (Public Law 94-265), established procedures designed to identify, conserve, and enhance Essential Fish Habitat (EFH) for fisheries regulated under a federal fisheries management plan. Federal agencies must consult with National Marine Fisheries Service (NMFS) on all proposed actions authorized, funded, or carried out by the agency that may adversely affect EFH.

1.7.2.8 The Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act of 1934 states that federal agencies involved in water resource development will consult with the US Fish and Wildlife Service (USFWS) and the state agency administering wildlife resources concerning proposed actions or plans.

1.7.2.9 The Migratory Bird Treaty Act (MBTA)

The MBTA provides the USFWS with regulatory authority to protect species of birds migrating within and outside of the United States. The MBTA prohibits the harming, harassment, and take of protected species, except as permitted by the USFWS.

1.7.2.10 The Bald and Golden Eagle Protection Act (BGEPA)

This law provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of these birds. The 1972 amendments increased penalties for violating provisions of the BGEPA or regulations issued pursuant thereto, and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for any violation of the Act.

1.7.2.11 Executive Order 11990, Protection of Wetlands

This Executive Order requires federal agencies to protect wetland habitats.

1.7.2.12 Executive Order 12898, Environmental Justice

This Executive Order requires federal agencies to consider and minimize potential impacts to subsistence, low income, or minority communities. The goal is to ensure that no person or group of people shoulder a disproportionate share of negative environmental impacts resulting from the execution of the country's domestic and foreign policy programs.

1.7.2.13 Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

Executive Order 13175 sets forth guidelines for all federal agencies to establish regular and meaningful consultation and collaboration with Indian tribal officials in the development of federal policies that have tribal implications; strengthen the United States government-to-government relationships with Indian tribes; and reduce the imposition of unfunded mandates on Indian tribes.

1.7.2.14 State/Local Regulations

On a case-by-case basis, state or local laws and ordinances may also be applicable to any potential project implementation, based on aspects of the individual project. A state water quality certification is an example of a potential instance where a state permit or authorization may be a requirement for project implementation.

1.8 REFERENCES

This updated Public Use Plan was prepared in accordance with the following Corps guidance:

Corps, 2007. Dworshak Reservoir; Consolidated Master Plan Revision Consensus Recommendations. Walla Walla District, 2007.

Corps, 1970. Public Use Plan for Development and Management of Dworshak Reservoir, North Fork Clearwater River, Idaho. Design Memorandum Number 10, Walla Walla District, 1970.

Engineer Manual (EM) 1110-1-400, Engineering and Design – Recreation Planning and Design Criteria, 31 July 1987;

Engineer Pamphlet (EP) 1105-2-35, Public Involvement and Coordination, 5 February 1982 (Change 1)

EP 1130-2-540, Environmental Stewardship Operations and Maintenance Policies, 15 November 1996, revised 11 August, 2008

EP 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 November 1996

EP 1130-2-500, Project Operations – Partners and Support (Work Management and Support), 27 December 1996

Engineer Regulation (ER) 200-1-5, Environmental Quality – Policy for Implementation and Integrated Application of the U.S. Army Corps of Engineers Environmental Operating Principles (EOP) and Doctrine, 30 October 2003;

ER 200-2-2, Environmental Quality – Procedures for Implementing the National Environmental Policy Act (NEPA), 4 March 1988;

ER 1105-2-100, Planning Guidance, 22 April 2000 (with Appendices D and G revised June 2004 and Appendix F revised January 2006)

ER 1120-2-400, Recreation Resource Planning, 1 November 1971 (Changes 1 through 3).

ER 1130-2-550, Project Operations – Recreation Operations and Maintenance Guidance and Procedures, 15 November 1996 (Changes 1 through 5).

2. FACTORS INFLUENCING RESOURCE MANAGEMENT AND DEVELOPMENT

This section provides an overview of the key factors that influence and constrain present and future options for the use, management, and development of land and water resources at Dworshak Dam and Reservoir. These factors fall into three general and interrelated categories: natural resources, historical and social resources, and administrative and policy factors. An analysis of these factors, as well as regional needs and desires, results in a framework intended to minimize adverse impacts to the environment, yet resolve competing and conflicting uses. The information presented in this chapter was used as an aid in determining land classifications, developing project-wide resource objectives, and identifying specific facility needs.

2.1 DESCRIPTION OF DWORSHAK PROJECT

Dworshak Dam and Reservoir is located in the Mountain-Snake Province, Clearwater Basin. The dam is located at the mouth of the North Fork Clearwater River, which winds through the timbered canyons on the western slopes of the Bitterroot Mountain Range.

The Corps owns 29,494 acres of land surrounding Dworshak Reservoir and manages this land for wildlife conservation, recreation, and other project purposes. Generally, the slopes at the reservoir's edge are very steep and densely covered by coniferous forest. This unique landscape is attractive for recreational users, and provides important wildlife habitat.

2.2 RESERVOIR REGULATION

As previously mentioned, Dworshak Reservoir is regulated as an integral component of the Columbia River hydropower system, with sufficient storage to provide regulation for downstream flood control; power generation for use in the Northwest hydropower system; and regulation for water quality, recreation, and other downstream requirements.

In 1992, Chinook salmon and steelhead trout were listed as endangered under the ESA. The prevailing biological opinion for the recovery of the species required the Corps to draw down the reservoir level in early July each year to facilitate fish outmigration. This policy has continued each year since 1992, with only minor adjustments in timing. In a year with normal snow pack, the Corps reduces the reservoir level up to 2 feet per day, usually beginning on July 5. The level of the reservoir is reduced until it reaches 80 feet below full pool (usually between August 30 and September 15). The reservoir is kept near that level until rain and snow melt gradually bring it back up to full pool in the spring. Power generation requirements occasionally require a draw down during other periods of the year, and high snow years require drawdown in the spring to create adequate storage space. Low snow

years require less storage space, and the reservoir is often allowed to fill earlier in the recreation season. Further detail and explanation of the implications of reservoir drawdown is presented in Section 3 of this report.

2.2.1 Effects of Operations on Recreation

The creation of Dworshak Dam changed recreation on the North Fork Clearwater River. Fishing is a major recreation activity in the area, but has transformed from river fishing to primarily lake fishing since construction of the dam. Hunting has continued to be another important recreational activity on and around the reservoir. The creation of the reservoir introduced many water-based activities, such as boating, water-skiing, and boat-in camping. Other types of recreational opportunities at Dworshak include hiking, car and recreational vehicle camping, and day-use activities such as picnicking.

Reservoir drawdowns result in an exposed shoreline rising steeply from the reservoir surface to the forest above. Mini-camps around the lake become increasingly difficult to access, some boat ramps become unusable, and access to boats in the existing marina (via stairs) becomes difficult. These challenges discourage many typical recreational users during late July, August, and early September; which were previously the periods of most intense recreational boating activity. Those recreationists that do use the reservoir in late summer, however, find the water warm, calm, and the lake wide open for all types of water sports.

2.2.2 Effects of Operations on Fish and Wildlife

The construction of Dworshak Dam has had many effects on fish and wildlife conditions in the area. There are no fish passage facilities at Dworshak Dam and, consequently, anadromous fish are prevented from accessing the majority of the habitat in the North Fork Clearwater River during their migration. Because of the loss of migratory species, marine-derived nutrients have been drastically altered, thereby resulting in efforts to manage nutrient levels in the reservoir. A Corps of Engineers hatchery, located at the mouth of the North Fork Clearwater River and operated by the US Fish and Wildlife Service (USFWS), provides some level of mitigation for the loss of fish passage to the upper reaches of the North Fork Clearwater caused by construction of the dam

Although somewhat detrimental to recreation, summer drawdowns provide cool water to the Snake River, which benefits the migration of juvenile fall Chinook and steelhead species in the Clearwater and Snake rivers. Bull trout may be negatively impacted by drawdown for several reasons. Entrainment of kokanee, a major food source, negatively impacts bull trout. Bull trout may also be entrained and carried into the mainstem Clearwater River. Strobe lights were tested and proven to work to reduce entrainment but have not been implemented. The change from high winter releases of water has reduced the likelihood of entrainment when Kokanee are often stacked in front of the dam.

Another negative impact of reservoir fluctuations is turbidity, which affects nutrient dynamics and biological production. Low reservoir levels may also create thermal and physical barriers, thus reducing their access to tributaries [Clearwater Basin Bull Trout Technical Advisory Team (CBBTTAT), 1998 *in* USFWS, 2002). A variety of species (i.e., non-native smallmouth bass and other shoreline spawners) experience drastic negative impacts to reproductive success because of the fluctuating water levels. These species spawn in shallow areas because those areas optimize egg survival based on water temperature. These beds are often dry or too far underwater due to the reservoir fluctuations.

In addition to the impacts on fish, there are also impacts to wildlife in the area. When the dam was created, the water flooded many acres of important wildlife habitat, much of which was important wintering habitat for large game species. Due to winter operations, deer and elk have been killed falling through the lake ice during cross-reservoir migrations. Current summer drawdowns of the reservoir also effect other wildlife, specifically amphibians, waterfowl, and some small mammals.

2.3 NATURAL RESOURCES

2.3.1 Hydrology

The Clearwater River Basin encompasses approximately 9,600 square miles [mi^2; 15,450 square kilometers (km^2)] in North Central Idaho. Elk Creek and the Little North Fork are the two major tributaries. The majority of annual runoff for the Clearwater River Basin is derived from a combination of winter rains and spring snowmelt floods. The streamflow pattern in the North Fork Clearwater River is characterized by low flows from late July through February, increasing flows during March, high flows from April through May or June, and receding flows in late June and July. The magnitude of flows generated by spring runoff will vary with the amount of snow accumulated, temperatures, and the amount of rainfall received in the area.

2.3.2 Limnology

2.3.2.1 The Clean Water Act (CWA)

The primary objective of the CWA is to restore and maintain the integrity of the nation's waters, which translates into two fundamental goals: 1) eliminate the discharge of pollutants into the waters of the United States; and 2) achieve water quality levels that are capable of sustaining a viable fishery, and are safe for swimming and other water sports.

The CWA provides a comprehensive framework of standards, technical tools, and financial assistance to address the many causes of pollution and poor water quality (i.e., municipal and industrial wastewater discharges, polluted runoff from urban and rural areas, and habitat destruction).

2.3.2.2 The Corps' Water Quality Management Program

The Corps' water quality management program for civil works projects is described in ER 1110-2-8154, *Water Quality and Environmental Management for Corps Civil Works Projects*. This regulation was updated in 1995 to encourage a holistic, ecosystem-level approach to water quality management.

As stewards of a significant percentage of the nation's aquatic environment, the Corps has a responsibility to preserve, protect and, where necessary, restore water quality altered by Corps projects. This requires a comprehensive understanding of the interactions of the uses and users of the aquatic environment, as well as the impact of Corps structures and their operation on water quality.

2.3.2.3 Water Quality

The majority of Dworshak Reservoir is thermally stratified during the summer. The relatively deep section of the pool near the Big Eddy Marina typically mixes vertically once a year, with turnover usually occurring in January or February. The epilimnion, or upper strata of warm water, typically occupies the top 13 to 23 feet (4 to 7 meters) of the reservoir during the summer. Water temperatures in this layer can reach, and even exceed, 77 degrees Fahrenheit (°F) [25 degrees Celsius (°C)] during July and August. This warm surface water, combined with low nutrient concentrations, can create an environment advantageous to blue-green algae during late summer and early fall. Nuisance algal blooms have been observed and treated in some sections of the reservoir, including Merry's Bay and Bruce's Eddy. The hypolimnion, or deep strata of the reservoir, occupies a larger volume than the epilimnion; and temperatures there range from about 39.2 to 44.6 °F (4 to 7 °C) year round

2.3.2.4 Water Quality Monitoring

Anticipating water quality changes, the Corps contracted a reservoir limnological study to the University of Idaho in March 1972 (Falter et al., 1977). Post-impoundment conditions for Dworshak Reservoir and the mainstem Clearwater River (downstream of Dworshak Dam) differ greatly from those of the free-flowing river. Corps personnel now monitor water quality parameters at five reservoir stations, and one station downstream of the dam. Dworshak hatchery personnel also monitor the chemical quality of Dworshak releases.

2.3.2.5 The Dworshak Nutrient Enhancement Pilot Program

In 2006, the Corps partnered with Idaho Department of Fish and Game (IDFG) to create a 5-year pilot program that would add nitrogen to the reservoir on a regular basis. This project was initiated because Dworshak Reservoir was becoming nutrient deficient, and it was believed that the reservoir would eventually become a sterile environment. It appears that the addition of ammonium nitrate to the reservoir has helped to create a balanced reservoir system. The effects of this program on

water quality appear to have been positive, and no measureable harmful effects have been observed. In 2011, the program will be evaluated, and a decision will be made whether to continue the nutrient enhancement program.

2.3.3 Air Quality

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

2.3.4 Climate

2.3.4.1 Temperature

The climate of the Clearwater Basin is characterized by mild summers and long, cold winters. Mean annual temperatures in the basin range from less than 32°F (0°C) at the highest elevations to over 50°F (10°C) at the lowest elevations (Figure 2-1). Seasonal temperatures have a fairly uniform pattern. Subfreezing weather is common during the months of October to May, when temperatures reach well below 0°F (-17.8°C), while mild temperatures prevail during the summer months. The average daytime summer temperature is around 88°F (31°C), while the winter nighttime average is approximately 28°F (2.2°C).

2.3.4.2 Precipitation

Precipitation, which averages 51 inches annually for the overall basin, ranges from 24 inches near the dam to nearly 80 inches near the summit of the Bitterroot Mountain Range (Figure 2-2). Precipitation has a seasonal pattern, with about 40 percent occurring during the months of November through January. During high snow years, more water storage is needed, and the reservoir is drawn down in anticipation of snowmelt to prevent flooding. In low snow years, the reservoir is allowed to fill early, often increasing access to the shoreline recreational facilities.

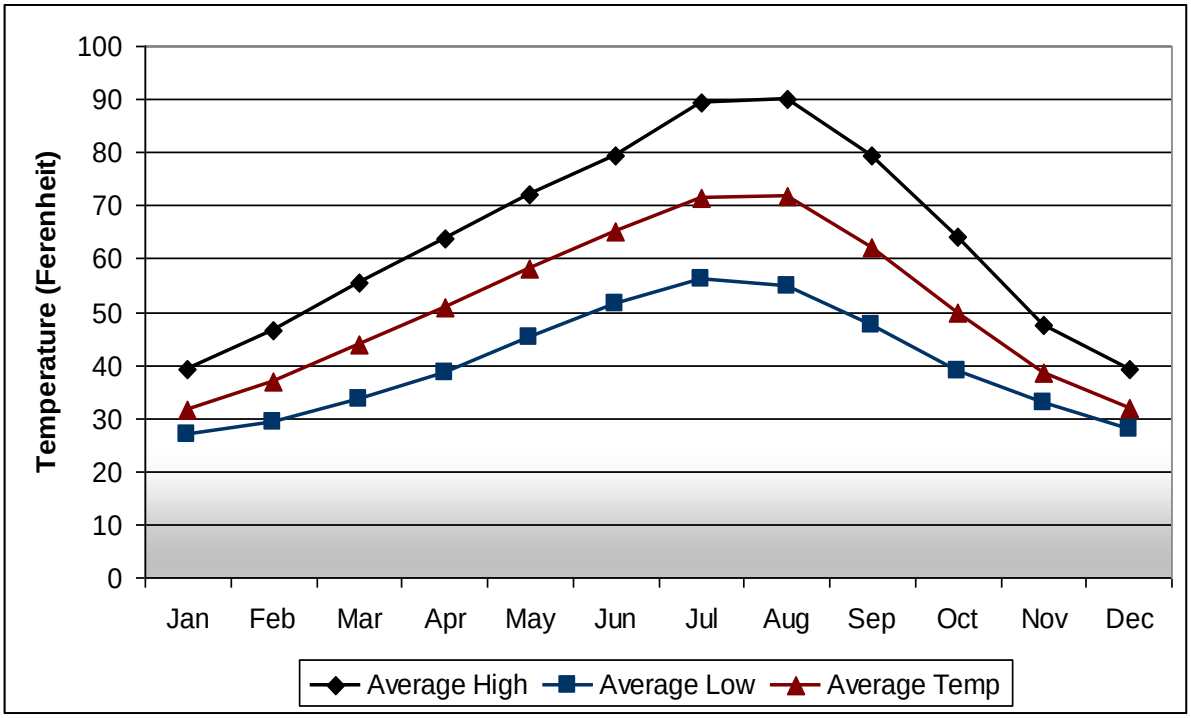


Figure 2-1. Annual Temperatures, 1966-2007

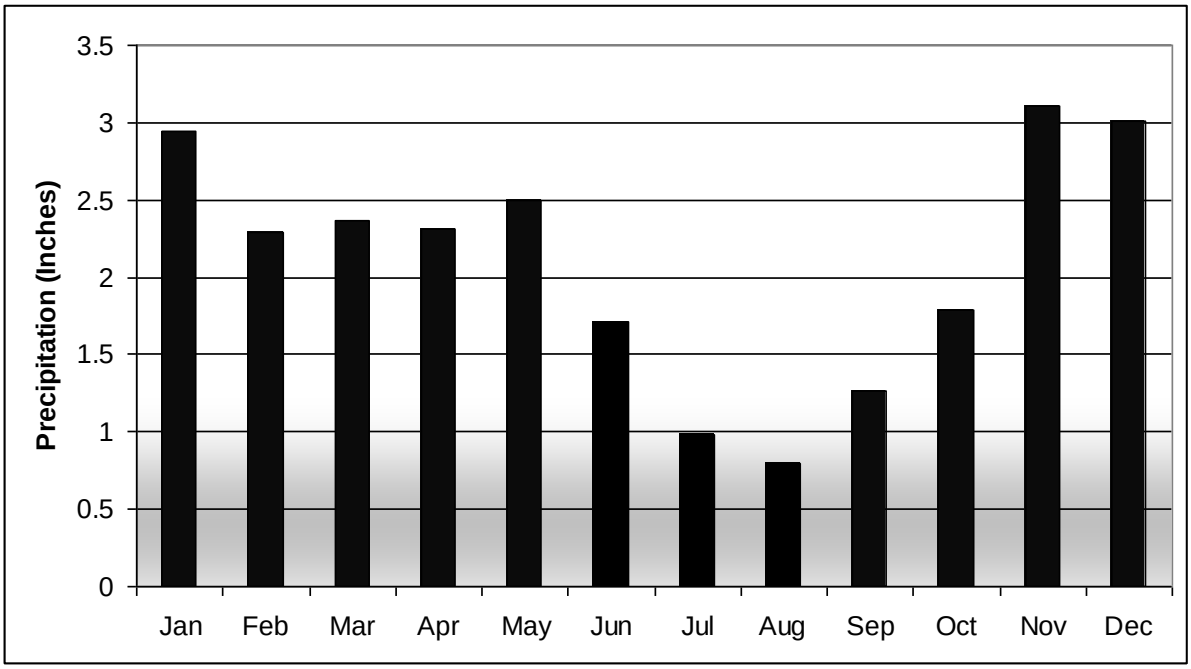


Figure 2-2. Average Annual Precipitation, 1966-2007

2.3.4.3 Wind

Wind speeds are typically low in the project area, averaging around 3 miles an hour and coming from the southeast. High winds occasionally occur on the reservoir, at times reaching up to 40 miles an hour. Such winds can cause wave erosion to the banks of the reservoir, as well as pose a safety risk to boaters. In the past, high winds have caused damage to recreation areas, including the marina at Big Eddy.

2.3.5 Topography, Geology, and Soils

2.3.5.1 Topography

Dworshak Reservoir lies within the Clearwater River Basin in north-central Idaho. Elevations in this basin range from 738 feet mean sea level (msl) at the mouth of the Clearwater in Lewiston, Idaho, to over 8,000 feet msl in the peaks of the Bitterroot Mountain Range. The portion of the Clearwater Basin that lies west of Dworshak is characterized by barren hills and plateaus intersected by cultivated valleys.

The 53.6-mile-long reservoir is formed in the North Fork and Little North Fork valleys. Steep slopes dominate the shoreline and project lands, although a few flat or low-slope areas can also be seen (Plates 2A and 2B). The majority of existing developed recreation sites are located on these gently sloped areas...

2.3.5.2 Geology

The North Fork Clearwater River originates in a mountainous area underlain by metamorphic and igneous granite rocks. In the lower portion of the reservoir, the valley floor is mantled by stream-deposited material. The lower valley walls are covered by a thin residual soil, with soil depth increasing at higher elevations. Rock outcroppings occur frequently along the canyon walls in the lower 2/3rds of the reservoir and are interspersed throughout the entire reach of the reservoir.

2.3.5.3 Soils

Soils at Dworshak reflect a great diversity, and vary from desertic soils to the forest soils more typical of the area (Plates 3A and 3B). At Dworshak, many unstable soils have developed on parent rock that was, at one time, subjected to tremendous heat and pressure. These soils are generally thin and underlain by an impervious parent rock. This rock contributes to the basin's high runoff characteristics. Many of the soils at Dworshak are highly susceptible to erosion, which precludes their use for further development.

The higher slopes along the reservoir are covered in many places with residual soils that are the product of weathering metamorphic rocks. Because of the instability associated with these soils and the weaker rock masses, particularly in the steeper

areas, construction activity is difficult. In some locations along the reservoir, a fairly flat bench occurs between the steeper mountainous terrain and the maximum pool elevation. These flat areas are generally associated with the clays and shales mentioned above. The clay-deposited areas have the hummocky topography, seep areas, and ponding water typical of slide areas.

The most common types of surface soil are sandy loam, loam, and silt loam, with come clay content indicated in each. Because of the natural forest conditions, layers of organic material have accumulated on the surface soil. Soils and slopes are a significant influencing factor at Dworshak. The National Resources Conservation Service (NRCS) Soil Capability Class Classification System describes the soils at Dworshak for the purposes of this report.

Capability class is the broadest category in the land capability classification system. Class codes 1 through 8 are used to represent both irrigated and non-irrigated land capability classes. Capability subclass is the second category in the land capability classification system. Class codes e, w, s, and c are used for land capability subclasses. A brief description of capability classes and subclasses is contained in Table 2-1.

The subclass represents the dominant limitation that determines the capability class. Within a capability class, where the kinds of limitations are essentially equal, the subclasses have the following priority: e, w, s, and c. Subclasses are not assigned to soils or miscellaneous areas in capability classes 1 and 8.

All of the soils at Dworshak have erosion potential. However, for the purpose of forest and wildlife management, this is not a major concern. The erosion potential of the soil is a significant factor in determining locations for recreational features, including campgrounds, trails, roads, and other amenities. Locations of recreational amenities should avoid areas that have visible signs of existing erosion and excessive slopes. Construction methods and design criteria must also address the limitations imposed by the soils at Dworshak Reservoir.

Plate 2A. Slope Map – Lower Dworshak Reservoir

Plate 2B. Slope Map – Upper Dworshak Reservoir

Plate 3A. Soil Capability Class Map – Lower Dworshak Reservoir

Plate 3B. Soil Capability Class Map – Upper Dworshak Reservoir

Table 2-1. The NRCS Soil Capability Classification System

Capability Class/Subclass	Description
Class 1	Soils have slight limitations that restrict their use.
Class 2	Soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
Class 3	Soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.
Class 4	Soils have very severe limitations that restrict the choice of plants or require very careful management, or both.
Class 5	Soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
Class 6	Soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
Class 7	Soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
Class 8	Soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for esthetic purposes.
Subclass e	Made up of soils for which the susceptibility to erosion is the dominant problem or hazard affecting their use. Erosion susceptibility and past erosion damage are the major soil factors that affect soils in this subclass.
Subclass w	Made up of soils for which excess water is the dominant hazard or limitation affecting their use. Poor soil drainage, wetness, a high water table, and overflow are the factors that affect soils in this subclass.
Subclass s	Made up of soils that have soil limitations within the rooting zone, such as shallowness of the rooting zone, stones, low moisture-holding capacity, low fertility that is difficult to correct, and salinity or sodium content.
Subclass c	Made up of soils for which the climate (the temperature or lack of moisture) is the major hazard or limitation affecting their use.

2.3.6 Land Cover and Vegetation Resources

Dworshak Reservoir and environs encompass a diversity of forest habitats, and contain several rare plant species and unique plant communities. The unusual flora of the area is due, in part, to its location in a core area of inland-maritime climate. Biodiversity of the area is further enhanced by its location between two ecoregions: the Bitterroot Mountains Section of the Northern Rocky Mountains Province and the Palouse Prairie Section of the Columbia Plateau Province (McNab and Avers, 1994).

Bunchgrass steppe vegetation extends into the lower reaches of the canyon on warm aspects, and elements of Palouse prairie flora, including several regional endemic species, merge with those of moist, western redcedar (*Thuja plicata*) forests of the Clearwater Mountains. Major forest cover types of the area are ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), grand fir (*Abies grandis*), and western redcedar (Lane, 1995).

2.3.6.1 Forests and Forest Management

Soil data for the Clearwater Basin indicates that fourteen forest habitat types (Table 2-2), as described by Cooper et al. (1991), occur on Corps-managed land surrounding Dworshak Reservoir. Based on regional geology, topography, soils, and climate; disturbance has played a significant role in shaping the composition, form, and structure of these forests.

Historic ecosystem processes included the deposition of ash through volcanic activity, glaciation, flooding, landslides, wind events, and wildfire. Several of these processes have occurred with high enough frequency and severity to be considered when managing natural resources. Although these types of events are natural occurrences, modern man has had substantial effect on their frequency and magnitude, either directly or indirectly. Resource managers should take care in planning new road construction to minimize the potential for landslides. Similarly, forest management practices can affect the impact of wind events as well. By overharvesting, remaining trees are left with little protection to withstand even moderate wind events. However, of these natural ecological processes, none have been more altered by man then wildfire.

The ecosystem process known as “wildfire” was historically the most dramatic process to shape northern Idaho forests. The impacts of fire to an ecosystem are dependent on the localized fire regime. The exclusion of fire from fire-dependent ecosystems can alter forest composition, form and structure, nutrient cycling, soil properties, erosion potential, and fish and wildlife habitat. Active efforts to suppress fires from Pacific Northwest ecosystems, including lands surrounding Dworshak Reservoir, began in the early 1900s. Years of fire suppression in the basin have resulted in dramatically altered fire regimes. There has been a significant reduction in the frequency of low-severity fire regimes (ground fires). The reduction in low-severity fire frequency has drastically altered the composition, form, and structure of many drier forest types throughout the basin. Unnatural forest change occurs when fire-intolerant tree species (e.g., grand fir) are allowed to mature in the absence of fire, and take over areas historically dominated by fire tolerant species (e.g., ponderosa pine). In contrast, wetter forest types, where frequent low-severity burns were not part of their historic fire regime, are not altered as drastically with the absence of fire. Reduced fire frequencies result in increased forest fuel loads as well, and more severe fires would be expected under more natural conditions.

Table 2-2. Dworshak Habitat Types and Associated Fire Regimes

Habitat Types	Acres	Fire Group Acres	Fire Type	Mean Fire Interval (years)	General Description of Historic Vegetation	Management Implications
Ponderosa Pine/Idaho Fescue	1462	1	Non-Lethal (Surface Fires)	15	Open forest structure dominated by large-diameter ponderosa pine	Restore open ponderosa pine ecosystem utilizing forest thinning and prescribed fire
Ponderosa Pine/Common Snowberry	208					
Douglas fir/Snowberry	13	1682				
Douglas Fir/Mallow Ninebark	3245	2	Non-Lethal	15	Open forest structure dominated by large-diameter ponderosa pine and Douglas fir	Restore open ponderosa pine ecosystem utilizing forest thinning and prescribed fire
			Mixed (Surface and Crown fires)			
		9541		50		
Grand Fir/Mallow Ninebark	6296					
		7	Mixed (Surface and Crown fires)	50	Closed canopy forest dominated by grand fir	Maintain forest composition, form, and structure. Utilize thinning and prescribed fire designed to reduce fuel loading only.
Grand fir/Queencup Beadlily	590					
Grand Fir/Twinflower	81		Lethal (Crown Fires)	200		
Grand Fir/Wild Ginger	604	1275				
Western Hemlock/Queencup Beadlily	1009	8	Non-Lethal (Surface Fires)	132	Closed canopy forest dominated by western redcedar or western hemlock	Protect and conserve forest composition, form, and structure
Western Hemlock/Wild Ginger	62					
Western Redcedar/Oakfern	133					
Western Redcedar/Queencup Beadlily	10384		Lethal (Crown Fires)	225		
Western Redcedar/Wild Ginger	2374	13962				
Western Hemlock/Maidenhair Fern	935	Not included in any Fire Group			Closed canopy forest dominated by western hemlock	Protect and conserve forest composition, form, and structure

Fire information was obtained from Smith and Fisher, 1997.

Understanding the ecological processes that have shaped these forests historically, as well as the resulting composition, form, and structure should be used in natural resource planning. Land managers should also recognize forests created by these processes influenced wildlife species diversity as well. The Corps land surrounding Dworshak Reservoir will be managed based on this ecological understanding. Drier forest types will be managed to promote natural forest conditions, given a historic fire regime, which will involve forest thinning followed by prescribed under-burns. Wetter forest types will be managed with much less frequency, as the natural disturbance regime was much less frequent.

2.3.6.2 Priority Habitats

Based on vegetation types present, wildlife habitat needs, and an understanding of native ecological processes, five priority habitats have been identified: Ponderosa Pine Ecosystems, Old-Growth Forest Communities, Western White Pine Communities, Wetland Communities, and Coastal Disjunct Plant Communities. Each should be considered critical for protection and enhancement.

- **Ponderosa Pine Ecosystems:** Historically, throughout Idaho, ponderosa pine dominated transition zones between sagebrush/grasslands and cooler forests. Under the historical fire regime of frequent, cool underburns, ponderosa pine was maintained as the dominant overstory species. Historical fires produced stands with densities of only 10 to 50 trees per acre, dominated by large to very large trees (Smith and Fischer, 1997). However, fire suppression and timber harvesting practices have altered the characteristics of these ponderosa pine stands. Fire suppression has allowed less fire-tolerant and more shade-tolerant species to establish and flourish, thus inhibiting ponderosa pine regeneration and altering the structure and composition of existing stands. Historical timber harvesting practices favored the removal of high value, large, shade-intolerant trees (e.g., ponderosa pine). Several reports have identified the loss of ponderosa pine habitats as a management concern [i.e., the Interior Columbia Basin Ecosystem Management Project [US Forest Service (USFS), 2000], and the Clearwater Subbasin Management Plan (Ecovista, 2003). Additionally, The Ecosystem Management Research Institute (EMRI), under contract with Partners in Flight (PIF), considers Idaho ponderosa pine ecosystems endangered. They estimate that 95% of historic ponderosa pine ecosystems in Idaho have been lost to logging, agriculture, and fire suppression. Most experts agree that restoration of ponderosa pine forests must begin immediately if the remaining large, old ponderosa pine are to be saved from stand-replacing fire and mortality due to competition. Within Dworshak and the surrounding area, wildfire and its effects have been suppressed for over 100 years. The past and present management

action of fire suppression has drastically altered the vegetative composition, form, and structure of many forest stands within Dworshak project lands. Cover types dominated by ponderosa pine were historically present on the lower half of the Dworshak Reservoir, from Ahsahka to Magnus Bay. Remnant, mature ponderosa pine trees still exist on south-facing slopes. However, many stands are quickly being overtaken by Douglas and grand fir. Management goals within ponderosa pine forest communities should include forest thinning and prescribed burning to restore forest composition, form, and structure to a desired condition, based on the historic disturbance regime. The desired condition should consist of 10 to 50 trees per acre, primarily comprised of large- to very large-diameter ponderosa pine and Douglas fir. Understory should consist of grasses with sparse shrubs. Any public use planning should identify and have provisions to protect these endangered ecosystems.

- **Old Growth Forest Communities:** Old-growth forest habitats have declined consistently across the Interior Columbia River Basin. Wildlife species utilizing mature and old-growth forests are associated with characteristic components of these stands, including canopy cover, mistletoe brooms, dead parts of live trees, exfoliating bark, snags, downed wood, litter and duff, fire processes, and insect outbreaks. Studies indicate that a large percentage of species within the Interior Columbia River Basin use mature and old-growth forests for feeding and/or reproduction. Mature and old-growth stands are present along Dworshak Reservoir, however, because surrounding lands have been heavily harvested. These stands are limited and underrepresented in the landscape relative to historical conditions. Several of the state-listed species, either documented as occurring or having the potential to occur on the reservoir, require or utilize these old-growth forest communities. Old-growth forest stands on Dworshak Project lands should be actively protected and/or enhanced, and a portion of mature forest stands should be left to increase the coverage of old growth. The characteristics of some existing old-growth stands may be enhanced through management techniques, such as understory thinning, prescribed fire (as in the case of some old-growth ponderosa pine stands), or snag creation. Other stands may be best managed by leaving them intact and undisturbed (as in the case of many western red cedar stands). The planning of recreation facilities should avoid negative impacts to old-growth forest communities.

- **Western White Pine Communities:** Prior to the 1900s, western white pine was a prominent component of western forests. In 1910, white pine blister rust was introduced to the west coast in contaminated nursery stock from Europe. White pine blister affects all five-needle pines, including western white pine. The first infection in Idaho was

discovered in 1923 in Coeur d'Alene National Forest. Western white pine stands were extremely susceptible to the blister rust, and many trees died. Through mortality, fire suppression, and timber salvage operations, western white pine was nearly eliminated from the landscape. Western white pine is an early seral species within several habitat types found on Dworshak Project, and occurred frequently prior to the introduction of blister rust. Mature western white pines are still present in some areas along the reservoir, but are well short of their historical extent. Since the mid-1900's, various agencies have worked together to develop rust-resistant strains of white pine, focusing both on developing rust resistance and maintaining genetic diversity. Through their efforts, resistant white pine seedlings are now available for planting. Natural resource management plans should include the reintroduction of western white pine in priority areas. This may require pre-planting silvicultural treatment. Pubic use planning should allow for locations where western white pine is allowed to flourish.

- **Wetland Communities:** Prior to the creation of Dworshak Reservoir, wetland habitats were undoubtedly present below the high water mark at various sites along the North Fork Clearwater River. With the creation of the reservoir and subsequent water level fluctuations, many of these habitats were eliminated or are no longer capable of supporting wetland species. Beaver, waterfowl, anurans (frogs and toads), and many land bird species are dependent on wetland communities. These communities also support diverse plant assemblages. Furthermore, Idaho Partners in Flight (IPIF) has designated non-riverine wetlands as a high priority habitat, and established an objective of obtaining a net increase in the number of wetland acres in Idaho (IPIF, 2000). Dworshak has a large number of small isolated wetlands that warrant protection. Natural resource management plans include the identification and protection of all existing wetlands. New recreation facilities should be located to avoid negative impacts to the existing wetlands, and planning should allow for locations to create new wetlands.

- **Coastal Disjunct Plant Communities:** The North Fork Clearwater River canyon, along with several other low-elevation canyons in northern Idaho, contains a unique forest ecosystem with numerous plant species characteristic of Pacific-maritime forests (Steele, 1971; Johnson and Steele, 1978). Low elevations, mountainous terrain, and Pacific air masses combine to moderate temperatures and increase humidity, emulating a maritime environment. The canyons are thought to have served as refugia for cold-intolerant species during Pleistocene climatic changes (Daubenmire, 1969). These "coastal refugia" contain almost 40 disjunct coastal vascular species alone, some of which occur nowhere else in the Rocky Mountains (Lorain, 1988). This

unique ecosystem is found in localized areas of northern Idaho. These plant communities occur within the wetter habitat types at Dworshak. Every effort must be made to protect these species and their habitats.

2.3.6.3 Sensitive Plants

During vegetative inventories of the Dworshak area conducted by IDFG in 2000 and 2001, 450 different vascular plants were recorded (Bowers and Nadeau, 2002). These included 15 tree species, 50 shrub species, 18 ferns and their allies, 82 grasses, and 283 forbs. Of these species 1 fern, 1 graminoid, and 9 forbs are on the state list of Special Status Plants (Table 2-3). Management should make provisions to protect these plants and their habitats. The Jessica's aster populations at Dworshak Reservoir should have special protection, as they represent some of the only populations occurring on federal land.

2.3.6.4 Land Use

The land owned by the Corps is managed for ecological conservation and mitigation, as well as for recreation. It is actively managed against wildfires and, as a result, is selectively harvested and burned at specified intervals through Corps stewardship projects. Developed camp sites and over 100 mini-camps are also located on Corps lands around the reservoir. There are hiking trails in different areas around the lake where the topography allows. The adjacent properties are used primarily for timber production, but portions of these lands are being sold off as private residential building lots.

Table 2-3. Dworshak State Listed Plants

Scientific Name	Common Name	Plant Type	Primary Habitat
Tripterocladium leucocladulum	Naked Rhizomnium Moss	Moss	Moist Forest, Riparian
Hypogymnia inactiva	Inactive Tube Lichen	Lichen	Moist Forest
Platismatia herrei	Herre's Ragged Lichen	Lichen	Moist Forest
Blechnum spicant	Deerfern	Fern	Riparian
Carex hendersonii	Henderson's sedge	Graminoid	Moist Forest, Riparian
Aster jessicae	Jessica's aster	Forb	Dry Forest, Forest Openings
Calochortus nitidus	Broad-fruit mariposa	Forb	Dry Forest, Grassland
Caradmine constancei	Constance's bettercress	Forb	Moist Forest, Riparian
Cirsium brevifolium	Palouse thistle	Forb	Dry Forest
Corydalis caseana ssp. hastata	Case's corydalis	Forb	Riparian
Cypripedium fasciculatum	Clustered lady's-slipper	Forb	Moist Forest
Dodecatheon dentatum	White shooting star	Forb	Riparian
Mimulus clivicola	Bank monkeyflower	Forb	Rock Outcrop
Orobanche pinorum	Pine broomrape	Forb	Dry Forest, Moist Forest
Trientalis latifolia	Western starflower	Forb	Dry Forest, Moist Forest

2.3.7 Fish and Wildlife Resources

Recreational activities can cause significant impacts to fish, wildlife, and their habitats. The loss of winter elk habitat has been mitigated through specific elk mitigation management areas, but populations are lower than they were prior to dam construction and impoundment. See Section 5 for more information on the Elk Mitigation Area.

2.3.7.1 Fish

Twenty-one fish species were documented as occurring in Dworshak Reservoir in 1980 (Table 2-4). Although no recent fisheries investigation has documented species presence in Dworshak most of these species are expected to still occur in the reservoir. Primary sport species include kokanee, rainbow trout, smallmouth bass and cutthroat trout. Because of the steep shorelines and drastic fluctuations in pool level, little shallow water habitat is available to support natural reproduction of smallmouth bass. Maximum shoreline spawning habitat exists at full pool. Cutthroat and rainbow trout spawn in the tributaries in the spring. Bull trout and kokanee spawn in the fall primarily in the tributaries to the reservoir (Maiolie, 1988).

The westslope cutthroat trout is listed as a sensitive species in Idaho. Since the late 1800s, distribution and abundance of westslope cutthroat trout has declined throughout its former range (Liknes and Graham, 1988). The decline of cutthroat trout has been attributed to overfishing, genetic introgression, competition with nonnative species (especially stocked rainbow trout), and habitat destruction. Westslope cutthroat occur in the reservoir and spawn in most tributaries (StreamNet, 2009). The protection of riparian habitat in support of suitable spawning habitat for westslope cutthroat trout must be considered in land use planning.

2.3.7.2 Birds

A total of 42 waterfowl and shorebird species were observed on Dworshak Reservoir during terrestrial resource surveys conducted by IDFG (Bowers and Nadeau, 2002). Six of these species are known to nest along the reservoir: Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), wood duck (*Aix sponsa*), green-winged teal (*Anas crecca*), common merganser (*Mergus merganser*), and spotted sandpiper (*Actitus macularia*). However, Dworshak Reservoir is primarily used by waterfowl and shorebirds as a loafing area during the spring and fall migratory periods, with peak waterfowl usage occurring during late fall, winter, and spring. Some feeding by geese and puddle ducks occurs along the exposed shoreline during the winter drawdown. The extreme fluctuations in pool level limit the growth of aquatic vegetation, reducing the amount of food available for waterfowl. Fourteen species of waterfowl and shorebirds are currently listed as “Species of Greatest Conservation Need” (Table 2-5).

Table 2-4. Dworshak Fish Species of Concern

Common Name	Scientific Name
Chiselmouth	*Acrocheilus alutaceus*
Bridgelip sucker	*Catostomus columbianus*
Large scale sucker	*Catostomus macrocheilus*
Sculpin	*Cottus spp.*
Northern pike	*Esox lucius*
Pacific lamprey	*Entosphenus tridentatus*
Brown bullhead	*Ictalurus nebulosus*
Pumpkinseed	*Lepomis gibbosus*
Smallmouth bass	*Micropterus dolomieui*
Largemouth bass	*Micropterus salmoides*
Kokanee	*Oncorhynchus nerka*
Black crappie	*Pomoxis nigromaculatus*
Mountain whitefish	*Prosopium williamsoni*
Northern pike minnow	*Ptychocheilus oregonensis*
Longnose dace	*Rhinichthys cataractae*
Speckled dace	*Rhinichthys osculus*
Redside shiner	*Richardsonius balteatus*
Cutthroat trout	*Oncorhynchus clarki*
Rainbow trout	*Oncorhynchus mykiss*
Bull trout	*Salvelinus confluentus*
Brook trout	*Salvelinus fontinalis*

Source: Horton. W.D.. 1980.

Sixteen raptors species were documented as occurring at Dworshak by IDFG (Bowers and Nadeau, 2002). Among these are eagles, hawks, ospreys, falcons, and owls. Four species are listed by the state: bald eagle, Swainson's hawk, merlin, and flammulated owl (Table 2-5). A large population of bald eagles winter on the reservoir, but only five nests have been documented. Over 150 osprey nests have been documented at the project.

Six upland game bird species were documented during IDFG surveys: mourning dove (*Zenaida macroura)*, California quail (*Callipepla californica)*, ruffed grouse (*Bonasa umbellus)*, blue grouse (*Dendragapus obscurus)*, spruce grouse (*Dendragapus canadensis)*, and wild turkey (*Meleagris gallopavo*). Asherim and Orme (1978) observed one male mountain quail at Magnus Bay in September 1977. Mountain quail were also reported near Reeds Creek in 1990 and 1993. Of these species, only the mountain quail is classified as a special status species in Idaho. Wild turkeys are not native to Dworshak. In 1985, however, 16 wild turkeys were released by IDFG in the Canyon Creek drainage. In 1993, additional releases of wild turkeys were made near Orofino Creek (26 birds) and Whiskey Creek (22 birds) to supplement the population. Wild turkey populations are now thriving.

Table 2-5. State Listed Birds Occurring on Dworshak Lands

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

Numerous land birds use Dworshak project lands for breeding, foraging, and/or over-wintering habitat. Most land birds are protected under the Migratory Bird Treaty Act (1918), and all except the American crow (*Corvus brachyrhynchos*) are considered protected non-game species in Idaho. Eighty-seven land bird species, including seven woodpeckers, were detected during IDFG surveys. Four land birds occur as special status species in Idaho (Table 2-5). Two of these, flammulated owl and pygmy nuthatch, are associated with ponderosa pine ecosystems.

2.3.7.3 Mammals

Thirty-nine species of mammals, excluding domestic species, were documented during IDFG surveys at Dworshak. Those include small mammals (14), bats (7), mid-sized mammals (3), furbearers and carnivores (11), cervids (4), and domestic species. Of the 39 mammal species detected, only 2 are on Idaho's "Species of Greatest Conservation Need" list: Townsend's big-eared bat (*Corynorhinus townsendii*) and gray wolf (*Canis lupus*). Undocumented sightings of fisher (*Martes pennanti*) and wolverine (*Gulo gulo*) have also been reported to Dworshak staff.

Townsend's big-eared bats are found in a variety of xeric to mesic habitats, including desert scrub, sagebrush, chaparral, and deciduous and coniferous forests. They are strongly associated with caves and mineshafts (Pierson et al., 1999). The

Townsend's big-eared bat captured during IDFG surveys was found in an adit located 0.25 mile (~0.4 kilometer) south of Dworshak Dam, in ponderosa pine habitat. Since then, surveys of the adit by the Project Wildlife Biologist have documented numerous Townsend's big-eared bats using the adit as hibernacula.

Gray wolves have large home ranges, and are habitat generalists. They are not associated with any particular habitat but, instead, inhabit areas with sufficient prey bases to support their populations. Primary prey species include deer, elk, moose (*Alces alces*), caribou (*Rangifer tarandus*), and other ungulates.

2.3.7.4 Amphibians and Reptiles

Eight amphibian species were detected in IDFG surveys. Three of these species have special status in Idaho: the Idaho giant salamander (*Dicamptodon aterrimus*), the Coeur d'Alene salamander (*Plethodon idahoensis*) and the Columbia spotted frog (*Rana luteiventris*). According to the Idaho Conservation Data Center, Columbia Spotted frog populations are only of concern south of the Snake River. All amphibians documented as occurring in and around Dworshak require moist sites for reproduction and development of their young. Idaho salamander adults are terrestrial. They seek cover under logs, bark, rocks, and other surface debris, most often in the riparian zones of streams and lakeshores, but in other moist upland environments as well. The Coeur d'Alene salamander is associated with flowing water of seeps, streams, and creeks. Columbia spotted frogs are highly aquatic, and seldom found far from water. Several amphibian species, including the Columbia spotted frogs, utilize standing water, ranging from ephemeral pools to permanent wetlands and shallow margins of the reservoir. Isolated wetlands located throughout Dworshak project lands provide valuable habitats for amphibian reproduction. These wetlands should be protected and/or enhanced. Recreational planning should minimize impacts to wetlands.

Six species of reptiles occur on Dworshak, as documented in IDFG surveys. These include the rubber boa (*Charina bottae*), gopher snake (*Pituophis melanole*), western terrestrial garter snake (*Thamnophis elegans*), common garter snake (*T. sirtalis*), western skink (*Eumeces skiltonians*), and northern alligator lizard. The western yellow-bellied racer (*Coluber constrictor mormon*) is likely to occur in the open forests and meadows below Dent Bridge, but has not been documented recently. The northern alligator lizard is the only reptile listed by the state. Dworshak is located at the very southern extent of the northern alligator lizard's range in Idaho (Groves et al., 1977). Northern alligator lizards inhabit cool, moist forests near riparian areas, forest clearings, or forest edges, which they utilize for foraging and basking, and they hibernate in logs and rock crevices in (Brown et al., 1995).

2.3.7.5 Habitat Mitigation

The construction of the dam and consequent impoundment of the reservoir was ultimately responsible for the losses to fish and wildlife populations. Concerns over the potential impact of Dworshak Reservoir on big game led to extensive pre-impoundment studies and a focus on the need for elk mitigation. Under guidelines established in the Fish and Wildlife Coordination Act of 1958 (PL 85-624 and amendments), the Corps agreed to replace elk wintering habitat to partially compensate for the loss of approximately 15,000 acres of river-bottom vegetation. Design Memorandum No. 15, *Plan for Development of Rocky Mountain Elk Habitat* (Corps, 1977), addressed the development of elk habitat on project lands along the upper reservoir (above Grandad Bridge). A total of 5,119 acres above Grandad Bridge were acquired for elk habitat mitigation. An additional 4,680 acres on Smith Ridge were also intended for inclusion in the Dworshak Elk Habitat Development Program, but the Corps was unable to acquire the Smith Ridge lands from the State of Idaho.

In the 1970s and 1980s, the Corps conducted extensive treatments to enhance elk habitat within the previously defined elk mitigation area. Approximately 2,800 acres were clear-cut and burned to optimize elk habitat and increase winter forage production. Although the treatments were highly successful, they were not enough to meet the objective of producing 915,000 pounds of browse annually. As a result, Bonneville Power Administration (BPA) acquired 60,000 acres on Craig Mountain (near Lewiston, Idaho) as mitigation for Dworshak Reservoir. These lands were deeded to the State of Idaho to be managed in perpetuity by IDFG. In addition, millions of dollars in trust funds were given to IDFG and the Nez Perce Indian Tribe for mitigation. A letter from the Director of IDFG in 1992 documented IDFG's consensus that 100% of the Corps' mitigation obligations were met through the purchase of these lands and the establishment of the trust funds. The Corps is still obligated to annually maintain the "hard core" Wildlife Mitigation Area for its designated purposes. The work of improving elk habitat within the mitigation area and throughout the reservoir continues today. Both IDFG and the Corps are committed to maintaining the mitigation area for the purposes for which it was purchased and managed. Recreational use in the mitigation area cannot negatively impact those purposes.

2.3.8 Rare and Endangered Species and Communities

Variations in topography, soils, hydrology, and vegetation allow a variety of rare species to exist on Dworshak project lands and waters. Federally-listed rare, threatened, and endangered species must be considered in all planning, operations, and management activities in order to reduce the level of ecological degradation within project boundaries.

A Biological Opinion, a document prepared by USFWS or NOAA in response to the Corps' assessment of the effects of a proposed action to Threatened and Endangered Species, will be prepared as part of the environmental compliance process. A consultation with USFWS is required, and a Biological Opinion is prepared, for each individual project the Corps intends to implement. It is also possible to prepare a larger, programmatic report to encompass a broad range of proposed activities.

Federally-listed species occurring or potentially occurring near the Dworshak Project are Canada lynx (*Lynx canadensis*), steelhead (*Oncorhynchus mykiss*), Chinook salmon (*Oncorhynchus tshawytscha*), and bull trout (*Salvelinus confluentus*). Each of these species is listed as threatened under the ESA.

2.3.8.1 Canada Lynx (*Lynx canadensis*)

The contiguous US distinct population segment of Canada lynx was listed as threatened in March 2000. Mesic coniferous forests with cold, snowy winters and a prey base of snowshoe hare provide good habitat for lynx (Quinn and Parker, 1987; Koehler and Brittell, 1990; and Koehler, 1990). In North America, the distribution of lynx is nearly coincident with that of snowshoe hares (McCord and Cardoza, 1982). Snowshoe hares inhabit early successional forests, typically with conifer overstories, low-growing understories, and high stem densities (USDA, 1994). Lynx also utilize late-successional forests with a high component of deadfalls for denning and rearing young. Intermediate successional stages may be used for travel cover and connectivity, but such habitats are not as critical to lynx survival as foraging and denning habitats (USDA, 1994).

In western states, most lynx occurrences (83%) were associated with Rocky Mountain Conifer Forest, and most (77%) were within the 4,920 to 6,560 foot (1,500 to 2,000 meter) elevation zone (McKelvey et al., 2000). Primary vegetation contributing to lynx habitat is lodgepole pine, subalpine fir, and Engelmann spruce (Aubry et al., 2000). In central Idaho, Douglas fir on moist sites and at higher elevations may also be considered primary vegetation.

Using 12 remote camera stations and live traps, IDFG conducted surveys for furbearers and carnivores throughout Dworshak Reservoir in 2000 and 2001. Eleven species of furbearers and carnivores were documented. No lynx were observed within the study area. Additional surveys for furbearers and carnivores were conducted by the Corps between 2002 and 2008, employing snow-tracking, remote camera bait stations, and hair snag traps. Lynx were not documented during Corps surveys. However, lynx have been documented within the lower North Fork subbasin in two locations north of Breakfast Creek, one on Floodwood Road (1997) and one at Stocking Meadows Ridge (1998). These sightings were approximately 40 miles from the Dworshak Project.

Based on the characteristics of lynx habitat, primarily elevational and vegetative, and the lack of lynx observations within the area it is highly unlikely that Canada lynx would occur on Dworshak Reservoir. Most documented sightings of lynx occur above 5000 feet elevation in western states, while the highest elevation within the Dworshak boundary is 3500 feet. No lynx have been documented on Dworshak reservoir and sightings in the lower north fork drainage occurred over 40 miles from the project.

2.3.8.2 Bull Trout (*Salvelinus confluentus*)

Bull trout were listed as a threatened species by USFWS in June 1998. The species spawns from August to November in larger tributaries of the reservoir (Corps, 1997), and can exhibit both resident and migratory life history stages. Migratory bull trout spawn in tributary streams, where juvenile fish rear from 1 to 4 years before migrating to either a lake (adfluvial) or river (fluvial), where maturity is reached. Growth and maturity vary with environmental conditions, and first spawning is often noted after 4 years of age (Rieman and McIntyre, 1993). Resident and juvenile migratory bull trout prey on terrestrial and aquatic insects, macro-zooplankton, and small fish. Adult migratory bull trout are freshwater piscivores, apex predators, and opportunistic feeders. At all life history stages, they need access to an adequate prey base. For adults, this necessitates habitats with suitable temperature, habitat complexity, and passage that are accessible through migratory corridors (USFWS, 1998).

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

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

In December 2000, the USFWS issued a Biological Opinion in response to a request by BPA, the Corps, and the Bureau of Reclamation (Reclamation) regarding the effects of hydroelectric facilities on Kootenai River white sturgeon (*Acipenser transmontanus*), bull trout (*Salvelinus confluentus*), and bald eagle (*Haliaeetus leucocephalus*). Actions for implementation by the action agencies (i.e., increased monitoring; and studies to evaluate distribution, timing, and usage of Dworshak Reservoir) would provide further information that may be beneficial to future actions.

Spatial and temporal distribution, migration patterns, spawning sites, and basic life history information of bull trout in Dworshak Reservoir were investigated by IDFG from the spring of 2000 through 2003. In total, 192 adult bull trout were captured, radio-tagged, and monitored. The results indicated extensive use of the reservoir by bull trout for overwintering. Bull trout spend the entire winter in the reservoir, beginning their upstream migration in late May to early June. The highest concentrations of wintering bull trout have been documented between Cranberry and Elkberry Creeks (Personal Communication with Dani Schiff, project supervisor, IDFG, 2003). Although bull trout are found within Dworshak Reservoir, it is unlikely that bull trout spawning exists within the project boundary.

2.3.8.3 Fall Chinook Salmon (*Oncorhynchus tshawytscha*) and Steelhead (*Oncorhynchus mykiss*)

Snake River fall Chinook and steelhead were listed as threatened in July 2000. These species historically migrated up the North Fork Clearwater River prior to the construction of Dworshak Dam in the 1970s. The dam now permanently prevents upstream fish passage and, as a result, no anadromous fish species currently occur on Dworshak Reservoir or within any of its tributaries. Mitigation efforts have established strong hatchery runs of both fall Chinook and steelhead on the mainstem Clearwater River. Kokanee salmon stocked in Dworshak Reservoir and reproducing in its tributaries provide a salmon fishery in the reservoir.

2.4 VISUAL QUALITIES

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

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

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

2.5 SOCIO ECONOMICS

2.5.1 Demographics

2.5.1.1 Historic Perspective

Clearwater County has been primarily a timber, mining, and agricultural-based area. The county population has experienced a number of fluctuations in direct correlation to the health of the timber industry. Figure 2-3 illustrates this fluctuation over the past 50 years. The peak in population around 1970 was in large part due to the construction of Dworshak Dam.

The racial composition of the region is predominately white. Native Americans, Pacific Islanders, and Hispanics also account for a percentage of the areas demographics. These numbers, shown in Table 2-6, have not changed significantly over the past 50 years.

The average per capita income for the area is $27,405 (Figure 2-4). There are 4,144 homes in the area, with average home cost at $80,500. Around 80% of the population graduated from high school, while 13% have higher education (www.census.gov).

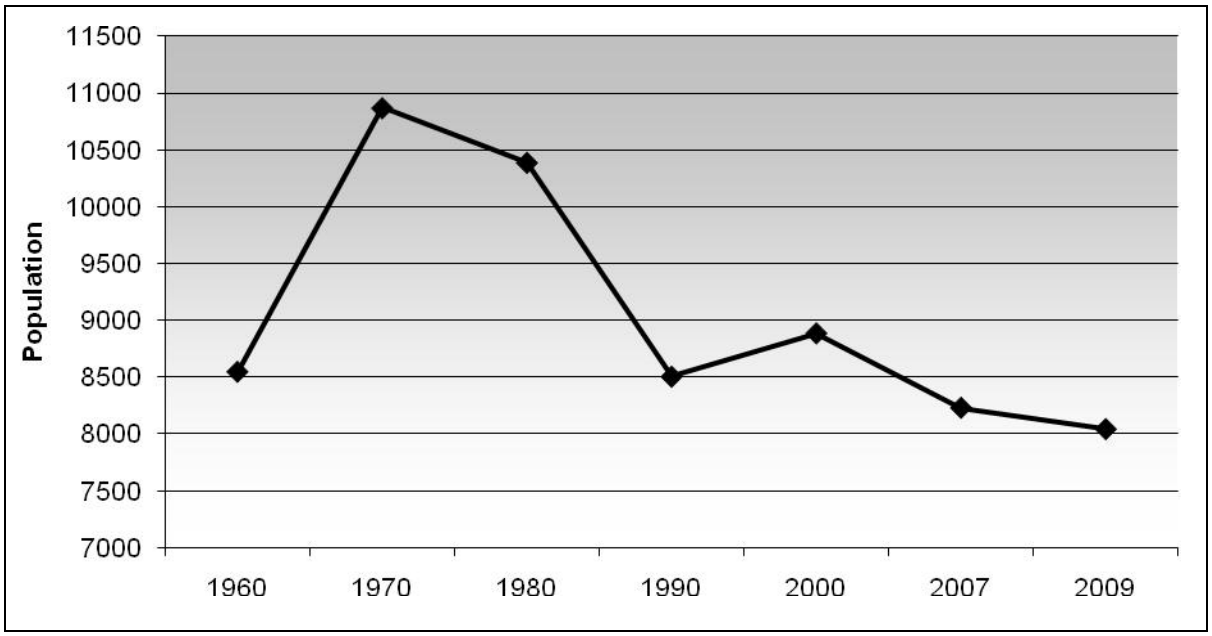


Figure 2-3 Clearwater County Historic Population Trends

Table 2-6. Clearwater County Racial Composition

Race	White	Black or African American	American Indian and Alaskan Native	Asian	Native Hawaiian or other Pacific Islander	Hispanic or Latino	Other Race
Percentage	96.7	.1	3.3	.6	.2	1.8	.6

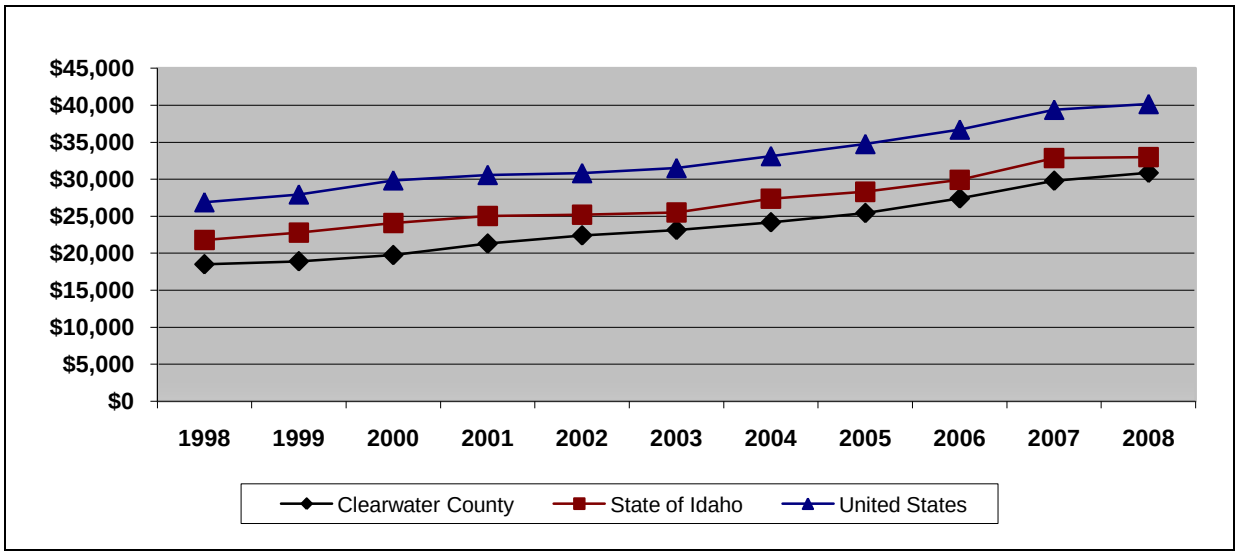


Figure 2-4. Clearwater County Per Capita Income

2.5.1.2 Current Population Trends

During the early 1990s, the population in Clearwater County grew, peaking at 9,232 in 1996. Hard economic times caused the population to drop from 9,099 in 1997 to 8,231 in 2007, a decrease of 10% (Figure 2-5). At the same time, the population of the United States grew 11 percent, and the population of the State of Idaho increased 22 percent. New registrations for driver's licenses and job registrations indicate that the few people who did move to Clearwater County came from other parts of the Pacific Northwest and California. People move there to enjoy the area's scenery, recreational opportunities, and rural lifestyle. The county seat, Orofino, has a population of 2,987. The next three largest cities are Pierce (population 514); Weippe (population 362); and Elk River (population 133).

The projected population for Clearwater County is expected to remain relatively consistent with a slight decline over the next ten years. The area is a timber resource-dependent area. As such, the population of the area will fluctuate based on current production, timber harvest regulations, and the ability of the forest to sustain continued harvesting.

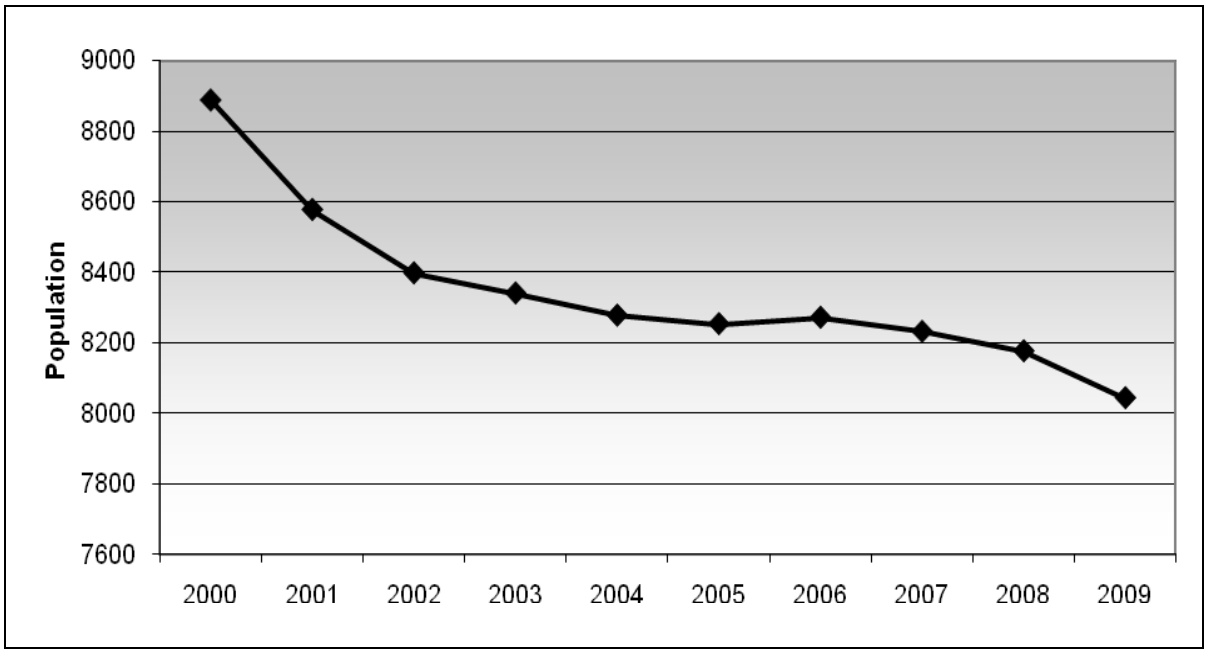


Figure 2-5. Clearwater County Population Trends

2.5.1.3 Summary of Demographic Effects on Visitation

The majority of visitors to Dworshak Reservoir come from a five-county region that includes Clearwater County, Latah County, Nez Perce County, Lewis County, and Idaho County. Figure 2-6 depicts historic populations for the above mentioned five counties.

Based on the historic population levels of these five counties, it is likely the population will continue to grow steadily in Latah and Nez Perce Counties. It is not as clear what future projections will look like for the other three counties. The effect of the overall anticipated increases in population will result in a minimal increase in demand for recreational opportunities.

The other demographic indicators (age, income, and education) have less of an impact on reservoir visitation. In general, lower incomes do limit the ability of individuals to participate in more costly forms of recreation (e.g., boating). There is a strong public demand to create more shore-based recreation features that do not require boat usage or ownership.

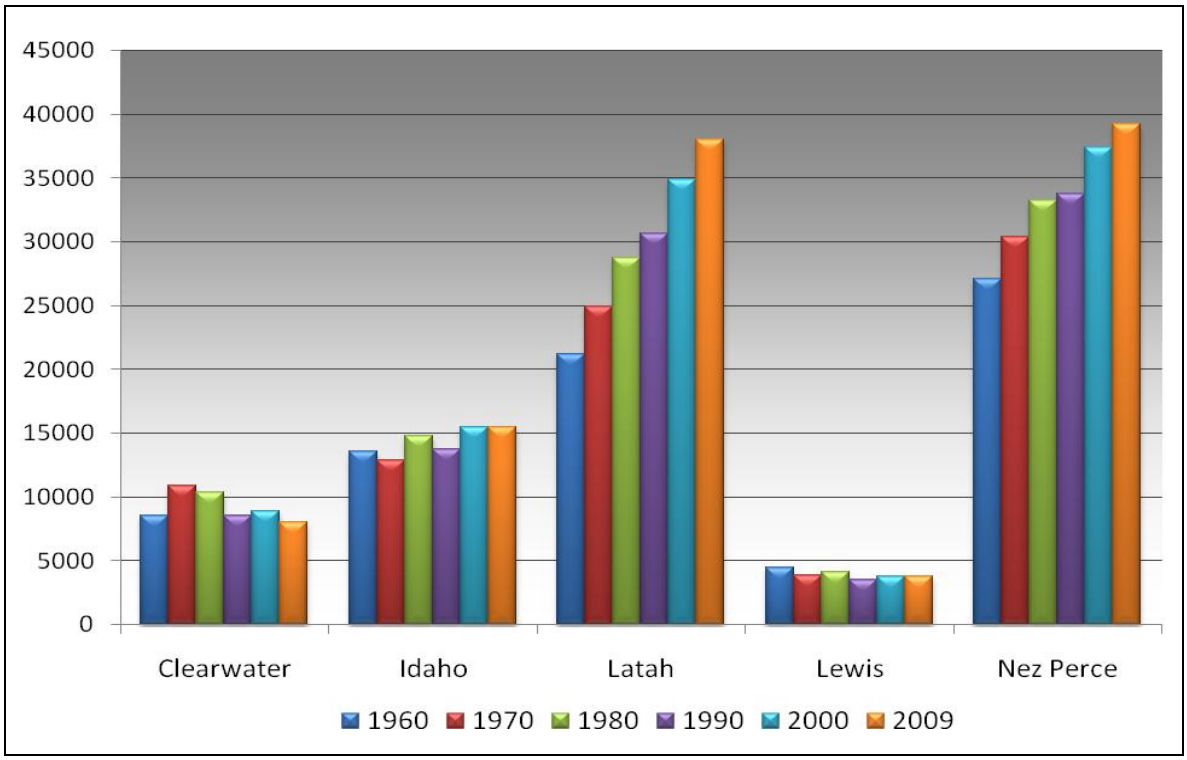


Figure 2-6. Five-County Historical Populations

2.5.2 Economic Characteristics

2.5.2.1 Income and Employment

Orofino and the other surrounding communities are historically resource dependent economies. Most of the population and workforce either worked for timber or other resource industries, or supported those industries with the necessary service businesses. Currently, major employers in the area include Clearwater County, Clearwater Healthcare LLC, Clearwater Valley Hospital and Clinic, Idaho Department of Health and Welfare, Idaho State Penitentiary, Orofino Joint School District 171, Tri-Pro Forest Products, USFS, and the Corps.

A decline in the forest products industry in the late 1990s climaxed with the closure of Pierce's Jaype Mill. Since that time, Clearwater County has experienced significant employment decreases in almost all industries. Economic development groups have worked hard to diversify the economy, attract new businesses, and help existing businesses grow. To assist with business expansion, an industrial park in Orofino was constructed. Architectural Signs and Engraving, Inc., the first tenant, has been successful.

In 2006, Clearwater County began to show signs of a recovery. Federal and state employment provides some stability to the local employment base. Jobs were added in manufacturing, retail trade, tourism, and health care. However, instability in the timber industry, and the national economy as a whole, has resulted in

setbacks. The Clearwater County Economic Development Council, and other local and state officials, are leading efforts to strengthen and diversify the economy in Clearwater County. Figure 2-7 provides a graphical view of unemployment of Clearwater County.

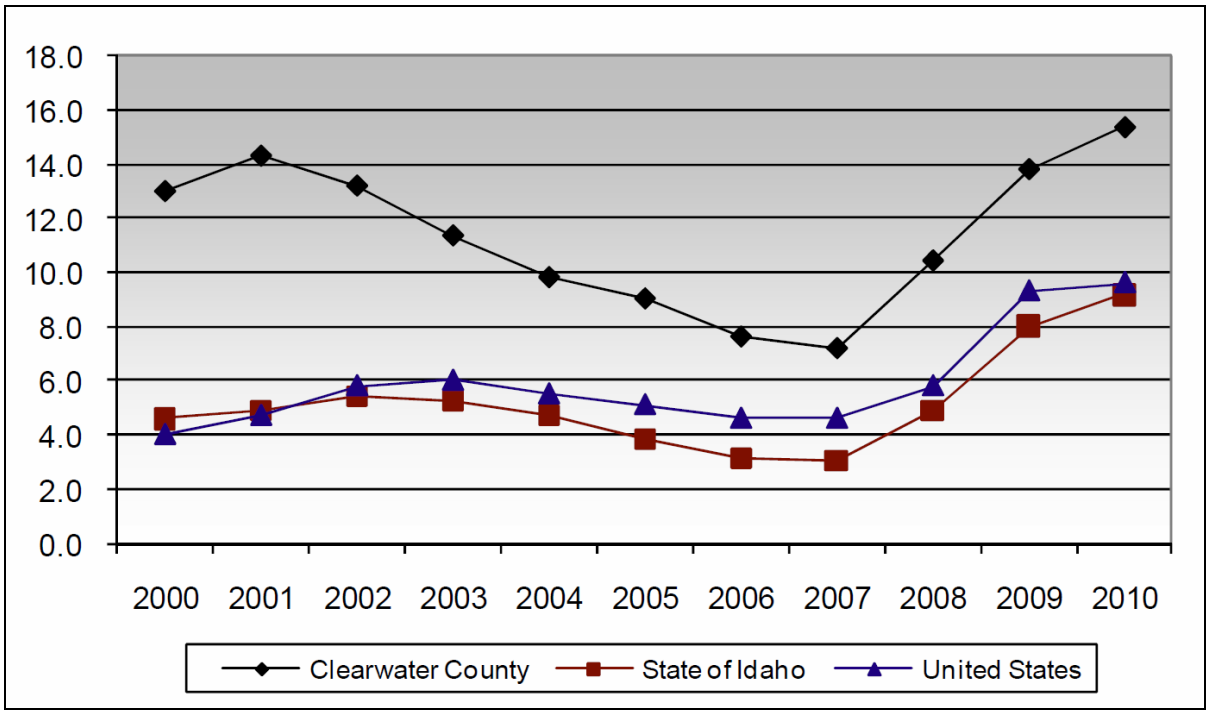


Figure 2-7. Clearwater County Unemployment

Clearwater County has struggled with high unemployment since the mid-1990s. It has long been believed that the area would transition from being resource-dependent to growth in manufacturing, retail, tourism, and government services. Clearwater County Economic Development and other local officials are making efforts to strengthen and diversify the economy.

2.5.2.2 Tourism

Tourists come to enjoy hunting and fishing opportunities and boating at Dworshak, or to learn about the area's role in the Lewis and Clark Expedition. A variety of hotels and bed and breakfast establishments provide lodging for a wide array of tourists seeking alternative lodging experiences. Other than lodging, the typical tourist expenditures include food, fuel, recreation gear, and local specialty shops.

The current policy of reservoir drawdown for ESA species in the Clearwater, Snake, and Columbia Rivers, has had measurable effects on tourism in this region. In an economic study commissioned by the Clearwater County Economic Development, published in April 2002, it was estimated that these draw downs caused a short-term decline in retail sales in the nearby community of $1.2 million, a medium-term decline of $3.2 million, and a long-term decline of $4.5 million (Peterson and DiNoto,

2002). Peterson and DiNoto (2002) estimated that this economic decline reduced employment by 36 jobs in the short-term, 90 jobs in the medium-term, and 125 jobs in the long-term. Value-Added, Earnings, and Indirect Business Taxes declined proportionately. Peterson and DiNoto estimated the net adverse impacts of the draw down ranged from 0.5% to 1.5% of the Clearwater County regional economy. These numbers have not been verified by the Corps.

2.6 PUBLIC ACCESS AND RECREATION

2.6.1 Accessibility

2.6.1.1 Land Access

Access to Dworshak Reservoir includes a complex system of roads and trails that serve both project operations and the public. Due to the remoteness of the project's upper end, road access is limited by road surface and weather conditions. The lower portion of the lands surrounding Dworshak, from Dent Bridge to Dworshak Dam, have paved and improved road access that will accommodate most vehicles. However, only a small portion of the project is accessible by road, with most of the project accessible only by boat or on foot. There are networks of old logging and homestead roads throughout the reservoir lands, most originating beyond Dworshak boundaries and overgrown with vegetation. Some may be of value for future transportation routes or trails.

Five log dump sites exist on the land surrounding the reservoir. The log dump sites were located at: Little Meadow Creek, Benton Creek, Breakfast Creek, Little North Fork, and Robinson Creek. However, after the dissolution of the Log Handlers Association and subsequent relinquishment of the lease, the original sites are no longer available for log transport or vehicular traffic. These sites have hardened gravel surfaces that extend to the edge of the reservoir and access roads were left in place, and may prove beneficial in the future for potential access.

Although restricted by past regulations, a number of other sites along the reservoir (including several mini-camp sites) are also accessible by vehicle on remote road systems. Most hiking trails provide access to the reservoir; however, drawdowns create exposed banks that are difficult to negotiate in most areas. Bank erosion at high pool has also created ledges that cause difficulty accessing the reservoir in some locations.

2.6.1.2 Water Access

There are seven vehicular access points for boat launching at Dworshak Reservoir. The majority of the reservoir is readily accessible at full-pool elevation by boat, canoe, or other water craft. Most of the boat launches are located on the lower third of the reservoir, while the upper third of the reservoir has only one boat launch.

The annual water drawdowns limit opportunities to launch a water craft at certain water depths. Efforts have been made to lengthen the boat launches to enable access at most times of the year. A list of the boat launch facilities and water depths of ramps is presented in Table 2-7 and Figure 2-8, respectively.

Table 2-7. Dworshak Boat Launch Facilities

Boat Launch	Boat Ramp Use Elevation	Boat Launch Amenities
Big Eddy	1445 msl (-155 feet)	2 lanes, handling dock, tie-up dock, marina dump station, floating fuel
Bruce's Eddy 1	1490 msl (-110 feet)	1 lane, handling dock
Bruce's Eddy 2	1560 msl (-40 feet)	2 lanes, handling dock
Canyon Creek	1560 msl (-40 feet)	1 lane, handling dock
Dent	1485 msl (-115 feet)	2 lanes, handling dock, tie-up at high water
Freeman Creek	1515 msl (-85 feet)	2 lanes, handling dock, 3 tie-up docks (2 at Freeman Creek, 1 at 3 Meadows)
Grandad	1525 msl (-75 feet)	1 lane, handling dock

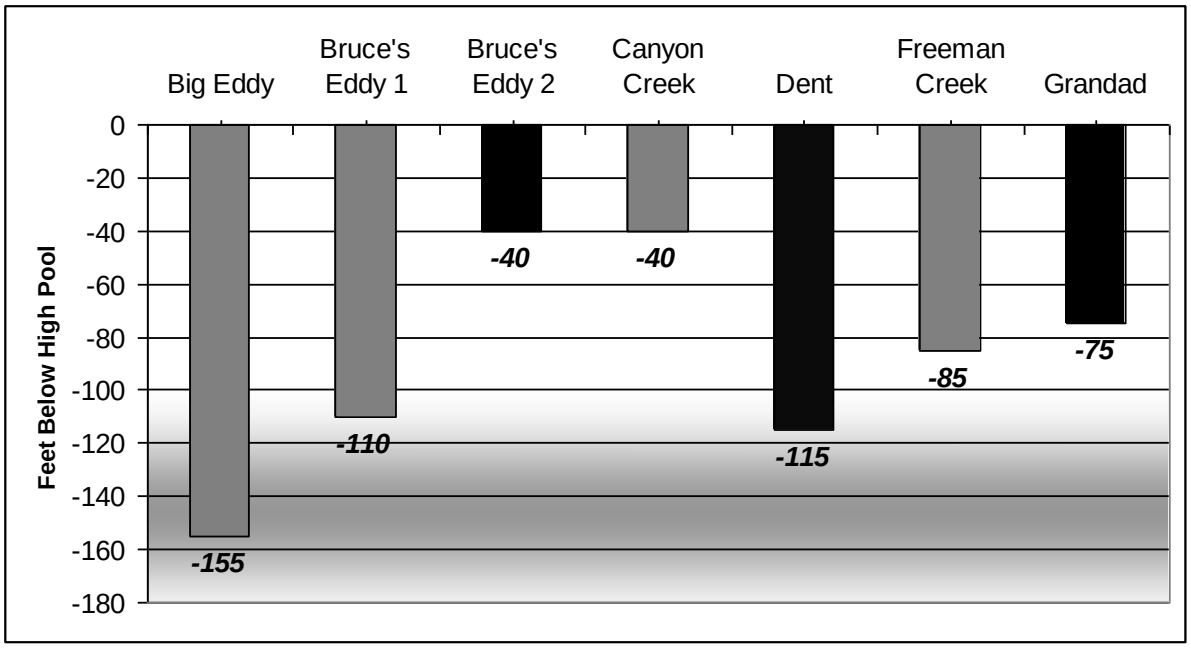


Figure 2-8. Dworshak Boat Launch Depths

Many parts of Dworshak Reservoir are remote and removed from major population centers. Table 2-8 shows an estimated travel time from nearby cities to various boat launches on the reservoir. The same information is graphically depicted on Plate 4.

Table 2-8 Estimated Travel Times from City to Boat Launch (in Minutes)

City	Big Eddy	Bruce's Eddy	Canyon Creek	Freeman Creek	Dent Acres	Grandad
Orofino	20	15	45	60	35	140
Weippe	60	55	85	100	80	90
Pierce	55	50	60	90	60	75
Elk River	65	60	60	120	35	50
St. Maries	160	165	210	160	175	170
Lewiston	70	75	105	95	100	185
Moscow	100	95	120	100	125	115
Deary	140	135	105	75	120	85
Potlatch	165	160	140	120	150	115
Kamiah	45	40	70	75	65	130
Lapwai	60	55	80	85	90	180
Clarkston, WA	80	85	115	105	110	195

2.6.2 Recreation Facilities

2.6.2.1 History of Recreation Development at Dworshak

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

Dworshak provides recreational opportunities for over 150,000 people each year. The number of recreational facilities has increased, and many improvements have been made over the past 35 years. Some of these facility improvements have been initiated and implemented by field personnel as part of the operations and maintenance program. While most recreation occurs on the lower end of the reservoir, there are recreational opportunities at the upper end of the project as well (i.e., camping, fishing, hunting, and boating).

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

Plate 4. Boat Launch Facilities and Nearby Cities

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

In 2004, the Corps analyzed the potential for house boat moorage as a possible way of creating additional boating and access opportunities on the reservoir (Corps, 2004). In 2005, the Corps evaluated the possibility of introducing ATV trails on Dworshak lands (Corps, 2005). A further explanation of these studies is contained later in this report. Other access considerations that have been initiated by the Corps include floating destination docks, lengthening boat ramps, and installing house boat buoys for house boat moorage.

2.6.2.2 Existing Recreation Facilities

The Corps-owned recreation facilities at Dworshak Reservoir vary from well-developed campgrounds to primitive areas with few facilities. Because of topography, road access, and location relative to population centers, most development of intensive-use recreation facilities has been concentrated on the lower third of the reservoir.

Staff at Dworshak Dam and Reservoir conducted facility analyses to determine which current facilities are adequate to meet current and projected recreational demands; and to identify those facilities that should be improved, consolidated, or closed. This information will be used to determine the best course of action for future management and maintenance of current recreation facilities. Table 2-9 is a summary of recreational facilities and amenities provided at Dworshak Reservoir.

The majority of Dworshak Dam and Reservoir's recreation facilities are accessible from April 1 to November 30 (Table 2-10), although some facilities are accessible all year (i.e., the boat ramps at Big Eddy and Bruce's Eddy). The mini camps are also open all year, although access to many of the sites may be difficult or impossible at lower water elevations. The mini-camps do not receive maintenance throughout the entire year.

Table 2-9. Dworshak Recreation Facilities

Recreation Facilities	Day Use	Primitive Camping	Camping Fee	Utility Hook-Ups	Trailer Dump Station	Hot Showers	Picnic Area	Swimming	Boat Launch	Hiking Trails	Universal Access	Group Picnic Shelter	Marine Dump Station	Floating Public Toilet	Marina and Fuel	Public Phone	Reservations Accepted	Boat/RV Storage	Public Tours
Big Eddy	X						X	X	X	X	X	X	X	X	X	X			
Bruce's Eddy	X								X	X	X					X			
Canyon Creek	X	X					X		X	X				X					
Cold Springs Group Camp	X	X					X			X									
Dent Acres Recreation Area	X		X	X	X	X	X		X	X	X	X		X		X	X		
Dent Group Camp	X	X	X				X			X		X					X		
Dworshak State Park(Freeman Creek)	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	
Three Meadows Group Camp	X		X	X		X		X		X	X	X					X		
Big Eddy Marina															X		X		
Grandad Campground	X	X					X		X					X					
Merry's Bay	X						X			X									
Mini-Camps	X	X					X			X									
Dam View	X	X					X												
Viewpoint	X						X				X	X							
Dworshak Visitors Center	X						X				X					X			X

2.6.2.3 Planned Recreation Facilities

The Corps, recognizing the impacts to recreation caused by summer drawdowns, has been investigating ways to provide alternate opportunities and access to recreational facilities around the reservoir. The initial public use plan, Design Memorandum No. 10 (DM-10), focused on boating as a means to recreate and travel on the reservoir, and assumed water levels within the reservoir would remain constant. The framework set up in DM – 10 limits the ability of the Corps to implement management measures that would allow for alternative means of access such as motorized vehicle use. Despite the limitations caused by DM 10, the Corps has created new hiking trails, upgraded campground facilities, and extended boat launch ramps to provide alternatives to recreation focused solely on boating.

A large boat marina site analysis was completed in 2004 (Corps, 2004). An economic feasibility report was contracted by the Clearwater Economic Development Council in 2006 (Jennings and Associates, 2006). The report

Table 2-10. Dworshak Recreation Facilities Schedule

Area	Open Date	Close Date	Additional Information
Big Eddy	All Year	N/A	
Bruce's Eddy	All Year	N/A	
Canyon Creek	April 1	November 30	Dates are tentative - weather permitting
Dam View	April 1	November 30	No Hookups
Dent Boat Ramp	March 10	November 30	Dates are tentative - weather permitting
Dent Campground Early Season	April 10	May 21	$10 a night
Dent Campground Main Season	May 22	September 1	$18 a night
Dent Campground Late Season	September 2	November 30	$10 a night
Dent Group Camp	May 22	September 1	$50 a night
Dworshak State Park	All Year	N/A	Amenities vary by season
Grandad	April 1	November 30	Snow/Road Conditions Open date is tentative - weather permitting
Merry's Bay	April 1	November 30	Dates are tentative - weather permitting
Mini camps	All Year	N/A	Weather Permitting
Visitor Center	All Year	N/A	Varies

determined that a house boat marina was a feasible means to offset the effects of reservoir drawdowns to boat-in access recreation facilities. The plan for this project includes expanding Big Eddy Marina from 101 slips to 150 slips; installing a wave attenuator at Big Eddy to facilitate marina expansion; providing fueling opportunities at the upper end of the reservoir; and a house boat marina at Bruce's Eddy. To date the instillation of the attenuator was tentatively approved for installation by the Corps, however, current funding levels at Idaho Parks and Recreation have put this project on hold.

Design Memorandum 10 contained many proposed recreation areas that were never constructed. Several of these areas were intended to be constructed as visitation to Dworshak became high enough to warrant construction of additional areas. Due to low visitation numbers, changing public recreation patterns, and a lack of funding, many recreation areas identified for future construction will not be realized.

Changes in social values and concern for the environmental resources of the nation led to the creation of a number of laws and policies that protect the environment—most notably, NEPA. At the time DM 10 was written, most of these laws were not yet in effect. The Corps is obligated to follow these laws and, as a result, many of those original developments planned for future construction would not comply with current law and policy. This plan addresses the potential for future development of recreational facilities on Dworshak Reservoir. Recommended future recreation areas will be evaluated for environmental compliance and feasibility at the point in time when visitation rates, public desire, and funding warrant the need for construction of such a development.

2.6.3 Recreational Activities and Needs

2.6.3.1 Fishing

Fishing for kokanee, smallmouth bass, and rainbow trout is the major recreational activity of visitors to Dworshak Reservoir (Photos 2-1 and 2-2). People can access the water for fishing at any of the seven boat launch facilities, and there are fish-cleaning facilities at the Big Eddy, Dent, and Freeman Creek recreation areas.

Photo 2-1. Idaho State Record Smallmouth Bass (Caught in 2006)

Photo 2-2. Fisherman on Dworshak Reservoir

The Dworshak Nutrient Enhancement Program (mentioned previously) is helping to establish a balanced reservoir system that will contribute to a healthier resident fish population.

Although fishing is good on the reservoir all season, fishermen on the reservoir have indicated a need for boat ramp extensions and additional parking areas to facilitate better access and launching opportunities during low water conditions.

2.6.3.2 Hunting

Dworshak Reservoir is an important regional resource for hunting. All lands, excluding the project operations lands and developed recreation facility areas are open for hunting. White-tailed deer, elk, black bear, and mountain lion are the primary big game species hunted on Dworshak lands. Upland game birds, such as turkey, and water fowl are also important to those visiting the area to hunt.

Because of restrictions on motorized use, hunters at Dworshak must travel by foot boat, or on horseback. Managers at Dworshak have received requests for motorized access for hunters, particularly as a means of providing hunting access to those with disabilities or for older hunters. Currently, the only roads accessible for vehicles are roads that access the primary recreation areas and Corps operation facilities. While some hunters would like to be able to access campsites and

backcountry areas using ATVs, others prefer to restrict motorized access to the backcountry to facilitate a quiet and primitive hunting experience. Future access management will seek to balance both requests and may include motorized access in particular areas, keeping non-motorized access in others. However, any areas opened to motorized access may be subject to seasonal use or closure to protect wildlife and other natural resources.

2.6.3.3 Camping

Camping is a popular activity for those visiting Dworshak Reservoir. Most of the campgrounds are owned and managed by the Corps, although Dworshak State Park (Freeman Creek) is leased to the State of Idaho Department of Parks and Recreation. Dworshak offers a diversity of camping opportunities, from highly developed camp sites with electricity, running water, and sewage dumping, to primitive camping at any of the 100+ mini-camps spread throughout the reservoir.

There is a high demand for updated and modernized facilities to accommodate current RV campers. Primitive campsites (e.g., the mini-camps) are expensive to maintain, but are an important resource to people who come to Dworshak seeking solitude and a more nature-oriented camping experience. Access by water to some of the mini-camps is almost impossible when the reservoir is drawn down. Consequently, many visitors would like the Corps to provide access to the mini-camps using motorized vehicles.

2.6.3.4 Boating

Boating is a primary activity for most visitors to Dworshak. Much of the boating is related to fishing; however, water-skiing, tubing, wake-boarding, jet-skiing, power-boating, and casual boating are also important boating activities.

Boating provides the most efficient means of transportation to recreation facilities on Dworshak Reservoir. One challenge faced by boaters is the lack of a fueling station on the upper end of the reservoir. There is also a demand for more access points to launch boats on the reservoir, specifically in the mid-reservoir area. Current access to the water for boating is covered in paragraph 2.6.1.2.

The Corps has installed floating docks at various locations around the reservoir. These docks have been widely successful and there is a demand to increase the number of these docks. Although only a few houseboats are currently using the reservoir, expansion of the Big Eddy marina to accommodate houseboats, or a separate, dedicated houseboat marina, have been proposed by local interests. A number of buoys used to moor houseboats have been installed near Bruce’s Eddy as temporary moorage until more suitable facilities are constructed.

The fluctuating water levels contribute to boating hazards caused by submerged facilities and the inflow of debris from the upper North Fork Clearwater basin. Debris

such as floating logs has been an issue since the creation of the reservoir, and continues to be a safety issue for boaters. In the past, Corps staff removed large floating debris from the reservoir, but this practice was discontinued due to elevated costs of equipment and labor. However, safety issues related to debris were brought up in the public meetings held in support of the Public Use Plan update, and this may be an issue that will be revisited in the future.

2.6.3.5 Swimming

Swimming is a popular activity at Dworshak Reservoir. There are designated swim areas at Big Eddy and Freeman Creek, both of which are best suited for use at full pool. They have been adapted for use as the water is drawn down to a certain point, but cannot be safely managed as swim areas at most low pool elevations. The community swimming pool in the nearby community of Orofino was closed. This has resulted in additional pressure on the Corps to provide safe areas for swimming on the reservoir. Reservoir drawdown and the steep local topography create numerous challenges to creating new swim beaches. In addition, the current swim beach at Big Eddy does not meet Corps design standards.

The destination docks on the reservoir provide another opportunity for recreationists to swim in a relatively safe environment. These square docks are open in the middle, and provide a nice area for swimming that is protected from boat traffic. Currently, there are six of these facilities on the reservoir. More destination docks are being planned, but are inaccessible to anyone without a boat or other means of accessing the water.

2.6.3.6 Winter Activities

Fishing and hunting take place year round at Dworshak. Any vehicle capable of travel over snow is allowed on designated trails as they cross through Dworshak project boundaries. Currently there are no Corps designated snowmobile trails within project boundaries other than those that are a part of designated trail systems that cross project lands. Snowshoeing and cross country skiing are permitted on all Dworshak lands. Because Dworshak Reservoir and its environs are at a relatively low elevation, snow cover is unpredictable and winter recreational activities are less than reliable.

2.6.3.7 Picnicking

Picnic tables are located at almost all camp sites and at the floating docks on the reservoir. There are also designated day use areas that people can use for picnicking. Overall, the picnic facilities meet the current demand, though some areas may require updating in the future.

2.6.3.8 Trails

Recreation trails are emerging as important outdoor recreation facilities at Dworshak Reservoir (Table 2-11). Walking, jogging, and bicycling are all popular activities along the reservoir. Currently, the trails on the project are only authorized for non-motorized use. One ATV trail has been added in recent years, as a pilot project, to determine the effects of ATV use on the environmental resources of the area. The current land management practices of adjacent land owning agencies and other regional agencies have significant impacts on the demand for trails on Dworshak lands. This issue is discussed further in Section 3 of this report.

Table 2-11. Dworshak Trail Inventory

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

2.6.3.9 Sightseeing

The rugged landscape of Dworshak makes it attractive to sightseers. The area is rich in vegetation diversity, and is home to many wildlife species, which provides opportunities for wildlife viewing and for scenic and wildlife photography. Although many of the visitors to Dworshak Reservoir participate in sightseeing, this may not be the reason for their visit. The peace, solitude, and beauty of the area make it attractive to visitors. Plates 5A, 5B, 5C, 5D, 6A, and 6B depict recreation facilities at the reservoir.

2.6.4 Visitation Profile – Trends and Demands

2.6.4.1 Project Visitation

Dworshak provides recreational opportunities for close to 150,000 people each year. The number of facilities and activities has increased, and many improvements have been made over the past 25 years. Dworshak Reservoir was originally forecasted to have hundreds of thousands of visitors each year. The numbers of people visiting Dworshak Reservoir has dropped significantly since the drawdowns for fish migration began. Visitation during the past 15 years (since drawdowns began) has been relatively stable, with only minor fluctuations (Figure 2-9). Visitation has decreased since 2001, in part because traffic across the dam was prohibited due to the terrorist attacks of September 11, 2001. Prior to that, visitors were allowed to drive across the dam and observe the natural beauty of the reservoir. Other factors may include the effects of the drawdowns, the rise in gasoline prices, and other social and economic factors.

The majority of the people who visit Dworshak Reservoir come during the summer months. The months of June through September constitute the peak recreation season for the reservoir (Figure 2-10). The short period when the water is at full pool has dramatically more visitation and use than at any other time during the year. The extreme reservoir drawdowns significantly impact the availability of users to access available recreation sites from the water. As a result there has been an increased demand for land based recreation at Dworshak.

2.6.4.2 Visitor Distribution

Most of the recreation facilities at Dworshak are located on the lower 1/3 of the reservoir. The development of this portion of the river was chosen because of its close proximity to the area's population base and ease of access. There is an expectation by current users that recreation areas will continue to provided near Orofino, and that present facilities will be expanded as demand warrants that expansion. The upper 2/3 of the reservoir draws visitors from smaller population centers (i.e., Elk River and St. Maries). These visitors have indicated a desire for a fuel station, more boat launch facilities, and more camping opportunities on the upper end of the reservoir.

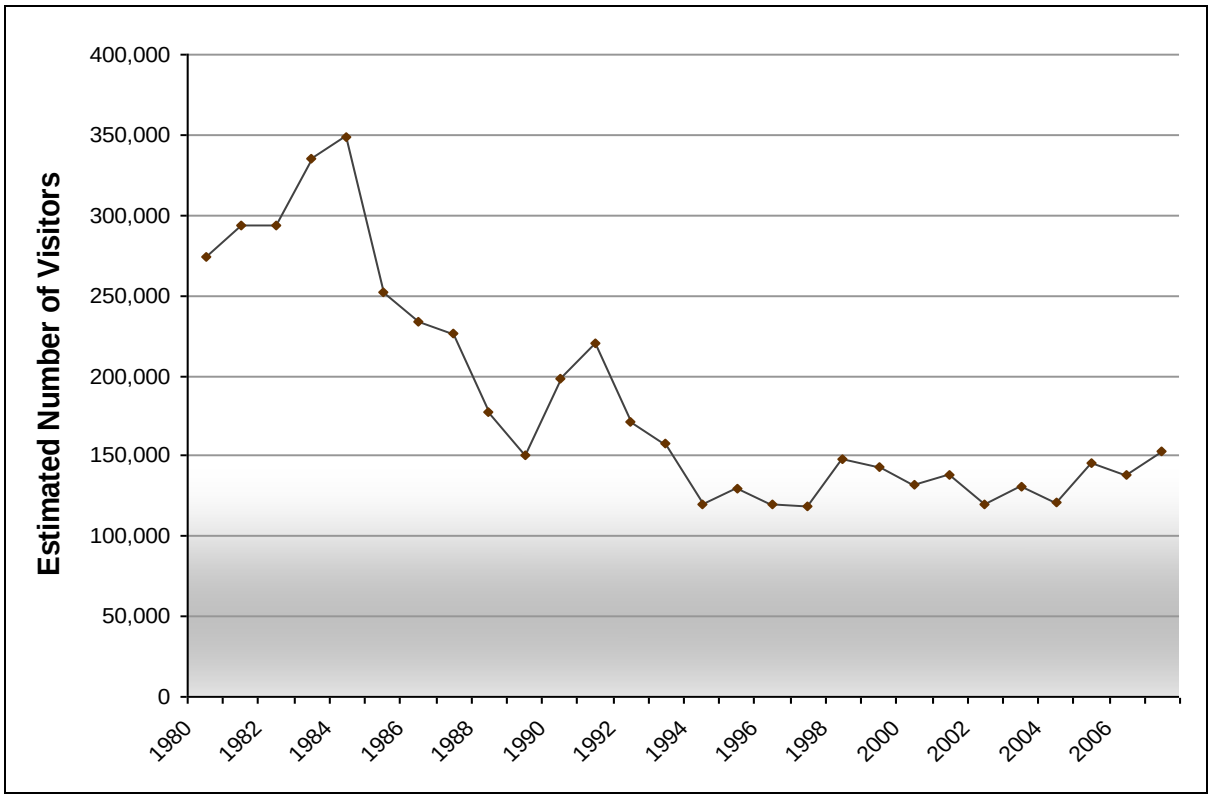


Figure 2-9. Dworshak Reservoir Historic Visitation

Plate 5A. Dworshak Reservoir Recreation Facilities

Plate 5B. Dworshak Reservoir Recreation Facilities

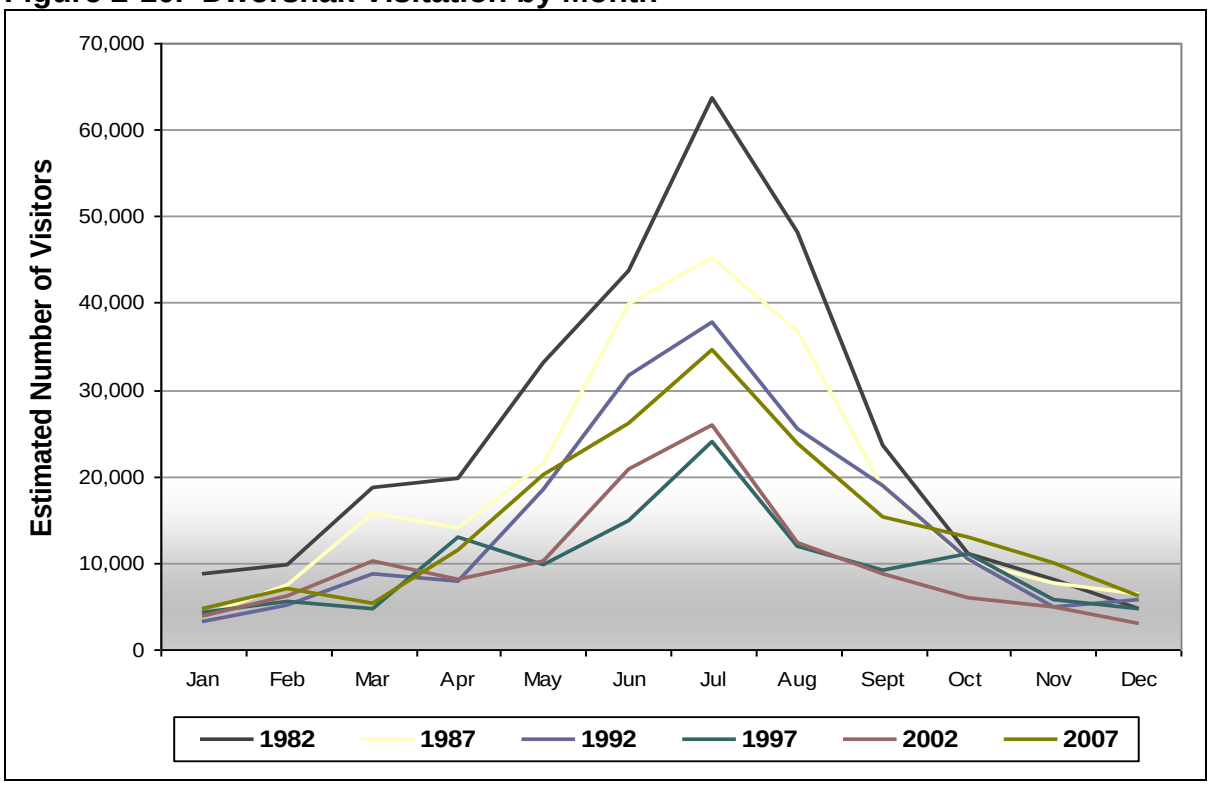
Plate 5C. Dworshak Reservoir Recreation Facilities

Plate 5D. Dworshak Reservoir Recreation Facilities

Plate 6A. Dworshak Trails

Plate 6B. Dworshak Trails

Figure 2-10. Dworshak Visitation by Month



2.6.4.3 Carrying Capacity

Recreation carrying capacity is a measure of the capability of a recreation resource to provide the opportunity for satisfactory recreation experiences, over a period of time, without significant degradation of the resource. Carrying capacity has two components: 1) social capacity; and 2) resource capacity.

Social capacity is the level of density beyond which the user does not achieve a reasonable level of satisfaction. The social capacity at Dworshak Reservoir is most frequently limited by the level of recreational facility development (such as parking spaces and restrooms), or by the expectations of different recreational users. The density of the existing facilities at Dworshak Reservoir is generally appropriate for the region and social capacity limits in most areas are only reached during the few weeks the reservoir is at full pool.

Resource capacity is the level of use beyond which irreversible biological deterioration takes place, or degradation of the resource makes it unsuitable or unattractive for recreational use. Resource capacity is usually a seasonal or long-term issue, as most areas will tolerate some short-term overuse without significant adverse effects. The resource capacity at Dworshak Reservoir is typically controlled by factors such as the presence of nesting sites, highly erodible soils, or steep terrain. Resource capacity must be accommodated in the design and location of facilities, as well as the regulation of use.

Currently, no more than 120 (plus or minus) watercraft are active on the reservoir at any one time. This equates to a carrying capacity of 158 acres per boat, a mere fraction of the ultimate carrying capacity of the reservoir. While each reservoir has its own optimum recreation carrying capacity, the Corps has typically estimated that 1 to 20 acres per boat are reasonably required, depending on the type of activities (i.e., water-skiing might require the upper range, while fishing could exist within the lower range). Using those numbers and the surface area (19,824 acres), the carrying capacity of the reservoir would be between 1,000 and 20,000 boats at any given time. Because of other constraints, including parking and remoteness of access points, visitation is actually much lower than carrying capacity. The small number of boats on the reservoir at any given time helps to create a more natural, quiet, and pristine recreational experience.

2.6.4.4 Activity Mix

The relative frequency of participation in various activities at Dworshak Reservoir is estimated on a periodic basis. The annual activity mix is presented in Table 2-12. The total is greater than 100 percent because many people participated in more than one activity at a given recreation area.

Table 2-12. Dworshak Activity Mix

Activity	Annual Participation Rate (percent)
Picnicking	7.5%
Camping	6.9%
Swimming	6.4%
Water Skiing	1.1%
Boating	37.8%
Sightseeing	20.6%
Fishing	52.5%
Hunting	0.5%
Other	21.3%
Total	154.8%

Source: Corps, 2006

2.6.4.5 Recreation Demand

The majority of comments from the public are requests for recreational opportunities that address the low water elevations. As stated earlier, the reservoir drawdowns make it hard, if not impossible, to access mini-camps on the lake. Low water levels also make it difficult, or impossible, to launch boats at certain locations.

Motorized access, including ATV access, is a high priority for many visitors to Dworshak. Other facilities requested by the public include more floating docks, extended boat launch ramps, upper reservoir boat launch ramps, and universal access to Big Eddy Marina at all water levels. Section 4 contains further information regarding public input.

2.6.5 Other Recreational Opportunities

2.6.5.1 Local

The Clearwater River provides many recreational opportunities to those who live in Clearwater County, Idaho. The river provides opportunities for a variety of active recreation, as well as hunting and fishing. The Clearwater and Nez Perce National Forests also provide diverse recreational opportunities (i.e., hiking, birdwatching, camping, ATV trails, etc.).

2.6.5.2 Regional

There are numerous recreation areas in close proximity to Clearwater County, Idaho. Within the region, opportunities abound for boating, camping, site-seeing, hiking, whitewater rafting, kayaking, golfing, snow-skiing, ATV usage, snowmobiling, fishing, hunting, and numerous other activities. The USFS, Idaho Department of Lands, Potlatch Corporation, and other land owners allow public use of their lands for many recreational activities. Nearby recreational areas include the Salmon River Breaks primitive area, Sawtooth primitive area, White Cloud Peaks area, Salmon River, Middle Fork Clearwater River, Hells Canyon-Seven Devils scenic area, Wenaha-Tucannon wilderness, Eagle Cap wilderness, Lewis-Clark Highway, and Nez Perce historical park. Plate 7 is a map of some recreation areas in the region. Although there are many other recreational opportunities in the region, motorized water sports (water-skiing, jet-skiing, etc.) are unique to Dworshak.

2.7 REAL ESTATE

2.7.1 Land Acquisition History

Under the auspices of the Flood Control Act of 1944, the Corps acquired large acreages of land for the Dworshak Project. At the time of acquisition, it was the general desire of the administration that new project lands be restricted to minimum operation and maintenance requirements and meet the readily foreseeable public access demand. The original acquisition criteria followed by the Corps were generally consistent with that policy.

The initial authorized project purpose, as set forth in PL 87-874, was flood control. All of the project lands were originally allocated to project operations, in accordance with the initial acquisition purposes. Subsequent legislation related to such civil works projects has authorized other project purposes, including recreation and fish

and wildlife management, all of the lands were originally allocated to project operations, in accordance with the initial acquisition purpose. The original land use allocations are shown in Plates 2 through 4 in the Dworshak Final Environmental Impact Statement (Corps, 1975). Some boundaries shown in these plates are not accurate portrayals of actual project boundaries; however, as some lands were not purchased as planned. A specific example is the elk mitigation area around the area, which ended up being much smaller than originally planned.

2.7.2 Current Landholdings

The Corps is responsible for the reservoir and surrounding lands totaling 45,473 acres. The Corps leases Dworshak State Park (Freeman Creek and Three Meadows Campground) to the State of Idaho Department of Parks and Recreation, as well as the marina facility and adjacent building at Big Eddy Marina.

2.7.3 Boundary Monumentation and Encroachments

The monumentation on the Dworshak boundary serves both the project and the public by identifying Dworshak lands. Approximately 74 percent of project lands are monumented. However, despite the monumentation, encroachment problems exist, primarily due to livestock and timber trespass. In addition, the frequency of encroachment issues is on the rise, due to an increase in private ownership of lands adjacent to the reservoir. Timber has been cut in order to create views of the lake; and ATV riders from adjacent lands cut fences, break and/or cut gate locks, and create trails on Corps lands.

The Corps is working with adjacent landowners and land management agencies in cooperation to survey mutual boundaries.

2.7.4 Fences and Gates

There are 34.4 miles of fencing at Dworshak currently. Of that total, 30.9 miles are boundary fencing, while the other 3.6 miles of fencing are located inside the project to provide security, guidance, and barriers. Due to the rough terrain, fencing the entire project would not be cost effective. However, boundary delineation with increased signage as called for by Corps policy [EP 310-1-6a], would be beneficial.

Gates are located at various locations on the boundary of the Corps' property, as well as within project lands. The primary purpose of the gates is security, but they are also used to keep vehicles out of lands not open to vehicle use. The Corps does have boundary fences is some locations surrounding the reservoir. At these locations the fences are frequently damaged by adjacent landowners logging operations, and by ATV users who cut the fence to gain access to the Corps lands.

The fences on Dworshak are not in place to keep private livestock off Federal lands. The Idaho Open Range Law requires land owners to "fence-out" livestock if they do

not want open range animals on their land. This law does not apply to federal property. Livestock owners are responsible for keeping their animals off federal property at their own expense, and the presence of unauthorized livestock on Corps property is a trespass in violation of 36 C.F.R. § 327.11. Persons violating 36 C.F.R. § 327.11 may be subject to citation and fines, and trespassing livestock may be subject to removal and impoundment (and associated impoundment fees). Efforts have been made to educate the adjacent landowners and grazers, but a long term solution has not been reached. The Corps recognizes that the present situation is not ideal and a long term solution to keep livestock off Federal lands at the livestock owners' expense must be sought.

2.7.5 Leases, Easements, and Outgrants

The Corps has a 2,157-acre flowage easement at the upper end of the reservoir (within the Clearwater National Forest). The Corps also owns the 21-acre Dworshak Fish Hatchery, which is operated by the USFWS.

Many leases, outgrants, and easements have been granted to public utilities and individuals for a variety of uses, including access roads, power transmission lines, and utility lines.

The development and use of lands by others outside of the Corps may be allowed when in accordance with the approved public use plan. This use must be consistent with policies, procedures, and regulations prescribed by Corps. Prior to their approval, any future leases, outgrants, and easements must be carefully examined to ensure their compatibility with project resource objectives and updated land classifications.

Plate 7. Regional Recreational Opportunities

2.8 PERTINENT PUBLIC LAWS, REGULATIONS, AND POLICIES

Rules and regulations governing the public use of water resources development projects administered by the Corps are contained in Title 36, Part 327 of the Code of Federal Regulations. Other authorities specifically related to the management of recreation and public access are found in Public Laws; Executive Orders (EO); and the Corps' Engineer Regulations (ER), Engineer Manuals (EM), and Engineer Pamphlets (EP). A list of applicable laws applicable to recreation and public access is included in the following list:

PL 78-534	Flood Control Act of 1944, 22 December 1944.
PL 79-526	Flood Control Act of 1946, 24 July 1946.
PL 88-578	Land and Water conservation Fund Act of 1965, 3 September 1964.
PL 89-72	Federal Water Project Recreation Act of 1965, 9 July 1965.
EO 11644	Use of Off-Road Vehicles on the Public Lands, 8 February 1972 (amended by EO 11989).
EO 11989	Off-Road Vehicles in Public Lands, 24 May 1977 (amends O 11644).
EM 1110-1-103	Design for the Physically Handicapped, 15 October 1976.
EM 1110-2-410	Design of Recreation Areas and Facilities Access and Circulation, 31 December 1982.
EP 310-1-6	Graphic Standards Manual, December 1980 (Change 1).
ER 1105-2-100	Planning Guidance Notebook, 22 April 2000.
ER 1110-1-102	Design for the Physically Handicapped, 15 October 1976.
ER 1110-2-400	Design of Recreation Sites, Areas, and Management Policies, 7 July 1972 (Change 1).
ER 1120-2-400	Recreation Resources Planning, 1 November 1971 (Changes 1 through 3).
ER 1130-2-400	Recreation - Resource Management of Civil Works Water Resource Projects, 1 October 1983.
ER 1130-2-540	Project Operations - Environmental Stewardship Operations and Maintenance Guidance and Procedures, 15 November 1996
ER 1130-2-550,	Recreation Operations and Maintenance Policies, 15 November 1996
ER 1165-2-400	Recreation Planning, Development, and Management Policies, 3 August 1970.

2.9 MANAGEMENT PLANS

2.9.1 Project/District Management Plans

There are several management plans that direct activities and expenditures for Dworshak Dam and Reservoir. The plans, discussed in the following paragraphs, are interrelated. Each must be considered when planning for the future.

2.9.1.1 Operational Management Plan (OMP)

The OMP is a management action document that describes in detail how resource objectives and concepts prescribed in the public use plan will be implemented and achieved by staff at the project. As of this writing, the latest OMP for Dworshak Reservoir was approved in 1999. An update of the OMP is scheduled for 2011.

2.9.1.2 Design Memorandum No. 10, Public Use Plan for the Development of Dworshak Reservoir

Design Memorandum 10, approved in April 1970, is the current guiding documents for the use and development of Dworshak project lands. It contains land classifications and other guidelines and regulations being revised by this updated public use plan, as it is out of date and does not reflect current Corps policy, environmental laws, or desired public use. This updated Public Use Plan responds to changes in environmental laws and public recreation demands.

2.9.1.3 Design Memorandum No. 15, Plan For Development of Rocky Mountain Elk Habitat Dworshak Dam and Reservoir

The primary purpose of this report, approved in November 1977, was to present a plan for the development and maintenance of winter range for Rocky Mountain Elk at Dworshak Dam and Reservoir. Additional items (e.g., water and pasture development) that influence the annual distribution of Rocky Mountain Elk are also incorporated into the plan. This report established the legal mitigation lands and requirements on Dworshak Reservoir.

2.9.2 Regional Management Plans

2.9.2.1 Comprehensive State Water Plan – North Fork Clearwater River Basin

This plan contains a series of policies formulated by the Idaho Water Resource Board, in consultation with local citizens and public officials, to provide direction to the Corps and other federal agencies regarding the operation of Dworshak Dam and Reservoir.

2.9.2.2 The 2008 Federal Columbia River Power System Biological Opinion

The 2008 FCRPS Biological Opinion contains provisions for modifying spring and summer flow releases from Dworshak Dam to provide benefits for the migration of certain ESA-listed fish (steelhead, and subyearling and adult fall Chinook salmon). The summer releases lower water temperatures in the river system and provides ecological benefits for these ESA-listed fish. The benefits come from the sheer volume of water released, and the cooler water temperature infused into the Lower Granite reservoir.

2.10 SUMMARY – IMPLICATIONS FOR PLANNING

Earlier discussion of natural and historic resources identified important implications for the use, management, and development of land and water resources at Dworshak Dam and Reservoir. Each item identified has been used in the planning process to help develop plans that balance the demands of the public with the policy and regulations the Corps must follow. Sections 3 and 4 of this report also provide information that is important to the planning process of this updated public use plan.

3. SPECIAL ISSUES

3.1 ADJACENT AND REGIONAL LAND OWNERS

3.1.1 Idaho Department of Lands

The Idaho Department of Lands manages lands granted to the State by the federal government. The lands were granted on the condition they produce maximum long-term financial returns for public schools and other beneficiaries. Idaho Department of Lands does not manage their lands for public access and recreation. However, they do not restrict their lands from public access, nor do they encourage it or maintain trails or other public access amenities.

The Corps understands the importance of Idaho Department of Lands trust lands and the impacts this Public Use Plan may have on those lands adjacent to Corps property if/when recreation amenities are improved. Idaho Department of Lands will be consulted with early in the Corps planning and evaluation process on projects that may impact Idaho Department of Lands roads and property.

There may be opportunity to share road maintenance expenses though a road use agreement. This option will be investigated internally for applicability and legality.

3.1.2 Potlatch Corporation

The Potlatch Corporation owns a significant amount of land surrounding Dworshak Reservoir. Potlatch is a Real Estate Investment Trust marketing forest products to local lumber and paper manufacturers. Potlatch has recently sold some of their lands around Dworshak Reservoir for development of private homesites.

Public access for recreation is allowed all year on Potlatch lands, although this privilege may be restricted or closed at various times and places. There is no guarantee that Potlatch will continue to allow public access on their lands, and they may also sell more of their land around the reservoir in the future. The future of recreation on Potlatch lands depends on how users respect the natural resources and the regulations Potlatch enforces.

A fee for a permit is required for those recreating on Potlatch lands. A permit is not necessary when traveling on Potlatch Co-op roads to access other adjacent lands unless an individual stops to recreate on Potlatch lands. Use of all private Potlatch roads to access any Corps lands will require a permit. The permit fee for using Potlatch land has been in place since April 2007, and has added additional pressures on Dworshak lands for ATV use and dispersed vehicle camping by those who do not want to pay the Potlatch permit fee.

The Corps understands the importance of Potlatch lands and the impacts this Public Use Plan may have on those lands adjacent to Corps property if/when recreation amenities are improved. Potlatch Corp. will be consulted early in the Corps planning and evaluation process on projects that may impact Potlatch roads and property.

For roads used to access Corps property, there may be an opportunity to share road maintenance expenses in the future with a road use agreement. This option will be investigated internally for applicability and legality.

In the future, sales of Potlatch lands surrounding Dworshak for residential development could have various impacts on the Corps lands, including increased visitation, additional demand for public access points, increased demand for additional recreational amenities, and increased stresses on the natural resources of the area. Residential development may also increase the demand for easements for access and location of utilities. Other issues caused by private residences adjacent to Dworshak lands are discussed in paragraph 3.1.4.

3.1.3 The US Forest Service (USFS)

The USFS is the primary forest management agency for the United States. Nearly two-thirds of the land in the Dworshak region is owned by the federal government. Of that number, 97% is owned and managed by the USFS. The Clearwater and Nez Perce National Forests provide many opportunities for recreation.

As of 2010, the USFS is in the process of updating their policy on motorized access to address environmental concerns as well as user demand. In the past, USFS policy allowed cross-county travel by motorized vehicles in all areas, unless posted as closed. The new plan will restrict motorized access to designated trails, and all areas will be considered closed to motorized traffic unless posted as open. There has been a lot of public interest in motorized recreation policies on USFS lands with respect to the impacts of uncontrolled motorized access on natural resources. This plan has created a great deal of public interest on both sides of this issue. Motorized access groups are in support of USFS lands remaining open for unrestricted use, while other groups and individuals are concerned about the impact of unrestricted motorized traffic on natural resources.

The new USFS policy has specifically impacted this region of Idaho by limiting areas open to motorized recreation, and has caused these recreationists to look elsewhere for open areas. The ATV user groups have expressed a desire to recreate on Dworshak lands at public meetings and working groups, as well as in letters to the Idaho Congressional delegation.

The Corps policy of restricting all motorized access to designated trails is consistent with the new USFS policy. The staff at Dworshak has identified areas of unauthorized motorized use on Corps property, and handles the situation

appropriately. In addition, the Corps will continue to coordinate with the USFS and other land management agencies in the area to determine the best way to manage motorized access.

3.1.4 The Nez Perce Tribe

The Nez Perce Tribe owns lands in the local region including lands adjacent to the Dworshak Hatchery. The Corps requested consultation with the Nez Perce Tribes as part of updating the Public Use Plan, however no response was provided by the Tribe.

3.1.5 Private Land Owners

In the past decade, an increased amount of land around Dworshak Reservoir, previously owned and managed for large-scale timber or natural resources, has been sold to individuals for the development of private homes (Plate 8). This has resulted in an increase of both intentional and inadvertent encroachment onto federal property.

Many home owners want immediate access to the water, including trails, boat launches, and docks. Any future trails proposed for construction on Corps property will be evaluated according to the process defined in paragraph 1.8.1 of this report. Any unauthorized trails will be considered an encroachment or trespass, and will be closed until such time as the trail may be evaluated for its potential to become a designated trail. Any trail designated on Dworshak lands will not be reserved for exclusive use, and must be open to general public access. No private boat launches or boat docks are permitted on Dworshak lands and waters.

3.2 RESERVOIR DRAWDOWN MANAGEMENT ISSUES

3.2.1 General Description of Reservoir Drawdowns

In 1992, the Corps began lowering water levels in response to a Section 7 consultation for Endangered Species. Historically, the reservoir remained full during the peak recreation season between Memorial Day and Labor Day. Currently, the reservoir is filled for the 4th of July weekend, and the drawdown begins after the holiday. The lower water elevations have created challenges for public access to recreation areas.

Reservoir drawdowns also create a variety of issues and challenges to standard land management practices. The low pool elevations have required the Corps to look at implementing unique management practices (i.e., extending boat ramps and installing destination docks) to minimize the impacts of reservoir drawdowns.

3.2.2 Definition of Issues

Low pool elevations limit the public's access to boat ramps, docks, and mini-camps. The result has been that users find or create access to the water and camp sites through means such as ATV use on unauthorized roads and trails.

The marina at Big Eddy provides boat launching at the lowest pool elevations (-155 feet). Other boat ramps accessible at lower elevations are Dent Acres (-115 feet) and Bruce's Eddy (-110 feet). Areas at the upper end of the reservoir (above Dent Bridge) do not have boat launch capability when water levels drop below 75 feet. The Grandad Boat ramp typically becomes unusable in September; and does not regain enough water elevation due to precipitation, to be usable until mid-October. Photos 3-1 through 3-4 illustrate low-water boating and parking issues.

Photo 3-1. Stairs at Big Eddy Marina.

Photo 3-2. Big Eddy Marina.

Photo 3-3. Boat Launch Ramp and Parking.

Photo 3-4. Low-Water Parking

Low water elevations inhibit access to the 100+ mini-camps located on the reservoir. Mini-camp use is directly related to ease of access. When lake levels are within 30 feet of being full, both on the rise and fall, the mini-camps receive use (Photo 3-5). When the water is beyond 30 feet down, access from the reservoir to the camp sites is very difficult (Photo 3-6). The exposed banks are unstable and hard to negotiate by foot, causing difficulty in access for the majority of the year. The only way to access these mini camps is by hiking trail (when available) or by hiking up the exposed banks. Others have created access by using ATVs on undesignated roads and trails, in violation of Corps regulations.

Photo 3-5. Mini-Camps

Photo 3-6. Exposed Slopes

Visitation at Dworshak has declined over the last decade. The cost of maintaining the facilities at Dworshak Reservoir is very high when measured against the number of people who use them. Recently, the Corps has adopted a performance-based budgeting system that measures the cost per visitor at facilities across the country. Facilities that have a high cost per visitor or low efficiency may face declining budgets in future years. The challenge with this method for Dworshak is the complexity and cost of managing a resource with such dramatic water fluctuations. Creating more efficient recreational amenities is an important approach that needs to be taken to ensure continued recreation opportunities at Dworshak.

3.2.3 Management Strategies

The management strategy for responding to low water access on Dworshak Reservoir has been to implement plans or upgrade facilities permitted under DM 10 as funding allowed. The driving strategy has been to make the best use of the resources and recreation opportunities at any given water level. Improvements made in the last decade to accommodate fluctuating water levels, including extending boat launch ramps, adding floating docks at various points on the reservoir, installing self-adjusting boat ramp docks, and upgrading existing facilities that already provide access to the water at low water levels. There is local interest in a large-boat marina to accommodate houseboats. Numerous improvements in efficiencies have been implemented, including a fast-response sewage boat and replacing flush toilets with vault or composting toilets in the remote campsites.

Plate 8. Dworshak Vicinity Surface Land Ownership

3.3 CURRENT MANAGEMENT AND OPERATION ISSUES

Declining recreation budgets and low visitation rates have impacted the amount of money available for Corps staff to manage and develop recreational amenities on the reservoir. The future of any additional recreation areas, and the sustainment of current recreational amenities, will depend in large part to the amount of money available to the Corps.

The Corps has used various means to meet public demand and leverage limited resources. In the past decade, the Corps has used cooperative agreements, contracted services, and volunteer assistance to meet public demand and operational goals. The Corps also uses real estate outgranting (leases) to sustain the availability of Corps-owned recreation assets. These leases are an important means of addressing public demand and leveraging limited resources.

The Dworshak Natural Resources staff utilizes several forms of agreements with other entities or agencies to accomplish their mission:

- Use of BLM forestry crew stationed at Cottonwood, Idaho, to assist with timber sale set up, administration, and vegetation sampling and analysis.
- A memorandum of understanding with the State of Idaho to utilize the same boundary survey format along common boundary lines and share results.
- A cooperative agreement with the Lewiston Juvenile Correction Center to provide a location for their outdoor education Trail Crew Maintenance Training Program.
- An agreement with the Nez Perce Tribe to perform annual bio-control of noxious weeds.

Dworshak relies heavily on commercial, recurring contracts to complete routine recreation, forestry, and wildlife work:

- Grounds maintenance, including lawn mowing, restroom cleaning, and remote campsite maintenance
- Janitorial services
- Garbage removal
- Sewage disposal and portable toilet rental
- Gate attendant contracts for Dent campground (mid-May through Labor Day).
- Law enforcement through the county sheriff, (additional patrols and safety education over and above what is required by the county).
- Noxious weed spraying
- Fire protection (structures)
- Fire protection, wildland (pre-suppression and suppression activities)
- Boundary surveying

Numerous other contracts to obtain good and services:

- Minor electrical repairs in recreation areas
- Vegetation modification for wildlife (browse slashing)
- Gate construction and installation
- Boat repairs
- Roadway and parking lot painting

To continue to provide vital service to the public in an environment of declining recreation budgets, the Dworshak Natural Resources staff has discontinued the summer ranger program. Instead, the services of numerous volunteers are used to accomplish the mission at the same or reduced levels of service. Many of the services would not be provided if not for the service of volunteers. Volunteer services include:

- Staff the front desk at the Visitor Center
- Lead tours of the dam
- Perform minor maintenance
- Assist with bird and wildlife inventories
- Perform hiking trail inventories
- Assist in mini-camp inventories

Table 3-1 contains a summary of the number of hours and associated value to the government of volunteer time over the last 3 years.

Table 3-1. Volunteer Summary

Year	Number of Hours	Value to Government
2007	5706	$107,111.01
2008	3967	$77,405.93
2009	3779	$76,524.75
	Total	**$261,041.69**

Dworshak plans to increase the number of volunteers over the next few years. Additional campsites that include water, sewer, and electricity are planned for volunteer use in the future. These sites will be provided to the volunteers at no cost.

3.4 TOURISM AND RECREATION TRENDS

3.4.1 National Tourism Trends

Tourism is an important part of the economy of the United States. Nationally, tourists from other countries account for nearly 1 billion visitors each year. The American population accounts for over 1 billion trips per year, as well. Attractions, natural features, landmarks, and recreation are major tourist attractions.

The amount of tourism is typically directly related to the nation's economic conditions. A volatile economy and rising fuel costs are factors relative to the health of the tourism industry.

3.4.2 Regional Tourism Trends

The University of Idaho and the Travel Industry Association of American show that tourism contributes in excess of $2.1 billion annually to the state's economy (Wilgus, 2006). That equates to 6.2% of the State of Idaho's gross domestic product. It is the third largest industry, exceeded only by manufacturing and agriculture. Tourism provides jobs for around 42,000 Idaho citizens. As a result of tourism, nearly $200 million (in the form of state and local tax revenues) are generated from the nearly 22 million visitors who travel to, or through, the state each year.

In Idaho, much like the rest of the nation, 47% of visitors to the state list their primary reason for travel as "seeing friends and family". Visiting attractions and natural areas were rated by 32% of Idaho visitors as the primary reason for traveling to Idaho, while 16% said recreation was their primary reason for coming here. When evaluating outdoor recreation and tourism trends, it is important to understand the distance visitors are willing to travel to take advantage of the facility.

Much of Idaho's recreational activities take place on federally-owned public lands. Decisions regarding access and usage on these lands will have a dramatic impact on the future of Idaho's tourism industry.

3.4.3 National Recreation Trends and Methods

Nationally, studies have shown that outdoor recreation participation increased by over 4 percent between 2000 and 2007. Table 3-2 shows the number of people participating nationally in recreation activities, and the percent of change from 2000 to 2008.

Table 3-2. National Recreation Numbers

Activity	Total Participants (1,000s)	Percent change in participants, 2000-2008
Kayaking	12480.5	63.1
Orienteering	5952.7	58.6
View/photograph flowers, etc.	118370.7	25.8
View/photograph other wildlife	114792.0	21.3
Visited farm or agric. setting	71327.7	20.2
View or photograph birds	81119.9	19.3
Drive off-road	44231.3	18.6
View or photograph fish	61135.5	16.8
Gather mushrooms, berries, etc.	71023.3	16.1
View/photograph natural scenery	145489.2	14.1
Big game hunting	20209.8	12.8
Boat tours or excursions	45525.7	10.7
Visit a beach	95882.7	10.4
Walk for pleasure	193411.7	9.6
Bicycling	91222.5	7.7
Snowboarding	11273.9	7.3
Warmwater fishing	51924.6	7.3
Day hiking	74032.5	6.8
Waterskiing	18048.9	5.5
Visit nature centers, etc	127406.5	5.0
Horseback riding	21678.5	4.9
Family gatherings outdoors	164841.4	4.2
Sightseeing	113166.0	4.1
Swimming in lakes, ponds, etc.	92140.1	4.0
Motorboating	54124.4	3.9
Driving for pleasure	111069.0	3.1
Visit a wilderness	70591.9	3.0
Developed camping	58021.3	2.7
Visit prehistoric sites	44938.0	2.4
Canoeing	21043.8	2.3
Visit waterside besides beach	55514.8	1.6
Small game hunting	15006.7	-0.3
Anadromous fishing	9161.8	-0.4
Backpacking	22077.0	-0.6
Picnicking	115836.2	-1.4
Primitive camping	33330.2	-2.0
Coldwater fishing	28218.7	-2.1
Use personal watercraft	19483.5	-4.1
Visit historic sites	92920.8	-4.5
Rock climbing	8662.0	-5.5
Rowing	8517.9	-6.3
Sailing	10241.9	-6.5
Mountain biking	41910.1	-8.0
Horseback riding on trails	15262.6	-8.2
Snowshoeing	3908.9	-11.8
Mountain climbing	11811.2	-12.5
Ice fishing	4854.0	-14.5
Migratory bird hunting	4148.9	-16.2
Rafting	17166.3	-16.8
Windsurfing	1343.3	-19.1
Snowmobiling	8328.2	-29.7
Cross-country skiing	4970.7	-39.2

3.4.4 Regional Recreation Trends and Methods

Recreation projections should always be viewed cautiously. The preferred recreational activities and technologies of today may become obsolete or fall out of favor over time. Recreational habits are influenced by weather, income, population growth, availability and other factors. However, it is useful to see what the projections are based on current trends and patterns. Tables 3-3 through 3-7 depict recreation trends from the National Survey on Recreation and the Environment (1999) for the Rocky Mountain Region.

Table 3-3. Developed Land Activities Participation Projects

Activity	2010	2020
Biking	+17%	+26%
Developed Camping	+16%	+17%
Family Gathering	+19%	+29%
Picnicking	+18%	+29%
Sightseeing	+21%	+32%
Visiting Historic Sites	+23%	+34%

Table 3-4. Dispersed Land Activities Participation Projections

Activity	2010	2020
Backpacking	+11%	+18%
Hiking	+15%	+24%
Horseback Riding	+13%	+23%
Off-Road Driving	+9%	+17%
Primitive Camping	+12%	+20%
Rock Climbing	+6%	+20%

Table 3-5. Water-Based Activities Participation Projections

Activity	2010	2020
Canoeing	+11%	+20%
Motor Boating	+17%	+26%
Non-Pool Swimming	+14%	+24%
Rafting	+10%	+19%

Table 3-6. Winter Activities Participation Projections

Activity	2010	2020
Cross-Country Skiing	+31%	+41%
Downhill Skiing	+14%	+15%
Snowmobiling	+6%	+10%

Table 3-7. Wildlife-Related Activities Participation Projections

Activity	2010	2020
Fishing	+16%	+26%
Hunting	+5%	+12%
Non-Consumptive	+20%	+30%

In 2002, the Idaho Outdoor Recreation Data Center (ORDC) conducted a survey to rank issues of recreation importance from the public perspective (Table 3-8). The results from this statewide survey are significantly different from the public input received by the Corps as part of this planning process. Section 4 discusses the

primary issues and concerns that the Corps heard in their public participation process regarding this updated public use plan. For example, ATV trails ranked very high as an issue for local participants, but ranked very low on a state-wide basis.

Table 3-8. Idaho Recreational Issues	
Issue	**Rank**
Protect water quality	1
Protect existing access to public lands	2
Protect natural resources on public lands	3
Educate youth about natural resources and the environment	4
Controlling invasive species	5
Educate adults about natural resources and the environment	6
Provide recreation safety instruction for youth	7
Provide outdoor recreation education for youth	8
Provide access for the disabled	9
Rehabilitate outdoor recreation facilities	10
Provide additional access to public lands for outdoor recreation	11
Provide recreation safety instruction for adults	12
Provide recreation facilities to encourage exercise for health	13
Acquire land for recreational use	14
Manage dispersed recreation use on public lands	15
Provide recreation trails to connect communities with each other and with other recreation areas	16
Provide designated ATV trail systems	17
Provide designated cross-country skiing trail systems	18
Provide designated snowmobiling trail systems	19

Tables 3-9 through 3-11 show how far the average Idaho recreationalist would be willing to travel to get to a recreation area, based on how long they will stay at the site (less than 1 day, an overnight stay, and a 2-night stay) (Achana, Francis T., PhD., 2006).

Table 3-9. Stays of Less than 1 Day				
Distance Traveled	<1 hrs	1 to 2 hrs	2 to 3 hrs	>3 hrs
Percentage willing to travel	9.9	51.8	29.2	9

Table 3-10. Overnight Stays								
Distance Traveled	< 1 hrs	1 to 2 hrs	2 to 3 hrs	3 to 4 hrs	4 to 5 hrs	5 to 6 hrs	6 to 7 hrs	> 7 hrs
Percentage willing to travel	1.6	20.4	36.8	21.8	8.2	5.6	2.1	3.6

Table 3-11. Two-Night Stays								
Distance Traveled	< 1 hrs	1 to 2 hrs	2 to 3 hrs	3 to 4 hrs	4 to 5 hrs	5 to 6 hrs	6 to 7 hrs	> 7 hrs
Percentage willing to travel	0.5	3.2	16.7	22.7	14.6	15.8	10.8	15.7

The data in these tables would lead planners to believe that Dworshak will be used primarily by people coming from 3 to 4 hours away or less. This information is consistent with previously-stated information that the majority of visitation to Dworshak comes from the adjacent counties. This information also shows that, to attract people from further distances, the recreation area needs to provide facilities and amenities that will attract multiple–night visits.

3.4.5 All Terrain Vehicle (ATV) Trends

In 1970, when the original public use plan, Design Memorandum No. 10, was written, ATV use was not considered as a recreation method. If fact, very few ATVs were available in the market place. The only "off-highway vehicles" at that time were four-wheel-drive jeeps. The first ATV was introduced in 1970, but they were not widely used until the early 1990s. For this report, an ATV is considered one type of Off-Highway Vehicle (OHV), while other OHV types include jeeps, sport utility vehicles, and other vehicles capable of off-highway travel.

In 1993, there were an estimated 2.9 million ATVs in the United States. By 2003, there were over 8 million ATVs. Since 2003, sales of ATVs have fluctuated some, but have typically been over 1 million new ATVs per year. The number of ATV operators has increased 32 percent, from 27.3 million in 2000 to 37.6 million in 2007. In 2007, the total number of users grew to over 40 million. The average user spends from 2 to 3 days each month using an ATV. Because the popularity of ATV-based recreation is relatively recent and is still increasing, the full range of short- and long-term impacts has yet to be fully realized or understood. Overall, it is clear that ATV use on public lands is, and will continue to be, an important management issue.

In the United States, the State of Idaho is second only to Wyoming in the percentage of total population using ATVs. Figure 3-1 depicts how ATV registration has increased over the past 7 years. The growing demand in Idaho to use public lands for ATV use has put an increased demand on the natural resources of the region. Many agencies have allowed ATV use to occur without managing or monitoring its effects on resources. A growing understanding of the effects ATVs have on the environment is leading most agencies to make current guidelines and regulations more restrictive.

At Dworshak, there has been a demand to use old logging road and trails for ATV use. In many places, ATV users have used these roads and created unauthorized trails. These trails now show signs of erosion, and there are other negative effects on the natural resources of the area (Photos 3-7 and 3-8). Although gates have been installed and trails closed, ATV users can easily find other routes to access the trails they have been using.

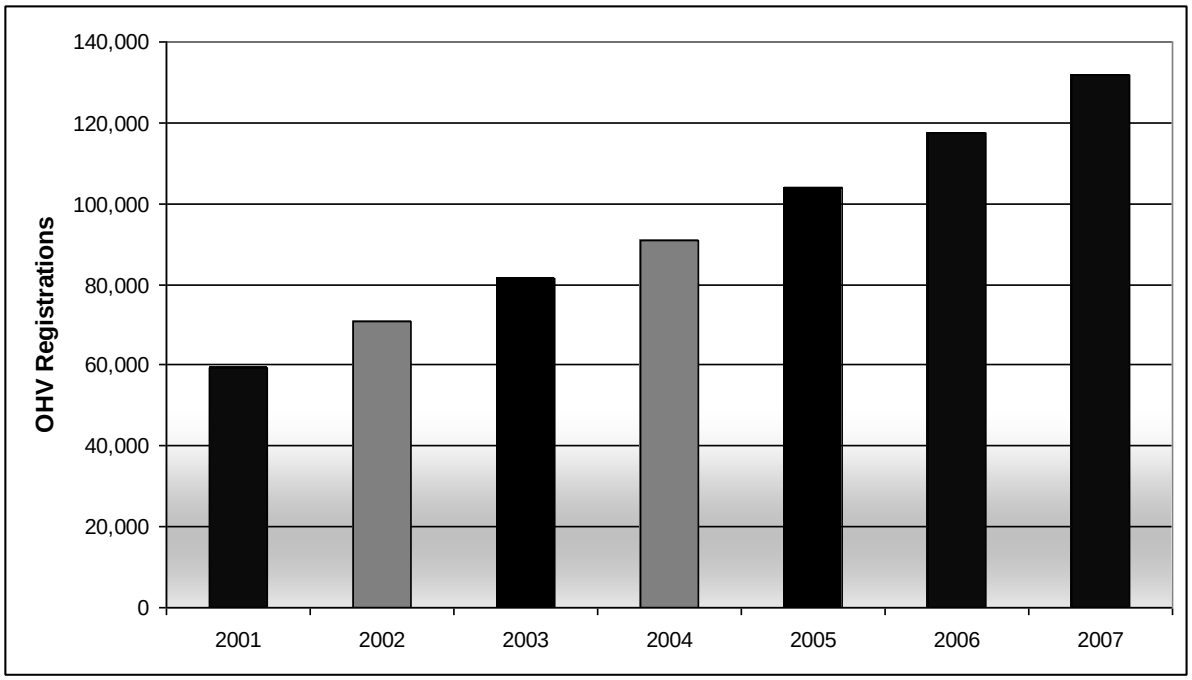


Figure 3-1 Idaho ATV Registration

Photos 3-7 and 3-8. The effects of ATV use on undesignated, undeveloped trails on Dworshak

In response to public demand, the Corps performed an analysis of ATV demand in 2004 at the Little Meadow Creek Log Dump. A hardened logging road was selected for use in a pilot study that would allow ATV use at Dworshak and help to determine suitability and impacts of ATV use on a given site. Factors evaluated were slope, aspect, impacts to cultural resources, aesthetic resources, and ease of access. This site has been monitored for both visitor use and effects on environmental resources, and that information will be used to determine if additional areas could be designated for ATV use. To date results of monitoring have shown that there have not been any problems with vandalism, off road travel, or any other abuses at this site. Visitation and use of this ATV trail has been relatively low which may be due to several factors including that the trail crosses Potlatch properties that now require a potlatch permit to recreate on, and a lack of initial signs to let people know where the trail was and general information to the public that the trail exist.

4. PUBLIC INVOLVEMENT

4.1 PUBLIC INVOLVEMENT

4.1.1 Working Groups

As part of the 1999 Dworshak Master Plan update effort, three citizens' working groups were established by the staff in the Dworshak Natural Resources Office. The groups each corresponded to a perceived management challenge (Land Management, Land Access, and Water Access). A fourth group, focused on Land-Based Recreation, was later added due to high interest. Each group was comprised of citizens and agency personnel interested in providing input and seeking solutions to those challenges. The working groups were facilitated by staff from the Dworshak Natural Resources Office. The groups were set up to meet once each week for approximately 4 to 6 weeks. Though envisioned to be a short-term commitment, the working groups evolved into small planning committees that dedicated several years and met monthly or quarterly to address planning and management issues at Dworshak Reservoir. These groups continued their focus despite a lack of federal funding to continue the master plan effort.

Recommendations presented by the four groups included areas of overlap and conflict. In an effort to find consensus, a professional facilitator was hired to bring the group members together and discuss issues, with the goal of understanding conflicts and finding compromise. The groups met in six sessions to finalize consensus recommendations for a Dworshak Master Plan or Public Use Plan update, and a report was published documenting their recommendations (Corps, 1997). The recommendations relate primarily to land use classifications, recreation areas and facilities, recreation activities and use, and areas managed for fish and wildlife.

4.1.2 Elected Officials

Corps staff and leaders meet regularly with Congressionals from the Idaho First District, as well as Senatorial staff. From the beginning, Congressional interest on issues and developments at Dworshak and in Orofino, Idaho, has been high. Congressional staff from the offices of Congressman Otter, Senator Craig, and Senator Crapo attended working group and consensus meetings. Besides Congressional briefing, Corps staff routinely visits with the Chambers of Commerce and City Councils in both Orofino and Lewiston, Idaho.

4.1.3 Nez Perce Tribe

The Corps places priority on building good relationships with tribal partners. As part of the planning process, the Corps contacted the Nez Perce Tribe and offered government-to-government consultation related to this Public Use Plan update. The Nez Perce Tribe is a sovereign nation and the Corps is required to offer consultation on actions or policies that may impact Tribal property or interests.

4.2 PUBLIC MEETINGS

4.2.1 Scoping Meetings

The Corps conducted public scoping meetings in Orofino and Lewiston, Idaho. In September 1999 to support an update of the Dworshak Master Plan. The meetings were well attended, and the Corps received many suggestions and comments related to management issues and recreation at Dworshak Reservoir. Most comments focused on the change in water level at the lake and negative impacts to recreational opportunities at the reservoir. Many felt that the changes and limitation in recreation opportunities had negatively impacted the economy of Orofino. From these scoping meetings and the interest they generated, Dworshak staff established the previously described working groups.

As part of the process to support this Public Use Plan, the Corps conducted public scoping meetings in September 2008. Meetings were held in Lewiston and Orofino, Idaho; and were focused on finding solutions and meeting challenges associated with recreating at Dworshak under a fluctuating water regime. The Orofino, Idaho, meeting was attended by approximately 80 people. The Lewiston meeting was attended by 20 to 25 people. Issues identified included:

- Need for motorized access
- Boat access at all water elevations
- Access for persons with disabilities
- Updates to the Elk Mitigation Plan
- Reservoir debris

4.2.2 The Corps Internet Site

In 1999, the Corps developed a website to disseminate information and collect comments for the Dworshak Master Plan update. The website has been used as a home page by the public working groups, and their reference materials and recommendations reside there. This website was also used to collect comments for this Public Use Plan update in the scoping and draft phases. The final Public Use Plan will be posted to this website. The website is nested within the home page of the Walla Walla District US Army Corps of Engineers, at *www.nww.usace.army.mil/planning/er/dworshak/dwamain.htm*.

5. LAND CLASSIFICATIONS

5.1 GENERAL

The land classification of an area governs land uses, resource management activities, and permissible facility development. Combined with project-wide and site-specific resource objectives, the land use plan provides a conceptual guide for the use, management, and development of all project lands.

As part of the planning process project lands were divided into individual management areas based on physical, administrative, operational, and use characteristics. Each area was assigned the most appropriate land classification. Together, these elements are the heart of this Public Use Plan.

5.2 LAND ALLOCATION

Land allocations identify the authorized purposes for which project lands were acquired. The entire Dworshak Dam and Reservoir project, other than the Elk Mitigation Lands, is allocated for Project Operations. Project Operations lands are those lands acquired to provide safe, efficient operation of the project for its authorized purposes. A 300-foot horizontal take line landward of the high pool elevation (1600 msl) was the guidance used for land acquisition. Additional lands above the 300-foot take line were acquired for access and public use, as described in Design Memorandum 10A, Preliminary master plan; part of the master plan for Dworshak Dam and Reservoir, North Fork Clearwater River, Idaho (Corps, 1963).

The initial authorized project purpose for Dworshak Dam and Reservoir, as set forth in PL 87-874, was flood control. Approximately 6,937 acres were acquired as mitigation lands. Although subsequent legislation related to civil works projects has authorized other project purposes, including recreation and fish and wildlife management, all of the lands originally retained were allocated to project operations in accordance with the initial authorized acquisition purposes. Separable lands were not acquired for recreation or fish and wildlife management purposes.

5.3 INITIAL LAND CLASSIFICATIONS

Land classifications were originally established for all Dworshak project lands through Design Memorandum 10, Public Use Plan for Development and Management of Dworshak Reservoir, North Fork Clearwater River, Idaho (Corps, 1970). These land classifications (Table 5-1) were based on guidelines established by the Corps prior to construction of Dworshak Dam and Reservoir.

Table 5-1. Current Land Classifications

Land Classification	Acres
Project Operations	1,239
Fish and Wildlife	3301
Big Game Habitat Development	5033
Recreation—General Access	10,705
Recreation—Group Camping	707
Recreation—Initial Development	3278
Recreation—Future Development	5830
Industrial Use and Access	255
Public Port Terminal	461

As estimated in DM 10.

5.4 UPDATED LAND CLASSIFICATIONS

In 1996, new guidelines for the development of project master plans were adopted by the Corps and documented in EP 1130-2-550. Chapter Three of EP 1130-2-550 documents how each project is to classify project lands.

All lands acquired for project purposes are classified to provide for development and resource management consistent with authorized project purposes and other federal laws. The classification process refines the land allocations to fully use project lands. The Corps considers legislative authority, regional and project-specific resource requirements, resource suitability, and public desires. Management and use of the lands assigned to each land classification are discussed, in connection with the appropriate resource objectives, in the following paragraphs. Locations for each land classification are shown on Plates 9A through 9M.

5.4.1 Project Operations Lands

This classification includes lands required for the dam and associated structures, administrative offices, maintenance compounds, and other areas used to operate and maintain Dworshak Dam and Reservoir. Where compatible with operational requirements, Project Operations lands may be used for wildlife habitat management and low density recreational uses (see paragraphs 5.4.5.1 and 5.4.5.2). Licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with operational requirements. Some project operation lands are always closed to public access for safety or security reasons, while other areas may be subject to closure for Dworshak operation requirements or other purposes. Motorized recreation is not allowed within project operation lands other than on designated routes. Table 5-2 contains primary and secondary uses for lands classified for Project Operations at Dworshak.

Approximately 231 acres of project lands are classified as Project Operation Lands.

9A-9M

9A-9M

9A-9M

9A-9M

9A-9M

9A-9M

9A-9M

9A-9M

9A-9M

9A-9M

9A-9M

9A-9M

9A-9M

Table 5-2. Authorized Uses – Project Operation Lands

PROJECT OPERATION LANDS	
Primary Use Manage lands required for the operation and maintenance of the Dam and Reservoir. **Secondary Uses** Wildlife Management - General Forest Health - Ecological Restoration Projects - Other similar activities	**Secondary Uses Cont.** Low Density Recreation - Hunting/Fishing - Hiking - Bicycling - Horseback riding - Primitive Camping (designated sites) - Picnicking - Sightseeing and Nature Observation - Other recreation activities of a primitive nature

5.4.2 Recreation Lands

Recreation lands are designated for intensive recreational use to accommodate and support the recreational needs and desires of project visitors. They include lands where existing or planned major recreational facilities are located; and allow for developed public recreation facilities, concession development, and high-density or high-impact recreational use. Recreation lands at Dworshak are areas that have improved road access, more than 15 campsites, and/or allow for intensive day use. Motorized access is allowed in designated areas deemed appropriate and necessary by Corps staff. All motorized access is subject to seasonal or permanent closure based on road conditions, the presence of important species that would be impacted by the presence of motorized vehicles, or other reasons deemed appropriate by Corps staff.

Facilities may include developed campgrounds, separate day-use facilities, lake access for boats, marina facilities and services, opportunities for the elderly and handicapped to participate in a variety of activities, trees for shade and wildlife use, and vegetative controls for shoreline and soil erosion (Table 5-3). Criteria such as spacing, buffer zones, vegetative screening, and other considerations are used in the design of recreation facilities to ensure that visitors have adequate access to the lake and quality recreational experiences. Low-density recreation and wildlife management activities compatible with intensive recreation use are acceptable. No agricultural uses are permitted on these lands except on an interim basis for the maintenance of scenic or open space values. Licenses, permits, easements, or other outgrants are issued only for uses that do not conflict with recreational use. Hunting is not allowed on lands classified as recreation, although fishing is an appropriate recreational activity.

Approximately 1,087 acres of project lands are classified as Recreation Lands.

Table 5-3. Authorized Uses – Recreation Lands

RECREATION LANDS	
Primary Use Manage lands for developed recreation sites that have more than 15 campsites and improved access - Campgrounds - Picnicking - Swimming - Fishing - Sightseeing and Nature Observation - Nature/Interpretive Trails - Hiking - Bicycling - Horseback riding - Playgrounds/Games/Sports/Other - Concessionaires - Motorized Recreation - Boat Ramps	**Secondary Uses** Wildlife Management - General Forest Health - Ecological Restoration Projects - Other similar activities Low Density Recreation - Primitive Camping (designated sites) - Motorized Access Trails and Roads - Non-motorized Trails - Other recreation activities of a primitive nature

5.4.3 Mitigation Lands

This classification includes those lands specifically designated to offset elk habitat losses associated with the development of the Dworshak Project. Under guidelines established in the Fish and Wildlife Coordination Act (PL 85-624) and ER 1105-2-129, ER 1120-2-400, and ER 1165-2-104, the wintering habitat lost through construction will be replaced (in part) by the development and improvement of selected lands acquired specifically for elk mitigation. Lands designated as Mitigation Lands are associated with certain legal requirements. Mitigation Lands on Dworshak Reservoir were identified in DM-15, Plan for Development of Rocky Mountain Elk Habitat: Dworshak Dam and Reservoir, North Fork, Clearwater River, Idaho (Corps, 1977), by the USFWS. However, the Corps was unable to acquire much of the land identified in the design memorandum. The current Mitigation Lands are those described as the "Hardcore Mitigation Lands" in DM-15, and include all lands purchased for the purpose of elk mitigation and all project lands immediately adjacent to them.

All activities required for mitigation on these lands were defined in DM-15 by both the USFWS and IDFG. Consultation with both groups in the late 1980s and early 1990s brought about change to the mitigation obligations identified in those original guidelines. However, the general management of the mitigation lands for their intended purpose still remains a legally required obligation for the Corps. The Corps and IDFG continue to work collaboratively to set goals and objectives for these lands (Table 5-4). Future changes to those goals and objectives require consultation with

the USFWS and IDFG. Low density, low impact recreational opportunities that minimize impacts to elk populations are allowed, including sightseeing, wildlife viewing, primitive camping, hiking, horseback riding, and biking, as well as hunting, fishing, and trapping. All recreation on Mitigation Lands must be primitive in nature. Motorized access is not allowed within Mitigation Lands, other than on Grandad Bridge Road, Breakfast Creek Road, Camp X Road, and Silver Creek Road. Consumptive uses of the vegetation (e.g., timber harvest for the purpose of habitat creation and forest health) are acceptable when compatible with the objectives and regulations required for mitigation lands.

Approximately 6,935 acres of Dworshak lands are classified as Mitigation Lands.

Table 5-4. Authorized Uses – Mitigation Lands

MITIGATION LANDS	
Primary Use Manage lands for Elk Habitat, as defined by regulation **Secondary Uses** Wildlife Management - General Forest Health - Ecological Restoration Projects - Other similar activities	**Secondary Uses Cont.** Low Density Recreation - Primitive Camping (designated sites) - Non-motorized Trails - Hunting/Fishing - Hiking - Bicycling - Horseback riding - Picnicking - Sightseeing and Nature Observation - Other recreation activities of a primitive nature

5.4.4 Environmentally Sensitive Areas

Environmentally sensitive areas are lands where scientific, ecological, cultural, or aesthetic features have been identified. These areas are available for public use, but the primary goals for this land classification are preservation, education, and interpretation (Table 5-5). Projects that are designed to promote and improve the special features identified in the area are allowed.

Development of recreation facilities in Environmentally Sensitive Areas may be limited or prohibited to ensure that the lands are not adversely impacted. Low density, low impact recreational opportunities that minimize impacts to the designated special features of the site are allowed, including sightseeing, wildlife viewing, primitive camping, hiking, horseback riding, and biking, as well as hunting, fishing, and trapping. Motorized access is only allowed on existing designated roads within an Environmentally Sensitive Area, and no new public motorized access routes will be designated in lands classified as Environmentally Sensitive Areas.

Approximately 3,101 acres of Dworshak lands are classified as Environmentally Sensitive Areas.

Table 5-5. Authorized Uses – Environmentally Sensitive Areas

ENVIRONMENTALLY SENSITIVE AREAS	
Primary Use Manage lands to protect unique or sensitive resources - Scientific - Cultural - Ecological - Aesthetic **Secondary Uses** Wildlife Management - General Forest Health - Ecological Restoration Projects - Other similar activities	**Secondary Uses Cont.** Low Density Recreation - Primitive Camping (designated sites) - Non-motorized Trails - Hunting/Fishing - Hiking - Bicycling - Horseback riding - Picnicking - Sightseeing and Nature Observation - Other recreation activities of a primitive nature

5.4.5 Multiple Resource Management Lands

This classification, which contains approximately 18,140 acres, includes lands managed for one or more of the activities described in the following paragraphs.

5.4.5.1 Multiple Resource Management, Recreation-Low Density

These lands emphasize opportunities for dispersed and/or low-impact recreation use. Facilities for site-specific, low-impact activities such as sightseeing, wildlife viewing, nature study, hiking, biking, horse back riding, primitive camping (less than 15 camp sites), and picnicking may be allowed. Consumptive uses of wildlife (i.e., hunting, fishing, and trapping) are allowed when compatible with the wildlife objectives for a given area and with federal, tribal, and/or state fish and wildlife laws and regulations. Motorized access on approved trails will be allowed in designated areas deemed appropriate and necessary by the Corps. All motorized access is subject to seasonal or permanent closure based on road conditions, the presence of important species that would be impacted by the presence of motorized vehicles, or other reasons deemed appropriate by the Corps. Table 5-6 contains a listing of primary and secondary uses on lands classified for Multiple Resource Management, Recreation-Low Density.

Facilities on this land classification may include boat ramps, boat docks, trails, parking areas and vehicle controls, vault toilets, picnic tables, and fire rings. Manmade intrusions (power lines, non-project roads, and water and sewer pipelines) may be permitted under conditions that minimize adverse effects on the natural

environment. Vegetation management that does not greatly alter the natural character of the environment is permitted for a variety of purposes, including erosion control, retention and improvement of scenic qualities, and wildlife management.

Approximately 1,930 acres of Dworshak lands are classified as Multiple Resource Management, Recreation-Low Density.

Table 5-6. Authorized Uses – Recreation-Low Density

MULTIPLE RESOURCE MANAGEMENT, RECREATION-LOW DENSITY	
Primary Use Manage lands low density, low impact recreation opportunities - Hunting/Fishing - Hiking - Bicycling - Horseback riding - Campgrounds <15 sites - Primitive Camping (designated sites) - Picnicking - Swimming - Sightseeing and Nature Observation - Motorized Access Trails and Roads - Boat Ramps - Non-motorized Trails - Other recreation activities of a primitive nature	**Secondary Uses** Wildlife Management - General Forest Health - Ecological Restoration Projects - Other similar activities

5.4.5.2 Multiple Resource Management, Wildlife Management

These lands are designated for wildlife management, although all project lands are managed for fish and wildlife habitat in conjunction with other land uses. Wildlife management lands contain valuable fish and/or wildlife habitat maintained and/or improved to be suitable for a designated species, group of species, and/or a diversity of species. These areas may be administered by other public agencies under a lease, license, permit, or other formal agreement. Licenses, permits, and easements are normally not allowed for manmade intrusions such as pumping plants, pipelines, cables, transmission lines, or non-Corps maintenance or access roads. Exceptions to this policy are allowable where necessary for the public interest or other reasons deemed important by the Corps.

Wildlife management lands are available for sightseeing, wildlife viewing, nature study, hiking, biking, horseback riding, and primitive camping. Consumptive uses of wildlife (hunting, fishing, and trapping) are allowed when compatible with the wildlife objectives for a given area; as well as with federal, tribal, and/or state fish and

wildlife laws and regulations. Limited motorized access will be allowed in designated areas deemed appropriate by Corps staff, and where the access would not conflict with the primary purpose of managing the land for wildlife health (Table 5-7). All motorized access is subject to seasonal or permanent closure based on road conditions, the presence of important species that would be impacted from the presence of motorized vehicles, or other reasons deemed appropriate by the Corps.

Approximately 15,350 acres of Dworshak lands are classified as Multiple Resource Management: Wildlife Management General.

Table 5-7. Authorized Uses – Wildlife Management

MULTIPLE RESOURCE MANAGEMENT: WILDLIFE MANAGEMENT	
Primary Use Manage lands for wildlife habitat - General Forest Health - Habitat Enhancement Projects - Ecological Restoration Projects - Protection of Specific Habitat Areas/Components (i.e. denning sites, calving sites, nests and wallows etc.) - Other similar activities	**Secondary Uses** Low Density Recreation - Hunting/Fishing - Hiking - Bicycling - Horseback riding - Primitive Camping (designated sites) - Picnicking - Sightseeing and Nature Observation - Designated Motorized Access Trails and Roads with seasonal closures - Non-motorized Trails - Other recreation activities of a primitive nature

5.4.5.3 Multiple Resource Management: Vegetative Management

Management activities in this land classification focus on the protection and development of forest resources and vegetative cover, although all project lands are primarily managed to protect and develop vegetative cover in conjunction with other land uses. Vegetative management lands are available for sightseeing, wildlife viewing, nature study, hiking, biking, and horseback riding, as well as hunting, fishing, and trapping. Consumptive uses of vegetation (e.g., timber harvest for the purpose of habitat creation and forest health) are acceptable when compatible with the vegetative objectives for a given area.

The Corps chose not to designate any Dworshak lands as Multiple Resource Management: Vegetative Management. Multiple Resource Management: Wildlife Management was chosen to be the primary classification for a large portion of the lands on Dworshak. Vegetative Management is, however, an important aspect of managing Dworshak lands for wildlife.

5.4.5.4 Multiple Resource Management: Inactive and/or Future Recreation Areas

This sub-classification consists of lands where recreation areas are planned for the future, or lands that contain existing recreation areas temporarily closed (Table 5-8). There is no guarantee that these areas will be developed and/or reopened. They are classified as Future Recreation Areas because it was determined by Corps staff, with input from stakeholders and working groups, that they have recreation potential. Sufficient public demand and funding for such a development would have to be present before development could take place. Each proposed recreation development site would then have to be evaluated under NEPA prior to development.

Lands classified as Inactive and/or Future Recreation areas will be managed as Multiple Resource Management: Low Density Recreation and/or Multiple Resource Management: Wildlife Management until an area is developed. At that time, the area will be classified and managed as Recreation Lands.

No lands at Dworshak were identified as Inactive Recreation Areas.

Approximately 860 acres of project lands are classified as Future Recreation Areas.

Table 5-8. Authorized Uses – Future Recreation Areas

MULTIPLE RESOURCE MANAGEMENT, FUTURE RECREATION AREAS	
Primary Use - Manage lands in a way that will not limit the ability to develop or manage the area as a Recreation Area **Secondary Uses** Manage lands for wildlife habitat - General Forest Health - Ecological Restoration Projects - Other similar activities	**Secondary Uses Cont.** Low Density Recreation - Hunting/Fishing - Hiking - Bicycling - Horseback riding - Campgrounds <15 sites - Primitive Camping (designated sites) - Picnicking - Swimming - Sightseeing and Nature Observation - Motorized Access Trails and Roads - Non-motorized Trails - Other recreation activities of a primitive nature

5.4.6 Easement Lands

Easement lands are lands for which the Corps does not hold fee title, but has acquired the right to enter onto the property in connection with the operation of the project. In most cases, the Corps has the right to occasionally flood these properties. Planned use and management of easement lands will be in strict accordance with the terms and conditions of the easement estate acquired for the project.

The government has acquired easements on approximately 1760 acres at or adjacent to Dworshak Dam and Reservoir.

5.5 IMPLEMENTATION AND RECOMMENDATIONS

Land classifications can be considered zoning plans in the sense that they allow for different types of management and development within each land classification category. Classifications are based on the attractiveness of the resource, as well as their protection, capability, public desires, and agency missions and policies. The process used to determine the assignment of these land classifications is described in the following:

- **General**

  Attractiveness, vulnerability, and compatibility models were developed for each land classification, using criteria from the regional and project inventory, as well as analysis data.

- **Attractiveness - Process**

  The first step in the process is to map those lands most attractive or best suited for a particular land classification. This is done by combining resource data maps (slope, existing facilities, and vegetation). For example, the most attractive lands for recreation are those that have slopes of 0 to 25 percent, are close to water, and have good vehicular access. Environmental impacts (both positive and negative) are considered under vulnerability, rather than under attractiveness.

- **Vulnerability - Process**

  The next step is to identify and map those areas vulnerable to impact (positive and negative) for a particular land use, by using resource data maps that identify sensitive resources (i.e., wildlife habitat, wetlands, or highly erodible soil). Impacts can be caused by construction, use, or maintenance, among other things. For example, recreation development may impact certain wildlife species.

- **Compatibility - Process**

  The third step in the process is to create a compatibility map. This is done by combining attractiveness and vulnerability maps. The compatibility map identifies areas with high attractiveness and low vulnerability. Compatibility maps are subject to change as additional information is developed.

- **Tradeoff Analysis - Process**

  After all compatibility maps are completed for each different land use, they are compared. Sometimes the lands best suited for recreation and wildlife are the same. When this situation arises, a tradeoff occurs, and a decision is made as to which land use best serves both regional and project needs. This step uses the analysis of resources, the professional judgment of an interdisciplinary team, public input, and input from other agencies.

An interdisciplinary team followed this process to create updated land classifications. The original land classifications, and the land classifications recommended by the working groups were also used in the process. The Corps recommendations for updated land classifications are found on Plates 9A through 9M.

5.6 LAND CLASSIFICATION RATIONALE

5.6.1 Dworshak National Fish Hatchery, Land Classification Unit (LCU) 01

Land Classification. Project Operations

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9A.

Land Classification Rationale. Dworshak National Fish Hatchery was built to mitigate for effects on migratory fish species caused by the construction of Dworshak Dam. The lands in this area are used solely for project operations, and are classified for this use.

Site Features and Development Potential. This site includes the fish hatchery and its supporting facilities. Public tours of the facility are available. No developmental needs or potential for this site were identified in this report.

5.6.2 North Fork Clearwater Shoreline, LCU 02

Land Classification. Multiple Resource Management, Recreation-Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9A.

Land Classification Rationale. The area along the river is used extensively by the public for fishing and casual walking. This area is primarily managed for low-density recreation.

Site Features and Development Potential. The area has an undeveloped parking area used by those fishing from the bridge at Ahsahka and along the shore of the river. The public also uses the parking area to access a walking trail along the river that goes from the bridge up to the base of the dam. A developed parking area could be constructed as public desire increases. The trail could be improved with amenities such as benches, tables, and other trail features. This area would also be an appropriate area to provide universally-accessible fishing platforms.

5.6.3 Ahsahka Hillside, LCU 03

Land Classification. Environmentally Sensitive Areas

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9A.

Land Classification Rationale. The Ahsahka Hillside Environmentally Sensitive Area encompasses 381 acres on the steep south-facing slope above State Highway 7. The predominant habitat type is ponderosa pine (*Pinus ponderosa*)/bluebunch wheatgrass (*Pseudoroegneria spicata*), and the dominant overstory species on the site is ponderosa pine. Several state-listed species associated with ponderosa pine ecosystems were documented within the Environmentally Sensitive Area; broad-fruit mariposa (*Calochortus nitidus*), western starflower (*Trientalis latifolia*), and pygmy nuthatch (*Sitta pygmaea*) (Bowers and Nadeau, 2002). Mehl and Haufler (2003) stated that, “Today ponderosa pine ecosystems are considered endangered, with current estimates of loss between 85% and 98% of its historical amounts.” Noss et al. (1995) listed old-growth ponderosa pine forests as endangered (85- to 95-percent decline) in the northern Rocky Mountains, Intermountain West, and eastside Cascade Mountains. Because of the current status of ponderosa pine ecosystems throughout the region, they were selected as a priority habitat for Dworshak Reservoir (See Section 2.3.6.2). The Ahsahka Hillside was chosen as an Environmentally Sensitive Area due to its ecological significance.

Site Features and Development Potential. This site has potential for ponderosa pine ecosystem enhancement. Future management includes thinning and prescribed burning to promote conditions characteristic of historic ponderosa pine ecosystems. Non-motorized recreation is high within this area, primarily due to a heavily-used trail system and good whitetail deer hunting. The continued future management of the area should encourage non-motorized use and engage in educational opportunities, such as interpretive signs, to increase public awareness of ponderosa pine ecosystems.

5.6.4 Wildlife Management Below Dam, LCU 04

Land Classification. Multiple Resource Management, Wildlife Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9A.

Land Classification Rationale. The area provides significant wildlife habitat and limited recreational benefit or opportunity.

Site Features and Development Potential. Because of the area's proximity to the dam and other associated facilities, this area is set apart from other Wildlife Management Lands. In planning for possible future development in this area care should be taken to avoid risks posed by utility lines and public restricted areas. Planning for wildlife management activities may also be impacted by the same safety factors.

5.6.5 Dworshak Dam, LCU 05

Land Classification. Project Operations

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9A.

Land Classification Rationale. All lands within this classification include buildings, facilities, and utility lines directly associated with the operation and maintenance of Dworshak Dam and Reservoir.

Site Features and Development Potential. This site features Dworshak Dam, its associated facilities, Visitor Center, maintenance buildings, and rock quarry. No additional development for the site is identified in this report.

5.6.6 Bruce's Eddy, LCU 06

Land Classification. Multiple Resource Management, Future Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9A.

Land Classification Rationale. This area has the potential for future development as a recreation site because of its proximity to the city of Orofino, its existing facilities, and low-gradient slopes that support recreational developments.

Site Features and Development Potential. The existing boat launches and parking area will continue to be managed a Multiple Resource Management: Recreation – Low Density. Potential developments identified this area include, but are not limited to, marina development, resort development, a campground, and concession-type services.

5.6.7 View Point Overlook, LCU 07

Land Classification. Multiple Resource Management: Recreation – Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9A.

Land Classification Rationale. The view point area is a day-use area managed for public access. It is classified for low-density recreation because it does not receive much visitation, those who do visit the site typically do not stay for long, and overnight camping is not allowed.

Site Features and Development Potential. This area has an overlook view of the dam, with a covered area and restrooms. It will continue to be managed for low-density recreation. However, improvements such as landscaping and picnic facilities could be added to make the area more inviting and usable by the public.

5.6.8 Dam View, LCU 08

Land Classification. Multiple Resource Management, Future Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9A.

Land Classification Rationale. This site features a series of flats, and has the potential for development as an additional camping area. Its proximity to Big Eddy Marina supports the use of this area for recreation purposes. It will be managed as Multiple Resource Management, Recreation-Low Density until demand warrants development of this area for a higher density recreation site.

Site Features and Development Potential. This site features a series of flat benches, one of which is paved and currently used for overflow camping. A few benches, fire rings, and a portable toilet are the only amenities at the area. Potential for this area includes, but is not limited to, developed campsites on the series of connected benches, and increased amenities (i.e., running water and permanent bathrooms). One or several of these flat areas may be considered for addition to the recreation outgrant for Big Eddy Marina.

5.6.9 Big Eddy Marina, LCU 09

Land Classification. Recreation Lands

Managing Agency. U.S. Army Corps of Engineers (Corps), and
State of Idaho Parks and Recreation

Location. See Plate 9A.

Land Classification Rationale. This site features the marina, parking lot, lodge, and other recreational amenities used for public recreation.

Site Features and Development Potential. The existing marina features a two lane boat launch, 101 boat slips, a handling dock, a tie-up dock, and a floating fuel station. There is typically a waiting list for rental slips, and the marina has the potential for expansion. The existing lodge building, originally built to house a restaurant, is currently underutilized and could support a variety of concessionaire-type activities. Although the marina and water-based facilities merit investigation of expansion, the land surrounding the existing facilities is steep and not conducive to future development or expansion of land-based facilities. Any expansion of water-based facilities may necessitate expansion of current parking facilities, potentially at the expense of existing park and picnic sites.

5.6.10 Merry's Bay, LCU 10

Land Classification. Multiple Resource Management, Recreation-Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9A.

Land Classification Rationale. Merry's Bay is an extensively used day-use area; however, site conditions limit expansion of the recreation area.

Site Features and Development Potential. The existing parking lot and picnicking areas should be evaluated to determine if they can be modified in a way that would be more inviting to the public as well as provide additional picnicking areas. The existing trail head also could be improved through signage. Other potential developments will require additional investigation.

5.6.11 Low Density Shoreline Recreation, LCU 11

Land Classification. Multiple Resource Management, Recreation-Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plates 9A. through 9M.

Land Classification Rationale. The majority of the shoreline on Dworshak Reservoir was designated as Recreation-Low Density to provide a variety of recreational opportunities for shore-based recreation activities. The rationale for this buffer ring on the reservoir was to encourage use of the shoreline by the public. The shoreline buffer contains mini-camps along the reservoir, and allows for additional mini-camps to be located along the shoreline. Activities relating to wildlife management, such as forest thinning and burning, will not take place within this area. Further management actions should support development of an aesthetically pleasing shoreline for reservoir users.

Site Features and Development Potential. These lands can be used for a variety of recreational activities including campgrounds with less than 15 camp sites. Motorized access may be designated. Other developmental opportunities include primitive designated boat launch sites or campgrounds. Further activities and developments on these lands are also possible, and will be evaluated as public demand requires.

5.6.12 Wildlife Management Lands, LCU 12

Land Classification. Multiple Resource Management, Wildlife Management

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plates 9A through 9M.

Land Classification Rationale. A large portion of the lands surrounding Dworshak Reservoir were classified as Wildlife Management because of the important environmental and ecological benefits these lands provide to the public. These lands do not restrict the public from general access and approved recreational activities. This classification was given to these lands as an effort to manage the lands for the primary purpose of creating and managing wildlife habitat, rather than as an effort to restrict public access.

Site Features and Development Potential. The lands surrounding Dworshak contain many important wildlife habitats. The development and promotion of healthy habitat can be accomplished through forest management techniques including thinning, slashing, burnings, and sensitive habitat protection. Additional wildlife management techniques and other activities are permitted as long as they do not conflict with the primary goal of wildlife management.

5.6.13 Freeman Creek Point Environmentally Sensitive Area, LCU 13

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9B.

Land Classification Rationale. The Freeman Creek Point Environmentally Sensitive Area encompasses 175 acres on a steep south-facing slope dominated by ponderosa pine. This site was recommended as a 474-acre Environmentally Sensitive Area by IDFG. Two state-listed species associated with ponderosa pine ecosystems were documented within the Environmentally Sensitive Area: broad-fruit mariposa (*Calochortus nitidus*) and Jessica's aster (*Aster jessicae*) (Bowers and Nadeau, 2002). Jessica's aster is an USFWS Species of Concern endemic to the Palouse Prairie region of eastern Washington and Idaho. Its range is small, and most populations occur on private land. Remnant populations tend to be small and fragmented. Many of them border agricultural fields and pastures, where they are threatened by herbicide spraying and roadwork activities. The four populations found on Dworshak Reservoir represent the only populations of Jessica's aster

known to occur on public land within the State of Idaho. Bowers and Nadeau (2002) point out that, “Jessica’s aster is probably the most vulnerable and globally rare species occurring in the Dworshak Study Area.”

Because of the current status of Jessica’s aster and the ponderosa pine ecosystem in which it is found this area was categorized as an Environmentally Sensitive Area.

Site Features and Development Potential. The site of this Environmentally Sensitive Area is steep, with little potential for recreation-type development. An existing hiking trail does go through this land unit with no significant impacts. This site has potential for ponderosa pine ecosystem enhancement, but further study will be necessary to determine how a restoration project may affect the sensitive species found here. If weed control programs are considered in this area, their effect on native plants must be carefully considered. Herbicide spraying is a potential threat to rare species, especially to Jessica’s aster and bank monkeyflower (*Mimulus clivicola*), species that occur in small, localized populations.

5.6.14 Canyon Creek, LCU 14

Land Classification. Recreation Lands

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9B.

Land Classification Rationale. The Canyon Creek boat launch and camping area fits the criteria set forth for recreation lands. The recreation designation for Canyon Creek expands beyond the existing site boundaries to allow for further site development.

Site Features and Development Potential. This area has more than 15 campsites and a boat launch. The surrounding lands are relatively steep, effectively preventing any large-scale recreation facility development. This area has the potential for expansion, and because it is heavily used for camping by local residents, demand is likely adequate to support development of additional facilities. Some smaller flat areas at the site would allow for the development of additional campsites. The existing trailhead could be improved and the trail expanded to provide a longer hiking experience. Extension of the existing boat ramp, combined with the addition of more parking would facilitate boating from Canyon Creek when water levels drop more than 40 feet.

5.6.15 Freeman Creek, LCU 15

Land Classification. Recreation Lands

Managing Agency. State of Idaho Parks and Recreation

Location. See Plate 9B

Land Classification Rationale. Freeman Creek is outgranted to the State of Idaho Parks and Recreation as a high density, intensive use recreation area, although much of the land within this designation is not developed. The footprint of this area was determined by the legal real estate documents associated with the outgrant.

Site Features and Development Potential. Freeman Creek is also known as Dworshak State Park. The area has a variety of camping facilities, ranging from car-based tent camping to recreational vehicle (RV) areas and small rental cabins. It also has many other amenities, including a boat launch, swim beach, moorage docks, playground, amphitheater, and archery range. The flat topography of the area lends itself to future development as needs and demands arise.

5.6.16 Three Meadows, LCU 16

Land Classification. Recreation Lands

Managing Agency. State of Idaho Parks and Recreation

Location. See Plate 9C.

Land Classification Rationale. Three Meadows is part of the lands outgranted to the State of Idaho. This area is an existing group camp that is designated as Recreation because of the intensity of use and existing amenities.

Site Features and Development Potential. Three Meadows group camp has a large central dining hall, commercial grade kitchen, small bunkhouse-style cabins, and a large shower building, as well as locations for tents and/or RVs. The area is similar to Freeman Creek and, with low-gradient slopes, is well suited for future expansion and development.

5.6.17 Little Bay, LCU 17

Land Classification. Multiple Resource Management, Recreation-Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9B.

Land Classification Rationale. The shoreline of Little Bay was classified as Recreation-Low Density because of the recreational opportunities provided to the public.

Site Features and Development Potential. This area has a relatively high concentration of mini-camps. These mini-camps are some of the most intensively used on the reservoir. Little Bay is mentioned specifically as a Land Classification Unit because of its potential for equestrian or motorized access and use. A conflict arises, however, because many boaters want the mini-camps to continue to be accessible only by water.

5.6.18 Little Bay Environmentally Sensitive Area, LCU 18

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9B

Land Classification Rationale. The Little Bay Environmentally Sensitive Area encompasses 112 acres on a moderate south-facing slope dominated by ponderosa pine (*Pinus ponderosa*) and Douglas fir (*Pseudotsuga menziesii*). The primary habitat type is grand-fir (*Abies grandis*)/ninebark (*Physocarpus opulifolious*), which has been identified as an historical ponderosa pine ecosystem, given the fire regime (Mehl and Haufler, 2003). Several state-listed species associated with ponderosa pine ecosystems were documented within this area: Jessica's aster (*Aster jessicae*), Palouse thistle (*Cirsium brevifolium*), and western starflower (*Trientalis latifolia*) (Bowers and Nadeau, 2002). Long-eared myotis (*Myotis erotis*) was also documented, and is associated with the rock outcroppings found in the area. This site was recommended as an Environmentally Sensitive Area by IDFG, and included 613 acres. Jessica's aster is an USFWS Species of Concern endemic to the Palouse Prairie region of eastern Washington and Idaho. Its range is small, and most populations occur on private land. Remnant populations tend to be small and fragmented, and many border agricultural fields and pastures where they are threatened by herbicide spraying and roadwork activities. The four populations

found on Dworshak Reservoir represent the only populations of Jessica's aster known to occur on public land within the state of Idaho. Bowers and Nadeau (2002) states that, "Jessica's aster is probably the most vulnerable and globally rare species occurring in the Dworshak Study Area."

Because of the current status of Jessica's aster, the occurrence of several other sensitive species, and the ponderosa pine ecosystem, this area was categorized as an Environmentally Sensitive Area.

Site Features and Development Potential. This site has previously been treated for ponderosa pine ecosystem enhancement. The restoration included thinning and prescribed burning. These actions are thought to have a positive effect on Jessica's aster. Post-treatment monitoring of the Jessica's aster populations by IDFG demonstrates a positive effect on these populations following treatment. If weed control programs are implemented within this Environmentally Sensitive Area, it is important to consider their effect on native plants. Herbicide spraying is a potential threat to rare species, especially to Jessica's aster and bank monkeyflower (*Mimulus clivicola*), species that occur in small, localized populations. Because of the low-gradient slopes in this area, there is potential for future recreation facilities. However, care should be taken to preserve this area as an Environmentally Sensitive Area. If motorized access is designated or equestrian trails planned for the Little Bay area new roads/trails should be built outside of the Environmentally Sensitive Area to avoid the dispersal of weed seed in and around the populations of Jessica's aster.

5.6.19 Elk Creek Meadows, LCU 19

Land Classification. Multiple Resource Management, Future Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9C.

Land Classification Rationale. This area is classified as Future Recreation because of the potential for future development. Public input, as well as Corps analysis, was used to make this determination. A trade-off analysis between Future Recreation and Wildlife Management was used to determine the classification of this area because of the importance of the open meadows for elk. The size and position of LCU 19, a Future Recreation Area, was selected to accommodate both future recreation in close proximity to the water while reserving the upland meadows for wildlife habitat. This area will be managed as Multiple Resource Management, Wildlife Management until development of this area is scheduled.

Site Features and Development Potential. There is a current demand for Elk Creek Meadows to be used for ATVs, as evidenced by the numerous unauthorized, user-developed ATV trails in the area. The surrounding forest has received treatments of

thinning and under burning and the resultant haul roads may provide a unique opportunity to develop an ATV loop trail system accessing many of the mini-camps in the area. If this is determined to be an appropriate area for future ATV development, a designated trail system would be needed to keep ATV's on the trails and out of sensitive areas. If demand warrants, additional mini-camps could be located along the shoreline. The low slopes of this area have potential for future high density recreation development. If and when future development does take place, the development must avoid impacts to the ecologically-important meadows and wetlands present on the site. It is possible that the area could be developed for full-size vehicles as well. However, Potlatch Corp. has a gate on adjacent property that is closed to full-size vehicles that would prohibit this type of use currently. Should Potlatch Corp. open this gate to full size vehicles the opportunity to provide full-size vehicle access will be evaluated.

5.6.20 Cold Springs Environmentally Sensitive Area, LCU 20

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9C.

Land Classification Rationale. The Cold Springs Environmentally Sensitive Area includes 14 acres in and around an isolated wetland. This site, along with the entire south side of the reservoir (from Cold Springs Group Camp to Dent Bridge), was recommended as an Environmentally Sensitive Area by IDFG, and included 1229 acres. Of the 1229 acres, the final areas chosen for classification as environmentally sensitive were the Cold Springs Environmentally Sensitive Area (14 acres) and the Dent Bridge Environmentally Sensitive Area (38 acres). Only one sensitive species, western toad (*Bufo boreas*) was detected by IDFG in the Cold Springs Environmentally Sensitive Area.

Wetland communities are considered worthy of protection by various agencies and organizations across the state. These communities were selected as a priority habitat by the Corps (Section 2.3.6.2). The IDFG website states that, "It is estimated that since the 1780's, 56% of Idaho's wetlands have been lost. Of the remaining wetlands, many have been degraded by hydrologic alteration and impacts to vegetation and soils" (http://fishandgame.idaho.gov/cms/tech/CDC/ecology/wetlands.cfm, accessed August 2009). Furthermore, the organization International Partners In Flight (IPIF) has designated non-riverine wetlands as a high priority habitat, and established an objective of obtaining a net increase in the number of wetland acres in Idaho (IPIF, 2000). The isolated non-riverine wetlands located near Cold Springs Group Camp were classified as environmentally sensitive due to their ecological significance.

Site Features and Development Potential. The site primarily supports wetland communities surrounded by moist conifer forests. There is potential for recreation in the area and the Environmentally Sensitive Area is located adjacent to the Cold Springs Group Camp. To accommodate low-density recreation, the shoreline boundary designation for low-density recreation was extended to ensure adequate space for future uses of the Cold Springs Group Camp. A trail along the shore may cross through the Environmentally Sensitive Area, providing access to the mini-camps. The trail was originally established by an equestrian group, with permission from the Corps. Impacts to the Environmental Sensitive Area must be analyzed prior to further equestrian usage.

5.6.21 Dent Acres, LCU 21

Land Classification. Recreation Lands

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9C.

Land Classification Rationale. Dent Acres is currently being used as a high-density recreation site. The footprint of the Recreation Lands was expanded beyond the actual footprint of existing facilities in order to allow for future expansion in some areas.

Site Features and Development Potential. Dent Acres has a boat ramp that is used nearly year-round (unless closed by snow), campsites for RVs, and a sun shelter. Although used quite extensively during the summer, many of the campsites are not large enough to accommodate modern RVs. Upgrades to water hydrants (frost-free) have been made to accommodate early and late season use (primarily hunters). Upgrades to power pedestals have been made so that each site has 20/30/50 amp power capabilities. There may be opportunities to enlarge some of these sites, or construct new facilities in previously undeveloped areas. Car based tent camping, additional hiking trails, mountain bike trails, a fueling station and many other amenities would be appropriate for this area.

5.6.22 Dent Acres Environmentally Sensitive Area, LCU 22

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9C.

Land Classification Rationale. The Dent Acres Environmentally Sensitive Area consists of 38 acres on a moderate to steep southwest-facing slope characterized by a mosaic of dry forest cover and openings. The primary habitat type is grand fir (*Abies grandis*)/ninebark (*Physocarpus opulifolious*), which has been identified as an historical ponderosa pine ecosystem, given the fire regime (Mehl and Haufler, 2003). This site, along with additional land to the west, was recommended as an Environmentally Sensitive Area by IDFG, and included 613 acres. Various sensitive species were documented in the broader area recommended by IDFG. However, the Corps decided that only a small isolated population of Jessica's aster (*Aster jessicae*) that occur on the east end of the recommended Environmentally Sensitive Area, warranted active protection, as described previously. Jessica's aster is an USFWS Species of Concern endemic to the Palouse Prairie region of eastern Washington and adjacent Idaho. Its range is small, and most populations occur on private land. Remnant populations tend to be small and fragmented, and many border agricultural fields and pastures where they are threatened by herbicide spraying and roadwork activities. The four populations found on Dworshak Reservoir represent the only populations of Jessica's aster known to occur on public land within the state of Idaho. Bowers and Nadeau (2002) note that, "Jessica's aster is probably the most vulnerable and globally rare species occurring in the Dworshak Study Area."

Because of the current status of Jessica's aster and the ponderosa pine ecosystem, this area was categorized as an Environmentally Sensitive Area. These issues represent significant ecological features.

Site Features and Development Potential. The site of this Environmentally Sensitive Area is steep, and has little potential for recreation-type development. Two roads transect the Environmentally Sensitive Area. One is paved, while the other is a service road only. Therefore, these roads have little potential to affect the Jessica's aster population. A short portion of an existing hiking trail goes through the area but is not a concern for impact to the sensitive species. Although the topography of the area would allow for future expansion from Dent Acres recreation area this area should be preserved as an Environmentally Sensitive Area.

The Dent Acres Environmentally Sensitive Area has potential for ponderosa pine ecosystem enhancement. However, further study and analysis will be necessary to determine how a restoration project may affect the sensitive species in this area. If weed control programs are implemented within this Environmentally Sensitive Area, it is important to consider their effect on native plants. Herbicide spraying is a potential threat to rare species, especially to Jessica's aster and bank monkeyflower (*Mimulus clivicola*), species that occur in small, localized populations.

5.6.23 Dent Acres Group Camp, LCU 23

Land Classification. Recreation Lands

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9C.

Land Classification Rationale. Dent Acres group camp area meets the criteria established for Recreation Lands. The footprint designated for Recreation Lands is slightly larger than the existing facilities to allow for future growth and expansion.

Site Features and Development Potential. Dent group camp has a large picnic shelter, vault toilets, parking, and designated tent pads. The site is presently available for reservations through the national reservation system and is managed as part of Dent Campground. The potential for future development and expansion of group camping and other recreational activities exist. Additional facilities could include, but are not limited to, multiple group camping areas, additional camp spots, upgraded restrooms, potable water, electrical upgrades, picnic shelters, tables, and improved access to the shoreline.

5.6.24 Ore Creek Environmentally Sensitive Area, LCU 24

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plates 9C and 9E

Land Classification Rationale. The Ore Creek Environmentally Sensitive Area includes 358 acres. The predominant habitat type present is western redcedar (*Thuja plicata*)/queencup beadlily (*Clintonia uniflora*), and the area is dominated by mature moist conifer forest. This site, along with much of the southern shore near Ore Creek, was recommended as an Environmentally Sensitive Area by IDFG, and included 1229 acres. Several sensitive mosses, lichens, liverworts and vascular plants associated with these moist conifer forests were detected (Bowers and Nadeau, 2002). The state-listed vascular plants included Constance's bittercress (*Cardamine constancei*), Henderson's sedge (*Carex hendersonii*) and phantom orchid (*Cephalanthera austiniae*). There is also one large isolated wetland found in this Environmentally Sensitive Area.

Although these forest stands have not been designated as old growth, they are mature forests having the potential to become old growth. Quigley and Arbelbide (1997) maintain that old-growth forest habitats have declined consistently across the Interior Columbia River Basin. Bowers and Nadeau (2002) identify mature and old growth forests as "special habitats," and state that "Idaho Department of Fish and

Game recommends managing for old-growth on Dworshak Project lands. The Corps' landscape-level management objectives should include protecting existing old-growth stands and increasing the coverage of mature and old-growth stands on Dworshak Project lands, as long as these stands remain underrepresented in the North Fork Clearwater drainage." Due to the importance of mature and old-growth forests in the Clearwater Region, the Corps also identifies these forests as "Priority Habitats" (Section 2.3.6.2). Therefore, because of the overall importance of these forest stands to the region and the sensitive species found in association with them, this area was deemed ecologically significant and classified as an Environmentally Sensitive Area.

Site Features and Development Potential. The site primarily consists of mature moist conifer forests and the species which they support. This area has the potential to support low-density recreation along the shoreline. An existing hiking trail goes through the Environmentally Sensitive Area, but does not pose significant effects to the concerned species. The slopes do not lend support for high-density recreation development at this site.

5.6.25 Elk Creek Environmentally Sensitive Area, LCU 25

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9D

Land Classification Rationale. The Elk Creek Environmentally Sensitive Area encompasses 743 acres of steep forested land within the Elk Creek arm. The dominant habitat types are grand fir (*Abies grandis*)/ninebark (*Physocarpus opulifolious*) and western redcedar (*Thuja plicata*)/queencup beadlily (*Clintonia uniflora*). A variety of sensitive plants associated with both dry and moist forests have been documented within this Environmentally Sensitive Area. However, the primary reason for its designation as environmentally sensitive is the aesthetic value of the area, which exhibits a riverine environment unique to Dworshak yet characteristic of many steep mountainous rivers found in the region.

Site Features and Development Potential. The steep slopes do not support recreation development in this area. This portion of the Elk Creek arm currently has limitations to motorized use on the lake. Outside of reservoir locations in close proximity to recreation facilities, it is the only area with a "no wake zone" (where motor boats may operate provided they do not produce a wake). This encourages more primitive use of the area by canoes and kayakers. This more primitive use should be promoted at this Environmentally Sensitive Area.

5.6.26 Magnus Bay South, LCU 26

Land Classification. Multiple Resource Management: Future Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9G.

Land Classification Rationale. The designation of the location of mini-camp 26.0 was to Future Recreation because of existing facilities, public demand, and access. The area is in close proximity to some very sensitive landscapes, but does not contain those same unique and sensitive features.

Site Features and Development Potential. Currently, the site has a few established camp sites and a good toilet. The existing authorized access is by boat only, but an existing old road has been used by some to access the area. This road is in very poor condition, but could be improved and designated for ATV or full-size vehicle usage. Further study will be necessary to determine the possibility of opening the trail for motorized access, as well as expanding current facilities at this location. Additional facilities could possibly include additional campsites, picnic shelters, tables, improved access to the shoreline, etc. This area will remain relatively primitive in nature even if motorized access is determined an appropriate use.

5.6.27 Magnus Bay Environmentally Sensitive Area, LCU 27

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9G.

Land Classification Rationale. The Magnus Bay area is probably the most desired area for use as both recreation and wildlife habitat. It was categorized into several land use classifications to protect the ecologically-significant resources and provide for quality public recreation. The Magnus Bay Environmentally Sensitive Area encompasses 616 acres, and was primarily created to protect the vast and intricate array of wetlands (and the associated wetland species) occurring within the area. The entire Magnus Bay site was recommended as an Environmentally Sensitive Area by IDFG, and included 1524 acres. A variety of sensitive species associated with wetlands and moist conifer forests were detected by IDFG within the area.

Wetland communities are considered worthy of protection by various agencies and organizations across the state, and these communities were selected as a priority habitat by the Corps (Section 2.3.6.2). On their website, IDFG states that, “It is estimated that since the 1780's, 56% of Idaho's wetlands have been lost. Of the remaining wetlands, many have been degraded by hydrologic alteration and impacts

to vegetation and soils" (http://fishandgame.idaho.gov/cms/tech/CDC/ecology/wetlands.cfm). Furthermore, IPIF has designated non-riverine wetlands as high priority habitat, and established an objective of obtaining a net increase in the number of wetland acres in Idaho (IPIF, 2000). The isolated non-riverine wetlands located at Magnus Bay were classified as environmentally sensitive due to their ecological significance.

Site Features and Development Potential. The site primarily supports wetland communities and the surrounding conifer forests. The size and location of the designated Environmentally Sensitive Area was selected to provide continuous habitat protection for important wildlife species associated with the wetlands which characterize the area. As a result the existing trail currently being traversed by unauthorized motor vehicle users will be closed. To accommodate potential future recreational desires, namely ATV travel between mini-camp 26 and north Magnus Bay, the low-density recreation buffer adjacent to the high water mark was increased from 100' to 250'. These delineations are designed to allowed protection of the wetlands occurring upslope while providing the potential for future motorized use in the area. The Corps also located the designated Environmentally Sensitive Area so that possible future high density recreation development could occur along the shoreline and northwestern end of the Bay. There are several ATV trails currently transecting the Environmentally Sensitive Area. These would have to be treated, either by obliteration or improved access restriction devices, to prohibit motorized access within the Environmentally Sensitive Area. New roads and/or trails will need to be built outside the Environmentally Sensitive Area to access any future recreation facilities.

5.6.28 Magnus Bay North, LCU 28

Land Classification. Multiple Resource Management, Future Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9G

Land Classification Rationale. Magnus Bay was originally identified in DM 10 as a good site for recreational development. The flat slopes of the area provide recreational opportunity; however, this area is also very significant ecologically. The area identified as Future Recreation still provides adequate space for high density recreation, but minimizes impacts to the most environmentally sensitive areas. The shoreline of the entire site was designated as Future Recreation is a tradeoff that provided environmental protection of the area behind the 250-foot shoreline buffer of Recreation. This area will be managed as Multiple Resource Management, Wildlife Management, until development of this area occurs.

Site Features and Development Potential. This northern section of Magnus Bay has no existing recreational facilities. The area has flat slopes and good access to the

reservoir at all water levels. Potential recreational development at Magnus Bay North could include, but is not limited to, camping, boat launch facilities, cabins, and resort development. It must be noted that any future development should address and incorporate the environmentally sensitive features of the site. The sensitive attributes of the site should be considered an opportunity to provide interpretive trails and other learning experiences, rather than a constraint. Evans Creek, across the reservoir, has also been designated as Future Recreation. It is unlikely that both areas will be intensively developed unless demand and visitation increase significantly.

5.6.29 Swamp Creek, LCU 29

Land Classification. Multiple Resource Management, Future Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9G.

Land Classification Rationale. The Corps, working groups, and the public have all identified Swamp Creek as a possible mid-reservoir access location for visitors coming from the northern side of the reservoir. Although potential for recreational development exists at the site, sufficient demand and adequate funding will be required before any development takes place. This area will be managed as Multiple Resource Management, Wildlife Management, until development of this area occurs.

Site Features and Development Potential. There are several mini-camps along the shore, which are the only existing recreational facilities at Swamp Creek. An unauthorized motorized trail has been used to access this site, but the trail is severely degraded and provides a perfect example of the environmental damage caused by motorized access trails that are not properly sited, prepared, and maintained. This trail will remain closed until it is designated as an authorized trail by the Corps, and trail site conditions are improved. Significant road improvements will be necessary for this area to be developed as a recreational area. Access to the site is across property owned by Idaho Department of Lands presently closed to large vehicles. Development potential of this site includes, but is not limited to, camping, boat launch facilities, boat storage facilities, fuel station, and concessionaire services.

5.6.30 Evans Creek, LCU 30

Land Classification. Multiple Resource Management: Future Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9G.

Land Classification Rationale. The Corps, working groups, and the public have all identified Evans Creek as a possible location for mid-reservoir access. The potential for recreational development at the site exists, but sufficient demand and adequate funding will be required before any development of the area takes place. This area will be managed as Multiple Resource Management, Wildlife Management, until development of this area occurs.

Site Features and Development Potential. Mini-camp 28.4 is the only existing recreational facility at Evans Creek. An unauthorized motorized trail has been used to access this site, but this trail will remain unauthorized and closed until it is designated as an authorized trail by the Corps. Significant road improvements would also be necessary for this area to be developed as a recreational area. Development potential for this site includes, but is not limited to, camping, boat launch facilities, a fuel station, concessionaire services, and resort development. Interim development of low density recreation facilities for ATV access is possible, and has been requested by some members of the public. The surrounding land is managed by Idaho Department of Lands as part of the John Lewis road closure. Seasonally, logging access roads on Idaho Department of Lands property are closed to full-size vehicles, making the Evans Creek area attractive as an ATV-accessible camp facility. Magnus Bay North, across the reservoir, has also been designated as Future Recreation. It is improbable that both areas in such close proximity would be intensively developed unless demand and visitation increase very significantly.

5.6.31 Elkberry Creek, LCU 31

Land Classification. Multiple Resource Management, Recreation-Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9I.

Land Classification Rationale. This site has been identified for potential expansion of the existing mini-camp. The potential for motorized access to the site also exists, and will be evaluated further before the road is authorized for motorized use.

Site Features and Development Potential. Elkberry Creek is home to mini-camp 36.2. This multi-site, mini-camp has been used by unauthorized motor vehicles in the past. The access road would need to be designated for motorized use, and would require minor improvements prior to further development. If developed for full-size vehicles, this site may help reduce camping pressure on the Grandad area. Potential development at this site includes, but is not limited to, expanded camping opportunities (less than 15 sites), shelters, permanent toilets, and vehicle parking areas.

5.6.32 Little Meadow Creek, LCU 32

Land Classification. Multiple Resource Management, Recreation-Low Density

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9I.

Land Classification Rationale. This site is the location of an existing pilot study for ATV access to a mini-camp. The site is used for low density recreation, and will continue to be used for that purpose pending evaluation and monitoring of the effects of ATV use.

Site Features and Development Potential. The Little Meadow Creek site was historically used as a log dump. The access road and camping area are surfaced with hardened gravel. The site currently has six fire rings, six picnic tables, and a permanent-style vault toilet. Potential site development could include, but is not limited to, additional campsites, full-size vehicle access and camping, and sun shelters.

5.6.33 Elk Mitigation Area, LCU 33

Land Classification. Mitigation Lands

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9J.

Land Classification Rationale. These lands were purchased as mitigation for elk winter range flooded following reservoir impoundment. They fulfill a legal obligation for the Corps to mitigate for habitat loss.

Site Features and Development Potential. These lands are managed for the primary purpose of elk habitat and specifically for creating elk browse. Any future development or management actions must support these purposes and not detract from that primary purpose. Allowable recreational developments will be primarily primitive in nature. Non- motorized trails and low-density camping may be approved in this area. However, further study on each specific development must take place to evaluate the individual and cumulative effects of recreational development within mitigation lands. Motorized recreation is not permitted within the Elk Mitigation Area.

5.6.34 Grandad, LCU 34

Land Classification. Recreation Lands

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9J.

Land Classification Rationale. This area was designated as recreation lands because of current use and site features, as well as its potential future use as a recreation site. Although the area is located within the elk mitigation boundaries, it was originally approved as a recreation site. The boundary of the recreation lands was modified from the original land classifications to portray the lands necessary for existing facilities with minimal expansion. This change reflects a large reduction in overall size of the recreation area.

Site Features and Development Potential. Facilities at Grandad include a boat ramp and parking area also used for camping. The potential for future development is limited by topography and usable space within the boundary designated for recreation. Additional development opportunities include, but are not limited to, more camping areas uphill from the existing developed area and other primitive walk-in campsites.

5.6.35 Homestead Creek Environmentally Sensitive Area, LCU 35

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9K.

Land Classification Rationale. The Homestead Creek Environmentally Sensitive Area includes 187 acres within the Homestead Creek drainage. This site was recommended as an Environmentally Sensitive Area by IDFG, and included 507 acres. The predominant habitat types are grand-fir (*Abies grandis*)/wild ginger (*Asarum canadense*) and western redcedar (*Thuja plicata*)/maidenhair fern (*Adiantum pedantum*). Several sensitive species detected by IDFG are primarily associated with these moist forests. The Homestead Creek area is comprised of perhaps some of the oldest forest stands on the reservoir. Protecting existing old-growth stands, and increasing the coverage of mature and old-growth stands, on Dworshak Project lands is a goal recommended by IDFG (Bowers and Nadeau, 2002). Further, the North Fork Clearwater River canyon contains a unique forest ecosystem, with various plant species characteristic of Pacific-maritime forests (Steele, 1971, Johnson and Steele, 1978). This, along with other north Idaho canyons, is thought to have served as refugia for cold-intolerant species during

Pleistocene climatic changes (Daubenmire, 1969). This unique ecosystem is found in localized areas of northern Idaho, including the lands adjacent to Dworshak Reservoir. The Homestead Creek drainage is characteristic of this phenomenon. Due to the overall importance of these forest stands to the region, this area was deemed ecologically significant and classified as an Environmentally Sensitive Area.

Site Features and Development Potential. The site primarily supports mature moist conifer forest stands and a unique coastal disjunct plant community. This Environmentally Sensitive Area should serve as an interpretive and educational site, promoting the history and awareness of coastal disjunct plant communities. There is potential for low-density recreation in the area and the Environmentally Sensitive Area is located to accommodate recreation along the shoreline boundary.

5.6.36 Boehls, LCU 36

Land Classification. Multiple Resource Management, Future Recreation

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9K.

Land Classification Rationale. This site was identified as an area that could be developed to provide additional recreational access at the upper portion of the reservoir. Because of size constraints at Grandad, the public has requested additional areas for recreation development be located on the upper reservoir.

Site Features and Development Potential. Mini-camp L3.6 is located at Boehls. An access road and a dock used by fire-fighting crews are also located there. The topography of the site limits the amount of development that can take place; however, opportunities for additional camping sites, full-size vehicle access, and a boat ramp exist.

5.6.37 Benton Butte Environmentally Sensitive Area, LCU 37

Land Classification. Environmentally Sensitive Area

Managing Agency. U.S. Army Corps of Engineers (Corps)

Location. See Plate 9L.

Land Classification Rationale. The Benton Butte Environmentally Sensitive Area encompasses 478 acres of mature moist conifer forests on steep north-facing slopes, although IDFG recommended an 1194-acre Environmentally Sensitive Area located further east. The only documented habitat type is western red cedar/wild ginger. Several sensitive species were detected by IDFG. The Benton Butte area

represents the largest block of mature forest remaining in the lower north fork drainage. During wildlife surveys of furbearers and carnivores at Dworshak, IDFG documented a pine marten (*Martes americana*) which was photographed by a remote camera (off Corps-managed land on Musselman Road). As a result, Bower and Nadeau (2002) contend that "Pine marten are scarce in the Dworshak Study Area as this was the only pine marten documented in the Dworshak area by IDFG over the last 10 years. Additionally, Asherin and Orme (1978) did not detect pine martens during 1976-77." However, in a cooperative study between the Corps and IDFG, numerous pine marten family groups were documented. These were seen, using remote camera bait stations, within the Benton Butte Environmentally Sensitive Area. The pine marten, preferring mature to old-growth forests, illustrates the importance of the Benton Butte Environmentally Sensitive Area in providing mature forest habitat to the lower North Fork. Protecting existing old-growth stands and increasing the coverage of mature and old-growth stands on Dworshak Project lands is a goal recommended by IDFG (Bowers and Nadeau, 2002). Due to the overall importance of these forest stands to the region, this area was deemed ecologically significant and classified as an Environmentally Sensitive Area.

Site Features and Development Potential. The site primarily supports mature and old-growth moist conifer forest stands. There is potential for low-density recreation in the area, and the Environmentally Sensitive Area is located to accommodate low-density recreation along the shoreline. Steep slopes limit the potential for high density recreation facilities and access.

5.6.38 Butte Creek Easement, LCU 38

Land Classification. Easement Lands

Managing Agency. U.S. Forest Service (USFS)

Location. See Plate 9M.

Land Classification Rationale. This is a legal flowage easement the Corps has on USFS lands.

Site Features and Development Potential. No development potential for this land classification exist other than what is designated by the USFS. The Corps does not have the authority to develop any type of feature on these lands.

6. RESOURCE PLAN RECOMMENDATIONS

6.1 INTRODUCTION

This Public Use Plan provides conceptual guidelines for the effective management of Dworshak Reservoir. These conceptual guidelines were developed in accordance with the Corps' master planning process. Preparation of this plan required 1) an appraisal of the natural and human-related resource conditions of the project and the surrounding region; and 2) an examination of environmental and administrative constraints and influences. Sound stewardship of public lands requires development and management of project resources for the public benefit that are consistent with resource capabilities.

To develop conceptual guidelines for future development and management, the Corps considered:

- Development and improvement needs at new and existing recreation areas;
- Needs for resource protection;
- Visitation trends; and
- Public requests for new development, as well as improvements to current development.

The guidelines also incorporate revisions to federal regulations, changes to socioeconomic conditions in the project area, and improvements made at Dworshak Reservoir since the Public Use Plan was first issued in 1970.

The recommendations seek to improve operation and maintenance for recreational facilities for increased efficiency. Many site features, such as steep slopes and fluctuating water levels, at Dworshak make the operation and maintenance of recreational facilities expensive and time consuming. Creating more efficient recreational opportunities will help to ensure the continued success of public access at Dworshak.

The conceptual guidelines presented in this Public Use Plan will authorize the Natural Resources staff to propose projects that address current problems and demands. Each proposed project will be evaluated for environmental compliance before it is implemented; and based on proper approval, public desires and available funding. The following table and figure explain the implementation process for proposed recommendations and projects

Table 6-1 Decision Matrix

Decision Matrix for Implementation of Facilities and Projects			
Decision Criteria	**Alternatives**		
	Alt. A	**Alt. B**	**Alt. C**
Consistent with current Resource Objectives			
Cohesive with current Land Use Classifications			
Avoidance of negative environmental impacts			
Avoidance of impacts to known cultural resource sites			
Address individual and cumulative impacts to important and sensitive habitats and species, social values, and cultural resources			
Addresses adjacent land owners and land management agencies needs, impacts, and concerns			
Ability to improve Corps recreation and resource management efficiencies			
Ability to fund and implement			
Ability to maintain for future use is demonstrated			
Support of general public and/or user groups			
A clear need for facility/amenity has been established			

This matrix will aid in the decision making process for implementation of new facilities. This matrix should also be used in decisions regarding closure and/or renovation of existing facilities. The matrix can be used to evaluate one single alternative or can be used to compare multiple alternatives with each other. Scores for each decision criteria should be supported with accompanying text stating specific opportunities, concerns, and limitations.

The purpose of the decision matrix is to help Corps staff make informed decisions that respond to and comply with the approved Resource Objectives, Land Use Classifications, and Federal laws. It will also ensure that proposed facilities address all other environmental, social, and regional impacts. The matrix provides for an open and transparent process in planning for future recreational amenities at Dworshak Reservoir.

6.2 CONCEPTUAL DEVELOPMENT GUIDELINES

The conceptual development guidelines are recommendations for management of Dworshak Reservoir that meet current public demand, address the possibility of future change, and minimize environmental impacts.

6.2.1 Motorized Access

There are numerous opportunities to increase visitation to Dworshak Reservoir by allowing motorized recreation in designated areas. The original design memorandum addressed motorized access as a way to access large developed campgrounds. Other forms of motorized recreation, such as the recreational use of motorcycles and ATVs, were not popular or did not exist when the original plan was written in the early 1970s. It is likely that new forms of motorized recreation may be developed in the next 20 years, and Dworshak management will need to evaluate the opportunities and impacts of those future developments.

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

The Corps understands the importance of adjacent private, agency, and organization lands and the impacts this Public Use Plan may have on those lands adjacent to Corps property. Adjacent land owners and management agencies will be consulted with early in the Corps planning and evaluation process on motorized access projects that may impact adjacent property owners.

Figure 6-1 Implementation Process

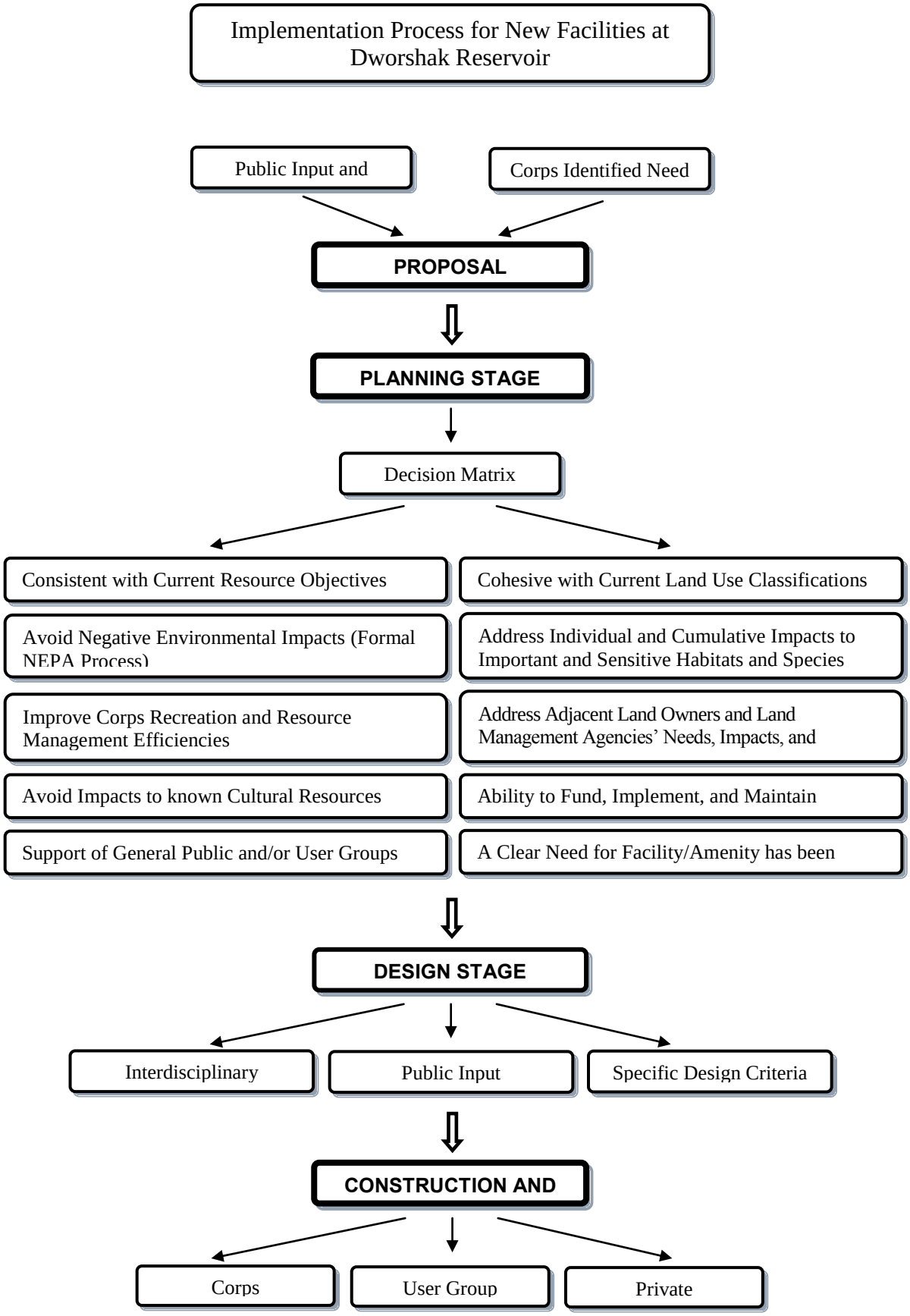


Table 6-2. General Trail Guidance

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

Table 6-3. General Motorized Trail Guidance

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

6.2.1.1 Motorized Vehicles - ATVs

It is recommended that potential ATV trails be evaluated and designated as authorized trail sites within Dworshak project boundaries, where appropriate. Each proposed trail will be individually evaluated under NEPA prior to approval and construction. Trails will be considered in locations where land use classifications permit, and they provide safe access to mini-camps or other recreation features around the reservoir. In addition, some desired trails may be part of a larger regional trail system. The designated trails will primarily follow old logging or homestead roads, although some shared roads may be considered. Potential ATV trails will only be permitted in areas classified as Recreation, Multiple Resource Management, Low Density Recreation; Multiple Resource Management, Wildlife Management; and Multiple Resource Management, Vegetation Management as updated in the land classifications presented in Section 5 of this report. Trails will not be allowed in areas classified as Environmentally Sensitive or Mitigation, unless on main public access roads already in use in those areas. Future ATV trails must

not have significant impacts to other known sensitive habitat areas or other areas of significant ecological importance. Future trail planning efforts and accompanying Corps environmental compliance procedures will evaluate the effects of each proposed ATV trail. General trail construction guidelines are included in the following paragraphs. Specific trail criteria may be prescribed by the Corps for each trail, depending on location.

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

The Corps will continue to coordinate future trail planning with adjacent land owners, including Potlatch Corporation, Idaho Department of Lands, USFS, and other land owners in the area. Where creation of an ATV trail on Dworshak property is accessible only by traveling through the properties of other landowners, the Corps may coordinate with the applicable land owner to resolve concerns and seek support for ATV users to access the Corps' ATV trail. The Corps will not pursue or hold easements on other properties for access to Corps land for recreational ATV use. The Corps expects all ATV users to comply with the regulations and recreation policies of adjacent landowners, including required fees, when crossing their land to access Corps land.

Trails will be designed, constructed, and maintained by the Corps in cooperation with a user group. The sponsor, a user group, or other entity, willing to sponsor a trail must comply with Corps design guidelines for ATV trails (Table 6-3). They must be willing to sign an agreement to assist with trail maintenance and monitoring on a yearly basis. The sponsor will be expected to seek partnerships with adjacent land owners to create trailheads on adjacent properties when the trail begins off Corps property. The sponsor will also be encouraged to adopt trails on adjacent lands that connect to the trails on Corps property.

All ATV trails will be opened on a seasonal basis, as determined by Corps staff. The trails will be monitored and evaluated annually, and may be closed at any time based on trail conditions, use, or other environmental requirements. Possible reasons for closure could include, but are not limited to, environmental degradation, the presence of threatened or endangered species, failure of the user group to properly maintain trails, and abuse of the ATV trail and areas adjacent to the trails by

ATV riders. Use of ATV's on Corps land is regulated by ER 1130-2-550, Chapter 10; EP 1130-2-550, Chapter 10 and Appendix S; and Executive Order 11644. These regulations address appropriate uses of ATVs, as well as required monitoring on designated trails.

Table 6-4. Trail Specifications for ATVs

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

Trails will primarily be self-policed by the sponsor user group that adopts the trail. The Corps ranger staff and local law enforcement will also monitor the area for compliance with ATV regulations. Written warnings and/or citations may be given to those breaking regulations.

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

6.2.1.2 Motorized Vehicles - Dirt Bikes

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

6.2.1.3 Full-Size Vehicles

Full-size vehicles are currently permitted only on designated roads within Corps project boundaries. Future access points for full-size vehicles will be evaluated on a case by case basis. The design guidelines and environmental conditions will be evaluated in a similar manner to that of an ATV trail (Table 6-4), with the understanding that impacts from a full-size vehicle will be more significant than an ATV due to size and weight.

Areas identified by Corps staff and the public to be appropriate areas for full-size vehicle access include Little Meadow Creek ATV Camp, Camp 26.0 at Magnus Bay, Evans Creek, Elkberry Creek, and Boehls. Additional study will be necessary before any of these areas could become a designated route for full-size vehicles. Other areas may also be appropriate for designation, but have not been identified at this time. Section 1.8.1 describes the process that must be completed before a recommendation can be developed and designated.

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

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

6.2.1.4 Effects of Motorized Access

The effects of allowing motorized recreation include possible effects to soils, vegetation, wildlife, wildlife habitat, water quality, and air quality. There are also public safety risks associated with allowing motorized access on Corps lands.

- Effects on soils
  - Soil compaction
  - Diminished water infiltration
  - Accelerated erosion rates

- Effects on vegetation
  - Destruction of vegetation cover and reduced growth rates
  - Introduction of non-native species
  - Dissemination of noxious weeds/seeds
  - Soil erosion and impacts to seed beds
  - Increased potential of fire starts

- Effects on wildlife, habitat, and threatened and endangered species
  - Movement barriers
  - Disconnected and fragmented habitat
  - Altered animal behavior due to noise
  - Altered breeding habits
  - Distribution of food or seed sources

- Effects on water quality
  - Increased runoff volume and velocity
  - Increased sedimentation and turbidity
  - Contaminants

- Effects on air quality
  - Fugitive dust
  - Emissions
  - Potential for fire starts

Fish and Wildlife is one of 5 authorized project purposes for Dworshak Dam and Reservoir (Section 1.3). The Corps must understand and evaluate the impacts of changing recreational plans on fish and wildlife. A general understanding of the effects of motorized access on wildlife is presented here. A detailed evaluation of the potential impacts to wildlife from each and every proposed project slated to increase motorized access will be addressed separately in individual project NEPA documents.

In general, the effects of motorized vehicles and roads on wildlife are well documented. Roads contribute to habitat fragmentation, decreased habitat effectiveness, interrupted migration and travel patterns, increased human-wildlife encounters, and increased direct mortality (Havlick, 2002). Impacts from roads designed for full size vehicles are different from impacts of ATV trails. Roads contribute to habitat fragmentation, whereas ATV trails decrease habitat effectiveness, and greatly increase opportunities for direct collision and negative human-animal encounters (Havlick, 2002). Summaries of the effects of roads on wildlife habitats, and biological systems in general, have been compiled by Forman and Alexander (1998), Trombulak and Frissell (2000), Gucinski et al. (2001), Forman et al. (2003) and gains et al. (2003).

Elk is a focal species for Dworshak Reservoir and the surrounding Clearwater Basin, and the Corps is legally obligated to provide mitigation for loss of elk habitat caused by construction of Dworshak dam. The effects of roads on both habitat and population responses of elk are also well documented. The primary effect is likely habitat fragmentation. A rough estimate of elk habitat lost from road construction is 5 acres of lost habitat per lineal mile of road constructed (Forman et al., 2003). Rowland et al. 2005, summarize the direct impacts of roads and associated traffic on elk as “Elk avoid areas near open roads”, Elk vulnerability to mortality from hunter harvest, both legal and illegal, increases as open road density increases” and “In areas of higher road density, elk exhibit higher levels of stress and increased movement rates”. Road densities appear to have a profound impact to elk behavior and energetic expenditures. However when modeling elk utilization, they found that elk locations were more associated with distance from open roads rather than the density of open roads. Both road densities and habitat effectiveness models are currently being used as targets in forest planning. In certain management areas within the Wallowa-Whitman National Forest, open road densities are targeted not to exceed 2.5 miles per square mile in general and 1.5 miles per square mile in selected summer and winter ranges (U.S. Department of Agriculture, Forest Service. 1990b). The effect of roads on wildlife will be considered in decision making as increased motorized access is proposed.

Additional information is available on the effects of off-road recreation on elk. Wisdom et al. 2004, presented findings on a in-depth study at the Starkey Project analyzing and comparing the impacts of four different types of off-road recreation on elk; ATV use, hiking, biking, and horseback. “Movement rates and probabilities of flight response were substantially higher during all four off-road activities, compared to the control periods of no human activity. Consequently, off-road recreational activities like those evaluated in our study appear to have a substantial effect on elk behavior.” These additional energetic costs are likely to have a measured effect of elk survivability. Elk reactions were more pronounced during ATV use and mountain bike riding. As of 2003, there were approximately 36 million registered all-terrain vehicles (ATVs) nationwide (Brininstool, 2006).All land managers, including the Corps, must understand and evaluate the effects of recreational use on wildlife when developing recreational use plans.

Designated motorized trails also have the potential to have positive effects at Dworshak. As stated earlier in the reports there are multiple locations around the reservoir that are being used as unauthorized motorized access. In many areas environmental degradation is occurring because trails are not being maintained and users are not staying on the trail. Designating trails may help in decreasing the spread of unauthorized trails that are causing detrimental effects to sensitive habitats and species.

Each proposed motorized trail will be evaluated to determine the effects of motorized use on all the above identified resources as well as other resources as determined during NEPA compliance. All possible effort should be taken to reduce the aforementioned effects when considering motorized trails.

6.2.2 Water-Based Recreation

6.2.2.1 Boating

Boating on Dworshak reservoir provides a unique recreation niche for the area. While many of the other lakes in the region feature developed shorelines or more developed settings, Dworshak provides a more remote, forested setting and experience. This remote experience has been cited by visitors as one of the reasons that they enjoy visiting Dworshak, and Dworshak attracts visitors from across the region. Boaters have been recorded in visitation logs as having travelled from hundreds of miles away to enjoy the quiet and uncrowded conditions at Dworshak.

Boating is also the primary method of transportation on/around the reservoir for visitors, Corps maintenance workers, rangers, and natural resource personnel. Currently the majority of boat use occurs on the lower one-third of the reservoir. There is, however, strong demand for a fuel station located mid-reservoir or above that would allow for more extensive use of the upper reservoir. The entire stretch of the reservoir is accessible to boats, with the exception of the boat restricted zone in front of the dam. Boats may pull up to, and use, any shore along the reservoir, but certain areas may be restricted from public use by Corps personnel. No wake zones exist around posted recreation and marina areas, as well as the upper reaches of Elk Creek (beginning at River Mile E 4.0). Additional rules and regulations regarding boating on Corps lands are found in Title 36 Code of Federal Regulations, Part 327.

6.2.2.2 Fishing

Fishing will continue to be managed by Idaho Department of Fish and Game. The Dworshak Nutrient Supplement Pilot Program will continue to be monitored and evaluated for its effects and successes. The Corps will continue to work with IDFG on ways to improve the fishery and fishing access at Dworshak Reservoir.

6.2.2.3 Floating Facilities and Docks

Floating facilities are a challenge to maintain due to the extreme fluctuations of water levels on the reservoir. Temporary moorage docks at developed campsites are very popular, but the water level fluctuations make maintenance difficult and time consuming. Marinas are more complicated to maintain and operate because of their size and the need to provide access to and from the shore. Several methods of counterweight anchors and self-adjusting boat ramp docks have been developed locally. Depending on public demand, funding, and engineering solutions, temporary moorage will continue to be evaluated because of high public demand for this amenity.

Floating facilities (i.e., destination and safe harbor docks) are extremely popular with recreationists. These facilities may be used for overnight moorage, but camping on the dock is not allowed and occupancy may not exceed 48 out of 72 hours. Further rules and guidance are found posted at each dock. Additional facilities should be developed as demand warrants and funding is available. Floating campsites, or other similar public use docks, may be another method of mitigating the loss of access to shoreline camps. Floating toilets are an important amenity to boaters on the reservoir, although they present a degree of possible risk to public safety. The current floating toilets are adequate, but will eventually need to be updated and replaced.

Other floating facilities, such as mobile floating gas docks and floating marina repair service shops, should also be evaluated for their possible benefits and risk. Such amenities will be addressed as demand for them exists.

6.2.2.4 Marinas

The existing marina at Big Eddy does not have enough existing boat slips to accommodate demand. The potential for development of additional boat slips and other marina based amenities has been, and will continue to be evaluated and pursued, but available funding of the lessee or a future concessionaire may limit the expansion of the current marina. (Because the Big Eddy Marina is a non-standard leased area the Corps may provide specified operations and maintenance funding into the facility. A standard lease requires that all operation, maintenance and upgrades are the responsibility of the lessee. It is Corps policy that we do not expend funds in leased areas). The potential to create universal access to Big Eddy Marina is an important concern for the public and the Corps, and will also continue to be evaluated. A houseboat concessionaire providing rental service and a marina would create additional recreational opportunities for the public and increase visitation at Dworshak. Potential sites for this type of operation were identified in the Large Boat Marina Site Analysis report (Corps, 2004).

Because of difficulty in the construction and maintenance of boat harboring and storage on the reservoir, other types of boat storage services should be investigated

as viable alternatives to marinas. One possible option would be a concierge service that stored boats off-site and launched them in preparation for the customer's arrival. This option could present economic opportunities for an entrepreneur or concessionaire.

A fueling station on the mid- to upper reservoir would also provide many benefits to the public, and will be evaluated and considered as funding is available. Additional fuel stations at other developed recreation areas, or future marina developments, will be evaluated on a case by case basis.

6.2.2.5 Ramps

Boat launching ramps provide vital public access to the reservoir at all water levels. The fluctuating water levels prevent some launching areas from use when water levels are very low. Ramps will continue to be extended as sufficient public demand exists and funding is available. Low water parking will also be evaluated and developed where practical and when funding exists. Longer ramps and additional parking will make areas much more usable and help to increase visitation during the major recreation season.

With sufficient demand and funding, additional boat launch sites could be evaluated and implemented at lands classified as Operations; Recreation; Multiple Resource Management, Low Density Recreation; and Multiple Resource Management, Inactive; and/or Future Recreation Areas. Due to their popularity, Canyon Creek and Grandad should be priority sites for boat ramp extension and possible parking expansion. Evans Creek has been identified by the working groups and Corps staff as a possible location for a mid-reservoir boat launch site. Other possible locations for future boat ramps would be at Swamp Creek, Boehls, Elk Creek Meadows, and Magnus Bay. Before a proposed boat ramp could be constructed or extended it must meet all current NEPA requirements at the time of implementation.

6.2.3 Land and Shore-Based Recreation

6.2.3.1 Fishing

Fishing is allowed in all areas of the reservoir, except from boat launch docks or marina docks. The public has expressed a desire for more shore-based fishing opportunities; however, steep and unstable shorelines limit options. New shore-based fishing opportunities (e.g., fishing platforms) could be constructed to meet this need in the future, but the challenge of fluctuating pool levels could potentially make design and construction of such facilities very expensive. The Corps will continue to evaluate options and locations for future shore-based fishing opportunities. Each will be evaluated on a case by case basis.

6.2.3.2 Camping

Camping is a very important recreational activity at Dworshak Reservoir. A large portion of the comments the Corps received from the pubic concerning recreation at Dworshak revolved around camping. Developed and primitive camp sites provide unique experience demanded by the public. Current demands, uses, and funding constraints require the Corps to evaluate the current management of existing campsites at Dworshak. Future management may include expansion of some and closure of other campsites, depending on demand. The goal is to create more efficient camping opportunities that will help the Corps manage and maintain its resources while also providing a variety of camping opportunities for the public. Additional rules and regulations regarding camping on Corps lands are found in [36 C.F.R. Part 327].

- **Existing Developed Campsite Areas**

  Developed campground facilities will be maintained in existing condition until sufficient public demand and visitation numbers require upgrades. Facility upgrades will be dependent upon funding availability. A reduction in demand could lead to reduced services and/or closure of facilities. Dent Acres, which is normally full during the summer season, is constrained by campsites that are undersized to some modern RVs. The existing area could remain as presently configured for cars and smaller campers, while a newly developed area could satisfy the needs of larger equipment. Expansion of Dent Acres Group Camp should also be evaluated. Additional camp sites, restrooms, shelters, and other amenities will allow the area to be used by large groups.

  There is strong public desire for an increase in the number of campsites at Grandad campground, as well as within the lands in the area classified as mitigation lands. Possible expansion of camping at Grandad has been evaluated, and locations have been identified that could provide additional camping opportunities. Primitive camping can be allowed within the mitigation lands, and sites along the road (at turnout locations) could be considered. Other areas outside of the mitigation area should be evaluated to determine if additional camping locations could reduce the current demand and pressures on the Grandad campground.

  Other campgrounds, such as Canyon Creek and Dworshak State Park, need to be evaluated to see if the current layout and design is sufficient for existing public use. In some cases, design improvements could lead to more efficient land use as well as a more pleasant

camping experience. Future demands on all existing developed camping areas still must be evaluated, and adaptive management measures should attempt to meet those demands.

- **Future Campground Development**

  Elk Creek Meadows, Magnus Bay, Swamp Creek, Bruce's Eddy, Evans Creek, and Boehls have been identified as areas of potential e development of recreation facilities in the future. In order for development to take place, these sites would be evaluated to determine if additional camping opportunities are necessary and if public demand supports the expansion of these sites. These sites are not guaranteed to be developed. They are given the classification of Multiple Resource Management, Future Recreation Areas because they have the potential to be developed as public demand requires and funding is available. Any future proposed designs will be evaluated under the Corps environmental compliance process, and must meet all current NEPA requirements before development could begin.

- **Mini Camps and Primitive Camp Sites**

  - The mini-camps around the reservoir were designed for boat access. The current drawdowns make many of these camp sites difficult to access. The fluctuating water levels have contributed to maintenance inefficiencies, which makes maintenance costs very high. The-mini camps around the reservoir have been evaluated based on use, low and high water accessibility, and current facility condition. This evaluation was used to determine how to best manage the camps with limited resource and manpower. Mini-camps will be maintained as currently configured until the Dworshak staff determines a more efficient process to manage the mini-camps.

  - **Future options for consideration:**

    In some instances, mini-camps will be closed because of poor access and low visitation. In other areas, new mini-camps more easily accessible from the lake and/or from ATV access trails may be developed. In areas identified as possible ATV access areas, new mini-camp sites may be developed as the visitation rates to these areas increase and public demand warrants such development (see Section 6.2.1.1). Some mini-camps may become ATV accessible. However, not all mini-camps that could provide ATV access will be designated for ATV use. Some will

remain as accessible by boat only to preserve the unique experience of boat access only camp sites. Mini camps will be identified on a map and multiple method access camp sites will be identified separately from boat access only camp sites.

The removal and disposal of human waste is the largest operation and maintenance cost at these remote mini-camp sites. Options will be considered that require users to pack out human waste. Camping at these sites would require the user to bring a commercial portable toilet and dispose of the waste properly after their visit. Portable camping toilets are available commercially, and range in price from $25.00 to $300.00. These sites would be identified on maps and designated with signage, and old toilet facilities would be removed. If this policy is implemented, park rangers will work with the public to educate them about this policy and provide enforcements. Further discussion and coordination with the public will take place prior to implementation of this policy.

The Corps is considering appropriate locations for walk-in campsites. Walk-in campsites provide an additional recreational opportunity for the public who would like a primitive camping experience, but do not have access to a boat or ATV. When considering locations for walk-in campsites, planners would consider: 1) areas that are easily accessible from existing recreation and public access areas, and that do not require a long hike (such as Dent Acres, where people could park); and 2) mini-camps or other campsites that can be accessed from larger hiking trail systems. Walk-in campsites should be evaluated and implemented adjacent to other developed recreation areas and public access points.

Primitive campsites accessible by full-size vehicle are another option to be considered for camping. Car-based camping is another recreational activity that matches the desire of the public without access to a boat or ATV. These primitive campgrounds will have less than 15 campsites, and will not be developed to the same level as the more developed and intensively-used campgrounds. Specific areas identified for potential car-based camping include Merry's Bay, Big Eddy, Dent Acres, Magnus Bay, Boehls, Elkberry Creek, and Evans Creek. Each of these areas must be evaluated further and must meet current Corps regulations and comply with the environmental compliance process outlined in Section 1.8.1.

- **Camping on Exposed Banks**

  Camping on exposed banks at low water levels may be permitted in areas designated by the Corps. These areas would be located below the high water mark. Locations would vary depending upon water levels and site conditions, and may change from year to year. The steep topography of the reservoir may limit the amount of area available for this type of activity. Camping in these zones would require that campers dispose of human waste in personal portable toilets. No digging, leveling or other land manipulation would be allowed. Fires may be permitted, but will require use of a fire ring located at least 50 feet from the shoreline and any debris wood piles located along the shore. All fires on Corps lands are subject to restrictions, and campfires may be prohibited during periods of extreme fire hazard, as determined by the local Fire Warden or as directed by the Corps. Driftwood found on the shoreline could be used for campfires fires.

  Corps staff could warn or cite those found camping at low water areas without the required equipment (personal portable toilets, fire rings, etc.). Before the area below the high water mark may be designated for camping, the Corps will engage in the environmental compliance process, as well as carefully evaluated for potential impacts to cultural resources. Areas cleared for camping on exposed banks would be designated on recreation maps and bulletin boards.

6.2.3.3 Swimming

The demand for swimming areas at the lake is very high. Swimming is allowed all around the lake, but is prohibited at boat ramps and the marina. There are two designated swim areas at Big Eddy and Freeman Creek. Swimming is encouraged at the destination docks the Corps has located at various locations in the reservoir, accessible only by boat. The swim area at Big Eddy does not meet current design criteria, and imposes some serious safety risks caused by steep cliffs and low rock outcrops in the swim area. The Big Eddy swim beach is operable for only 2 months when the reservoir is full. Other locations have been evaluated to determine if there is a more appropriate area for a swim beach. Due to the extreme topography along the banks of the reservoir and the fluctuating water levels, providing a designated swim beach at Dworshak Reservoir is not likely. Swimming opportunities other than a swim beach will continue to be explored. Any future designated swim areas or other swimming opportunities must meet current Corps regulations and comply with NEPA.

6.2.3.4 Hiking

Current hiking trails will be maintained as presently configured. New hiking trails will be constructed based on sufficient public demand. The potential to create a system of trails connecting existing trails and creating a loop around portions of the reservoir would increase participation in hiking. The larger system of hiking trails could connect to mini-camps and other recreation locations to allow hikers a place to camp. Hiking trails are an acceptable recreation feature on all lands except those lands specifically restricted to public access. Newly proposed trails will be evaluated under the Corps; environmental compliance process, and must meet all current NEPA requirements at the time of implementation.

The working groups identified the area between Canyon Creek and Cold Springs as a possible area to create a trail that would connect two existing trails. As discussed in Section 6.2.3.2, a trail at Dent extending from the developed campground to primitive campsites, would be a great opportunity for primitive camping for those without a boat. Interpretive trails at Elk Creek Meadows, Grandad Mitigation Area, and Magnus Bay should also be explored. During the public scoping process members of the public expressed interest in the development of interpretive trails. As funding and manpower is available, efforts should be made to create interpretive features on existing or new trails. These trails would provide many opportunities to educate the public regarding the uniqueness of the reservoir, vegetation, wildlife, and other natural features.

6.2.3.5 Biking

Bicycling is allowed on all trails at Dworshak. An increase in the number of trails may facilitate increased bicycling at Dworshak, thus providing additional land-based recreation opportunities and diversity, as well as increased visitation. The Corps will encourage partnerships with user groups, as suggested with ATVs, for development and maintenance of additional trails. Trails for bicycling are allowable on all lands except those restricted to public access. Proposed trails will be evaluated for environmental impacts and compliance prior to construction.

6.2.3.6 Equestrian Use

Trails will remain open to equestrian use. Opportunities exist for increased trail riding, and local horse groups have expressed an interest in using facilities at Dworshak and increasing opportunities for group rides. In order to accommodate more regular equestrian use, some facilities (i.e., corrals and water tanks) would need to be constructed. As with other uses, the Corps will look for opportunities to partner with user group sponsors for development and maintenance of these facilities. Equestrian trails may be located on all lands except those restricted to

public access. Local groups have expressed a desire to utilize the Little Bay area for such a trail system in the future. Other trail locations may be identified and constructed as demand warrants. Any proposed future trails will be evaluated for environmental impacts and compliance prior to construction.

6.2.3.7 Trail Etiquette

Existing trails at Dworshak are currently shared by those on horseback, foot, or bicycle. Trails at Dworshak will remain open for shared uses as long as shared users do not have serious conflict. In the event of ongoing user conflicts, Dworshak Natural Resources personnel may be forced to assign users to specific areas to reduce conflicts. Commonly accepted trail etiquette maintains that bicyclists always yield to hikers and those on horses. Hikers also always yield to horses. The rationale behind this is that bicyclists and hikers may respond more quickly and rationally to movement or surprises than a horse or person on horseback.

6.2.4 Private Outfitters

Private outfitters and guides are allowed to use Dworshak lands and waters, but are prohibited from engaging in or soliciting business on Corps property without the District Commander's written permission. Outfitters and guides are subject to the same [C.F.R.] Part 327 rules and regulations as the general public.

6.2.5 Visitation

Design recommendations for future development should accommodate projected visitation. Visitation is influenced by factors such as the density and distribution of populations, convenient travel distances, recreational habits and desires, ease of access to the area, attractiveness of recreational opportunities compared to other sites, and the available income and leisure time of the target population.

6.2.6 Future Demands

The recommendations in this report reflect current inventory data, recreation trends, and forecasts. As technology and public demand changes and new recreational opportunities arise, Corps staff will investigate the feasibility of new activities and evaluate proposed changes and additions to this plan for potential conflicts, opportunities, and environmental impacts.

6.2.7 Coordination

Many additions and alterations to Dworshak recreation area facilities have been completed in the years since the project's initial construction. Some of these facility improvements have been initiated and implemented by Dworshak Natural Resources personnel as part of the operations and maintenance program. Resource Managers should continue to involve the public and call upon an interdisciplinary team of landscape architects, biologists, architects, recreation specialists, civil engineers, and other design professionals available within the Corps to make an onsite review of conditions, discuss alternatives, review plans, and make recommendations that relate to major improvements in operations and maintenance.

6.3 DESIGN CRITERIA

Design principles and criteria particularly appropriate to Dworshak are discussed throughout this section. The following design principles and criteria are extracted from EM 1110-1-400, *Recreation Planning and Design Criteria*. The EM states:

> "All project features are designed so that the visual and human-cultural values associated with the project will be protected, preserved, or maintained to the maximum extent possible. Specific ecological considerations include actions to preserve critical habitats of fish and wildlife; accomplish sedimentation and erosion control; maintain water quality; regulate stream flow, runoff, and groundwater supplies; and avoidance or mitigation of actions whose effect would be to reduce scarce biota, ecosystems, or basic resources. In the development of individual project features, consideration is given to the needs for architectural design, land treatment, or other resource conservation measures. Emphasis is given to developing measures for realizing the full scenic potential of the project feature as it affects the overall project. This is accomplished by providing for cover reforestation, erosion control, landscape planting, management of vegetation, healing of construction scars, prevention of despoilment, and other related activities for all project lands."

6.3.1 Policies and Procedures Publications

General policies and procedures for the planning, design, operation, and maintenance of recreation facilities at Corps' civil works projects are given in the EMs, ERs, and EPs listed below. These publications guide the development of recreational facilities to assure they are of the highest quality and serve the health, safety, and enjoyment of the visiting public.

- EM 1110-1-400, *Engineering and Design Recreation Facility and Customer Services Standards* 1 November 2004.

- EM 385-1-1, *Safety and Health Requirements Manual*, 15 September 2008.
- EM 1110-2-410, *Design of Recreation Areas and Facilities - Access and Circulation*, 31 December 1982.
- EP 310-1-6, *Graphic Standards Manual*, 1 September 1994.
- EP 310-1-6a and b, *Sign Standard Manual*, 1 June 2006.
- ER 1110-2-400, *Design of Recreation Sites, Areas and Facilities*, 31 May 1988.
- ER 1130-2-401, *Visitor Center Program*, 15 February 1991.
- ER 1130-22-400, *Management of Natural Resources and Outdoor Recreation at Civil Works Water Resource Projects*, Chapter 1, 1 June 1986.
- ER 1165-2-400, *Recreation Planning, Development, and Management Policies*, 9 August 1985.

6.3.2 Design Approach

6.3.2.1 Interdisciplinary Approach

The design of all facilities will be a fully coordinated team effort among planning, design, construction, operation, and non-federal elements. This interaction will begin with initial planning concepts, and continue throughout the construction and operational phases of the project. Items such as roads, trails, parking areas, launching ramps, campsites, beach developments, and similar facilities should be field-staked, evaluated, and field-adjusted by the design team during the developmental phase. The design team will periodically visit the sites or areas during construction to determine whether field conditions are as anticipated, as well as consult with construction personnel in interpreting the plans and specifications. These site visits will also be used to observe and correct any problems not apparent or fully evaluated in the design. The team approach should be used for all aspects of federal projects, as well as for the review and approval of plans scheduled for development by non-federal entities. The evaluation process is not finished when construction is completed, however. The team should observe facilities during project operations to correct inconsistencies between the design and usage, thus gaining experience for future designs.

6.3.2.2 Future Development in Existing Areas

In cases where the modification or renovation of existing facilities is required, special design attention must be given to the following:

- Improving health, safety, and security features for the visitor.
- Resource carrying capacity.
- Reducing operation and maintenance costs.
- Attracting potential non-federal sponsors.

In existing areas, capital costs already invested should not be considered as the primary governing factor for determining the types of usage that may be contemplated for an area in the future. Changes may be made when necessary and justified.

6.3.2.3 Barrier-Free Facility Design

All facility designs will provide universal access for visitors where required by federal law or regulation. The standards are to be applied during the design, construction, and alteration of buildings and facilities.

6.3.2.4 Environmental Protection and Enhancement

Designs should minimize the impact of development on the natural and aesthetic qualities of the site. This will help to avoid delays in obtaining certain permits prior to the construction phase. The design team should closely monitor construction and operational activities to ensure compliance with prescribed environmental protection requirements.

6.3.2.5 Carrying Capacity

A quality recreation area is dependent on design and construction that is fully compatible with the physical attributes, resources, and social carrying capacity of the site. Site design shall not exceed the carrying capacity of the resource.

6.3.2.6 Access and Circulation

Access and circulation roads into the recreation areas play a major role in influencing the total recreation experience. The design and location of roads, parking areas, boat ramps, walks, stairways, and trails must be accomplished in accordance with the philosophy envisioned for public use and participation in recreation activities. Criteria, data, and basic design considerations for access and circulation in recreation areas is the subject of EM 1110-2-410, *Design of Recreation Areas and Facilities - Access and Circulation,* and must be used in conjunction with this manual.

6.3.3 Health, Safety, and Security

The health, safety, and security of the visiting public at recreational areas must be designed into facilities from the beginning of the planning stages; and should be continued throughout the design, construction, and operation stages. The ERs and EMs in the 385 series establish safety program requirements for all Corps activities, and pertinent provisions of these publications will be applied. All facilities and equipment will comply with applicable Occupational Safety and Health Administration standards, National Fire Protection Association standards, and

Consumer Product Safety Commission standards and guides. All Corps standards established in EM 1110-1-400, *Recreation Planning and Design Criteria*, will also apply to facility design in outgranted areas.

6.3.4 Structures

The basic objective in the planning, design, construction, and maintenance of comfort stations, shelters, and other buildings in recreational areas is to provide adequate facilities for the use and support of the visiting public. The structures should be identifiable, convenient, and economical to construct and maintain. The structures should be attractive, but should not distract from the natural character of the area.

6.3.5 Utilities

Utilities must be provided, as necessary, to support recreation facilities and the needs of the public. Appropriate alignment and location is very important for aesthetics, costs, and proper management. Accurate visitation data are extremely important in the design of all utility systems. The design for new projects should be based on anticipated or projected visitation, while area renovation should be based on actual historical visitation figures. In the design of utility systems, emphasis will be placed on the cost of installing, operating, and maintaining the systems. These systems must meet all federal, state, and local criteria and standards for health and safety. Generally, all utility lines should be placed underground, unless cost or other special conditions make such installation prohibitive.

6.3.6 Landscaping

Areas selected for recreation development may possess outstanding natural features (*i.e.,* earth, rock, water, or plant materials). It is essential for the design team to ensure these attractions are used to optimum advantage during site development. The physical properties of the site should be inventoried, and features most conducive to the proposed development determined. The design should utilize these features to the maximum extent possible. Whenever possible, existing plant materials should be incorporated into the proposed design. In some cases, the thinning of existing vegetation may be desirable. It is desirable to have 0- to 50-percent shade. Very dense shade is undesirable for recreation sites. If additional plants are required, they should be native species indigenous to the site or ornamental species that are growth zone compatible. These species should be low maintenance varieties, and hardy for the area. Water courses or natural springs should be staked or fenced to prevent damage from construction activities.

6.3.7 Support Items

The quality of camping, picnicking, or other recreational experiences is often contingent on the quality, type, and design of available support facilities. The

challenge for the designer and manager is to provide aesthetically harmonious, functional facilities that are durable, resistant to vandals, and economical to install and maintain. Specific design criteria for campsites, picnic areas, launch ramps, swimming areas, fishing areas, and hunting areas are found in EM 1110-1-400, *Recreation Planning and Design Criteria.*

7. ENVIRONMENTAL OPERATING PRINCIPLES

In 2003, the Corps adopted seven environmental operating principles (EOPs). The purpose of the operating principles is to guide "the ways in which the U.S. Army Corps of Engineers missions must be integrated with natural resource laws, values, and sound environmental practices" (Corps, 2003). The Corps is integrating the EOPs into all business activities.

The following paragraphs explain how the Dworshak Dam and Reservoir Public Use Plan fulfills each EOP.

- **EOP 1. Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.**

  Collaborative efforts with federal and state agencies, and state and local governments, are implemented wherever possible for development, management, and monitoring of resources at Corps reservoir projects. Sustainable development is ensured into the future through environmental stewardship, epitomized by resource objectives identified for Dworshak Reservoir, and development needs that are consistent with these resource objectives.

  Monitoring (including inspections) allows feedback to determine whether adaptive management efforts are needed to ensure the balanced human environment envisioned in the Public Use Plan. The Corps' multidisciplinary staff conducts periodic inspections of each area, structure, and facility used to operate and maintain the project to ensure management and development activities are in accordance with Corps-approved plans and current regulations.

  The Public Use Plan identifies sustainable conceptual guidelines for future development. These are based on contribution to the objectives of society (regional plans/needs and expressed public desires) now and in the future (forecasted for the next 15 to 20 years) that maintains their ecological, environmental, and hydrological integrity (consistent with project purposes, NEPA, and other laws and regulations).

  The Public Use Plan includes historic, current, and forecasted future environmental and economic considerations. The plan discusses various resource objectives and development needs that must improve the quality of life by meeting regional recreational needs, while protecting biological, geological, cultural, and historical resources. Planning, design and construction, and operation and maintenance function in an integrated manner to ensure maximum quality of life for present and future generations.

- **EOP 2. Recognize the interdependence of life and the physical environment, and consider environmental consequences of Corps programs and activities in all appropriate circumstances.**

  In the Public Use Plan, the Corps considers the interrelationships among all factors, including activities of humans, habits and habitats of fish and wildlife, in determining the most suitable land classification and types and levels of development for Dworshak Reservoir.

  The Public Use Plan strives to secure adequate information on the environmental consequences of all reasonable alternatives, in order to objectively assess them in the decision process by identifying the most appropriate land classifications and most suitable types and levels of development. The subsequent environmental compliance requirements will further assess the impacts of individual development projects on the resource.

- **EOP 3. Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.**

  The conceptual guidelines developed during preparation of the Public Use Plan seek a balance and synergy among human development activities and natural systems. Considering Dworshak Reservoir from a holistic perspective created solutions that provide public access opportunities that minimize harmful impacts and support the natural systems of the area.

- **EOP 4. 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.**

  The Public Use Plan recommendations considered existing environmental conditions and the impacts future development will have on the resource. Because the Plan recommends conceptual guidelines for development and not specific areas for specific activities, each future development will have to fulfill the requirements of NEPA. The Public Use Plan will aid in the NEPA process by describing existing environmental conditions, including air quality, water quality, vegetation, fish and wildlife, and threatened and endangered species. Future developments will have to be evaluated regarding the effects of the project or activity on the environment.

  The conceptual recommendations set forth in the Public Use Plan must also be in compliance with other applicable environmental and cultural resource laws and executive orders, including the CAA, CWA, ESA, Archaeological Resources Protection Act, Fish and Wildlife Coordination Act, along with others as they apply.

- **EOP 5. 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.**

  The cumulative impacts to the environment resulting from visitation to Corps recreation areas will continue to be monitored and negative impacts mitigated where necessary. Recreation areas will be designed and located to provide wildlife habitat in appropriate areas. In addition, project staff will evaluate the construction of any new recreation facilities under NEPA to see if they are categorically excluded from further analysis or require an environmental assessment to determine their impact to the environment. The Corps will offer consultation to Tribal governments for site-specific development proposals. The Corps and non-federal lessees will manage recreation areas in accordance with all pertinent environmental laws.

- **EOP 6. Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.**

  The Dworshak project staff coordinates extensively with other agencies and organizations to develop integrated scientific, economic, and social knowledge bases that support a greater understanding of environmental impacts. The Corps is also active in educating the public about environment impacts. One of the project-wide resource objectives at Dworshak is to provide public education about the history of the area, Dworshak project resources, and the Corps' role in developing and managing these resources.

- **EOP 7. 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.**

  The Corps has been proactive in respecting the views of individuals and groups interested in the Public Use Plan. During Summer 2008, the Public Use Plan team held two public scoping meetings designed to gain local insights concerning use of the land base surrounding Dworshak Reservoir. Additionally, public comment cards were available at several public locations around the lake, providing an opportunity to ask questions or make comments concerning the use of the land base. The effort of the working groups were also considered and used during the creation of this plan.

8. CONCLUSIONS

The formulation of this Public Use Plan for the development and management of Dworshak has sought balance between maximum public benefits on a continuing basis and protecting the environmental resources of the area for future ecological benefits. This effort has extended over many years. It has required the interaction and involvement of the general public and recreational user groups, as well as federal, state, and local offices. It has also required the appraisal of natural and cultural resources at the project, and the examination of various environmental considerations. This plan will guide the use, development, and management of Dworshak in a manner that optimizes public benefits within resource potentials and the authorized function of the project.

Access to the reservoir has become difficult due to water drawdowns. Many facilities designed for full pool for a majority of the recreation season no longer provide for the needs and desires of the public at the lower water levels. The existing recreation areas offer great variety in location, types, and levels of developed facilities for land-based and water-based recreation activities. However, because of fluctuating water levels, visitation peaks a week before and after the 4th of July holiday, when the reservoir is at full pool.

This updated Public Use Plan addresses the need to provide additional recreational features that will allow the reservoir to be more accessible at any given time of the year and at varying water levels. Recommendations that specifically allow the reservoir to be more accessible to the public include the possibility of designating trails for ATV use, and designating the shore in the drawdown zone as an approved location for camping. The majority of the shoreline on the reservoir was classified as low density recreation in order to support public use of that resource. The majority of the lands above the shoreline will be managed for the primary purpose of wildlife. However, this does not limit the ability of the public to access and use these lands for approved activities. Developed recreation areas have also been identified, and have potential for future development based on initial evaluations. Funding, visitation and public demand, environmental effects, as well as other effects, will be studied before any of these areas are developed.

Extensive coordination with the general public, as well as citizen-involved working groups, was incorporated in all aspects of this Public Use Plan. Coordination between Tribal, federal, state, and local agencies; as well as with non-governmental organizations was also important to the creation of this plan. Planning for the development, preservation, or enhancement of project resources will continue to be coordinated with Tribes, governmental agencies, non-governmental organizations, and members of the general public to ensure the efficient, effective, and timely implementation of resource objectives.

The continued cooperation among the public and federal, state, local, and non-governmental interests to preserve and improve the natural and manmade resources at Dworshak Dam and Reservoir will provide improved outdoor recreation opportunities in this region for future generations of both residents and non-residents.

The activities, plans, and policies proposed in this Public Use Plan are consistent with the Corps' policies, regulations, and seven EOPs.

9. RECOMMENDATIONS

It is recommended that this updated Public Use Plan guidance be closely followed in managing the natural, cultural, and other man-made resources at Dworshak Dam and Reservoir. The current Operational Management Plan (OMP) for Dworshak Dam and Reservoir should be reviewed for consistency with this updated Public Use Plan and updated as needed.

It is recommended that changes to current operations and facilities, such as those items included in Section 6 be implemented when the Corps has received sufficient public demand, available funding, and completion of the environmental compliance process. Additional development will only occur if it meets the criteria of the decision matrix, is appropriate in scale to the level of demand, and does not significantly affect natural or cultural resources, as described in, and evaluated by, the NEPA process.

It is recommended that Corps of Engineers management, both at Dworshak and at the District headquarters, continue to coordinate with members of the "Working Groups" after finalization of the Public Use Plan. This will help managers understand public demand and desires, gage support for changes to facilities, and work as partners in changes to the development and management of resources at Dworshak Reservoir.

In the future, the Corps should host a stakeholders' meeting at least once each year after the Public Use Plan is finalized. This meeting would be open to all stakeholders, including "Working Group" members; representatives of interested Tribes and federal and state agencies; local officials; lessees; and non-governmental organizations; and interested members of the general public. At this meeting, Corps staff will provide an annual update on important management and development activities that occurred at the project during the previous 12 months, as well as anticipated activities/demands for the upcoming year. Corps staff and attendees will work together to identify issues and problems, prioritize them, and seek ways to solve them.

Additional boundary surveys should be conducted where needed, and the Federal property boundaries marked. This may be a program that develops over time, as funding is available, but an ongoing program will help managers and the public understand where specific activities may be allowed. Signage and/or fencing should be installed where appropriate, especially at wildlife management areas. It is recommended that vehicle use in prohibited areas continue to be monitored, and that non-motorized areas be protected by installation of signage, fencing, gates, or other appropriate barriers. Persons caught operating motorized vehicles in prohibited areas may be cited and required to appear before a Federal magistrate.

Finally, it is recommended that this updated Public Use Plan be approved as the U.S. Army Corps of Engineers' policy guidance for the Dworshak Dam and Reservoir Project, Ahsahka, Idaho.

10. REFERENCES

Achana, Francis T., PhD., 2006. 2004-2005 Idaho Outdoor Recreation Needs Assessment. *In* SCORPTP Magazine, 2006, http://parksandrecreation.idaho.gov/assets/content/docs/Comp%20Planning/Research%20Intro%202006-2010%20SCORTP.pdf.

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

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

Brininstool, J. 2006. Off-Road vehicle emissions and their effects on human health. Road RIPorter, Spring Equinox Edition, Vol 11 # 1. Wildlands CPR.

Brown, H.A., R.B. Bury, D.M. Darda, L.V. Diller, C.R. Peterson, and R.M. Storm, 1995. Reptiles of Washington and Oregon. Seattle Audubon Society, Seattle, Washington.

Clearwater Basin Bull Trout Technical Advisory Team, 1998 *in* US Fish and Wildlife Service, 2002. Bull Trout (*Salvelinus confluentus*) Draft Recovery Plan, Chapter 16, Clearwater River Recovery Unit, Idaho, Portland, Oregon.

Cooper, S.V., K.E. Neiman, and D.W. Roberts, 1991. Forest Habitat Types of Northern Idaho: A Second Approximation, General Technical Report INT-236. Intermountain Research Station, U.S. Forest Service, Ogden, Utah.

Daubenmire, R., 1969. Ecologic Plant Geography of the Pacific Northwest. Madrono 20:111-128.

Ecovista, November 2003. Draft Clearwater Subbasin Management Plan. Contracted by Nez Perce Tribe Watershed Division in cooperation with the Clearwater Policy Advisory Committee, *http://www.nwcouncil.org/fw/subbasinplanning/clearwater/plan/managementplan.pdf.*

Falter, C.M., J.M. Leonard, and J.M. Skille, 1977. Early Limnology of Dworshak Reservoir, 1972-1974, Part I. Contracted by the US Army Corps of Engineers, Walla Walla District.

Forman, R. T. T., and L. E. Alexander. 1998. Roads and their major ecological effects. Annual Review of Ecology and Systematics 29:207-231.

Forman, R. T. T., D. Sperling, J. A. Bissonette et al. 2003. Road ecology: science and solutions. Washington, DC: Island Press.

Gaines, W. L., P. H. Singleton, and R. C. Ross. 2003. Assessing the cumulative effects of linear recreation routes on wildlife habitats on the Okanogan and Wenatchee National Forests. U.S. Department of Agriculture, Forest Service, General Technical Report PNW-GTR-586, Portland, Oregon.

Groves, C. R., B. Butterfield, A. Lippincott, B. Csuti, and J. M. Scott. 1997. Atlas of Idaho's wildlife. A. Lippincott, editor. Non-game and Endangered Wildlife Program, Idaho Department of Fish and Game, Boise, Idaho, USA.

Gucinski, H., M. H. Brooks, M. J. Furniss, and R. R. Ziemer. 2001. Forest roads: a synthesis of scientific information. U.S. Department of Agriculture, Forest Service, General Technical Report PNW-GTR-509, Portland, Oregon.

Havlick, D. 2002. No Place Distant: Roads and Motorized Recreation on America's Public Lands. Island Press. Washington DC.

Horton, W.D. 1980. Dworshak Reservoir Fisheries Investigations. Idaho Department of Fish and Game, prepared for United States Army Corps of Engineers, Contract DACW68-79-C-0034, Boise.

Idaho Commerce and Labor, 2009. Clearwater County Profile. July 2009.

Idaho Department of Water Resources Water Planning Bureau, 2000. Dworshak Operation Plan, December 2000.

Idaho Partners in Flight (IPF). 2000. Idaho Bird Conservation Plan, version 1.0. Idaho Partners in Flight, Boise, Idaho, USA.

Internet Research Information Series, 2008a. Off-Highway Vehicle Recreation in the United States and its Regions and States: An Update National Report from the National Survey on Recreation and the Environment (NSRE), A RECSTATS Research Report in the IRIS Series. February 2008.

Internet Research Information Series, 2008b. Trends in Forest-Based Recreation: Reports for the 2010 Montreal Process Indicators for the U.S., A Recreation Research Report in the IRIS Series, September 2008.

Internet Research Information Series, 2008c. Outdoor Recreation Activity Trends: What's Growing, What's Slowing? A Recreation Research Report in the IRIS Series, September 2008.

Jennings and Associates, 2006. Feasibility Study and Consultant's Report: Marina Expansion and Large Houseboat Rental Enterprise on Dworshak Reservoir. March 2006.

Johnson, F. D. and R. Steele. 1978. New Plant Records for Idaho from Pacific Coastal Refugia. Northwest Science 52(3):205-211.

Koehler, G.M. 1990. Population and Habitat Characteristics of Lynx and Snowshoe Hares in North Central Washington. Canadian Journal of Zoology. 68:845-851.

Koehler, G.M. and J.D. Brittell, 1990. Managing Spruce-fir Habitat for Lynx and Snowshoe Hares. Journal of Forestry. 88:10-14.

Lane, F. O. 1995. Programmatic environmental assessment for forestry management of Dworshak Project (draft). U.S. Army Corps of Engineers, Walla Walla, Washington, USA.

Lorain, C. C. 1988. Floristic history and distribution of coastal disjunct plants of the northern Rocky Mountains. Unpublished M.S. Thesis, University of Idaho, Moscow, Idaho, USA.

Liknes, G.A., and Graham, P.J., 1988. Westslope cutthroat trout in Montana: life history, status, and management. American Fisheries Society Symposium 5:53-60.

Maiolie, M.A., D. P. Statler and S. Elam 1993. Dworshak Dam Impacts Assessment and Fishery Investigation and Trout, Bass and Forage Species. Final Report. Prepared for U.S. Department of Energy, Bonneville Power Administration, Division of Fish and Wildlife, Project No. 87 99 and 87-407.

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

McCord, C.M. and J.E. Cardoza, 1982. Bobcat and Lynx. In: Chapman, J. A. and G.A. Feldhamer, eds. Wild Mammals of North America. Baltimore, MD: Johns Hopkins University Press: 728-766.

McKelvey, K.S., K.B. Aubry, and Y.K. Ortega, 2000. History and distribution of lynx in the contiguous United States. *In* Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, G. M. Koehler, C.J. Krebs, K.S. McKelvey, and J.R. Squires (technical editors). Ecology and conservation of lynx in the United States, pages 207-264. University Press of Colorado, Boulder, Colorado. 480 pages.

McNab, W. H. and P. E. Avers, compilers. 1994. Ecological subregions of the U.S.: section descriptions. Administrative Publication WO-WSA-5. U.S. Forest Service, Washington D.C., USA.

Mehl, C. and J. Haufler, 2003. Final Report: Preserving and Restoring the Old-Growth Ponderosa pine Ecosystems in Idaho. Ecosystem Management Research Institute published report for the Idaho Department of Fish and Game, WCRP PROJECT R-1-6-0203, pp-33.

Noss, R. F., E. T. LaRoe III, and J. M. Scott. 1995. Endangered ecosystems of the United States: A preliminary assessment of loss and degradation. USDI National Biological Service. Biological Report 28. Washington, D.C. 58 pp.

Peirson, E.D., N.C. Wackenhut, J.S. Altenbach, T. Bradley, P. Call, D.L. Genter, C.E. Harris, B.L. Keller, B.L. Lengus, L. Lewis, B. Luce, K.W. Navo, J.M. Perkins. S. Smith, and L. Welch. 1999. Species Conservation Assessment and Conservation Strategy for the Townsend's Big-eared Bat (Coryorhinus townsendii). Idaho Department of Fish and Game, Boise, Idaho, USA

Quigley, T. M., and S. J.Arbelbide, technical editors. 1997. An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins, Volume III. General Technical Report PNW-GTR-405. Pacific Northwest Research Station, U.S. Department of Agriculture, Forest Service, Portland, Oregon, USA

Quinn, N.W.S., and G. Parker, 1987. Lynx. *In* M. Novak, J.A. Baker, M.E. Obbard, and B. Malloch (editors). Wild furbearer management and conservation in North America, pages 683-694. Ontario Ministry of Natural Resources, Ontario, Canada.

Reiman, B.E., and J.D. McIntyre, 1993. Demographic and Habitat Requirements for Conservation of Bull Trout. General Technical Report, INT-302, Ogden, Utah. US Department of Agriculture, Forest Service, Intermountain Research Station, Boise, Idaho. 38 pages.

Rowland, M., M. Wisdom, B. Johnson, and M. Penninger. 2005. Effects of roads on elk: Implications for management of forested ecosystems. Pgs. 42-52 in Wisdom, M.J, technical editor, The Starkey Project: a Synthesis of Long-Term Studies of Elk and Mule Deer. 2004. Transactions of the North American Wildlife and Natural Resources Conference, Alliance Communications Group, Lawrence, Kansas, USA.

Smith, J. K. and W. C. Fischer. 1997. Fire Ecology of the Habitat Types of Northern Idaho. General Technical Report (INT-GTR-363). Intermountain Research Station, U.S. Forest Service. 143 pp.

State of Idaho Department of Parks and Recreation, 2004. *2004 Idaho Outdoor Recreation Needs Assessment Willingness to Travel, Constraints, Opinions, Demographics.*

State of Idaho Department of Parks and Recreation, 2002. Idaho Outdoor Recreation Demand Assessment.

Steele, R. 1971. Red alder habitats in Clearwater County, Idaho. Unpublished M.S. Thesis, University of Idaho, Moscow, Idaho, USA.

StreamNet, 2009. http://www.streamnet.org/mapping_apps.html, accessed 2009.

Trombulak, S. C., and C. A. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic communities. Conservation Biology 14:18-30.

US Forest Service (USFS), 2000. Final Environmental Impact Statement, Interior Columbia Basin Ecosystem Management Project, December 2000, *http://www.icbemp.gov/.*

US Army Corps of Engineers (Corps, 2007. Dworshak Reservoir Consolidated Master Plan Revision Consensus Recommendations. Walla Walla District, 2007.

US Army Corps of Engineers (Corps), 2005. Dworshak Reservoir Off Highway Vehicle Analysis, Issue Paper, Walla Walla, Washington, March 2005.

US Army Corps of Engineers (Corps), 2004. Dworshak Reservoir Large Boat Marina Site Analysis. Walla Walla District, September 2004.

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

US Army Corps of Engineers (Corps), 1977. Plan for Development of Rocky Mountain Elk Habitat, Dworshak Dam and Reservoir, North Fork Clearwater River, Idaho. Walla Walla District, November 1977.

US Army Corps of Engineers (Corps), 1975. Final Environmental Impact Statement for Dworshak Reservoir. September 1975.

US Army Corps of Engineers (Corps), 1970. Public Use Plan for the Development and Management of Dworshak Reservoir, North Fork Clearwater River, Idaho. Walla Walla District, April 1970.

US Army Corps of Engineers (Corps), 1963. Preliminary Master Plan; Part of the Master Plan for Dworshak Dam and Reservoir, North Fork Clearwater River, Idaho. Walla Walla District, March 29, 1963; revised, June 20, 1966.

US Forest Service, 2008. Nez Perce National Forest, Designated Routes and Areas for Motor Vehicle Use, Draft Environmental Impact Statement. November 2008.

US Census Bureau. State and County QuickFacts. http://quickfacts.census.gov/qfd/states/16000.html, accessed 2009.

U.S. Department of Agriculture, Forest Service. 1990b. Wallowa-Whitman National Forest Land and Resource Management Plan. Baker City, Oregon.

US Geological Survey, 2007. Environmental Effects of Off-Highway Vehicles on Bureau of Land Management Lands: A Literature Synthesis, Annotated Bibliographies, Extensive Bibliographies, and Internet Resources, 2007.

University of Idaho, 2002. Economic Impacts of Dworshak Reservoir Drawdowns on the Clearwater County Regional Economy. April 2002.

Wilgus, Carl, 2006. The Business of Tourism. *In* SCORPTP Magazine, 2006, http://parksandrecreation.idaho.gov/assets/content/docs/SCORTP/tourism.pdf.

Wisdom, M., H. Preisler, N. Cimon, and B. Johnson. 2004. Effects of off-road recreation on mule deer and elk. Transactions of the North American Wildlife and Natural Resource Conference 69.