SUMMARY

S.1 Purpose and Need for the Proposal

The Washington State Legislature created the Columbia River Basin Water Management Program (Management Program) to address a variety of water resource problems in the Columbia River Basin. Those problems have limited the availability of water for agriculture and economic development and for sufficient stream flows for fish.

The Lake Roosevelt Incremental Storage Releases Project (the Proposal) is one proposal under the Management Program to improve water management in the Columbia River Basin. Specifically, the purpose of the Proposal is to release additional water from Lake Roosevelt to provide drought relief, improve municipal and industrial water supply, provide water to replace some ground water use in the Odessa Subarea, and enhance stream flows in the Columbia River to benefit fish.

S.2 Description of Proposal

The Proposal involves withdrawing additional water from Lake Roosevelt at Grand Coulee Dam to provide water for downstream uses. The program includes storage releases that would occur every year and storage releases that would occur only during drought years.

During non-drought years, an additional 82,500 acre-feet would be diverted or released from Lake Roosevelt to provide the following:

- 25,000 acre-feet of municipal/industrial supply,
- 30,000 acre-feet of irrigation water for replacement of some ground water supplies in the Odessa Subarea, and
- 27,500 acre-feet for stream flow enhancement to benefit fish downstream of Ground Coulee Dam.

During drought years, 50,000 acre-feet would be released from Lake Roosevelt in addition to the non-drought diversion of 82,500 acre-feet. These diversions would provide:

- 33,000 acre-feet of water for Columbia River mainstem interruptible water right holders; and
- 17,000 additional acre-feet for flow augmentation to benefit fish downstream of Ground Coulee Dam.

S.3 Summary of Impacts and Mitigation

The probable significant adverse environmental impacts and proposed mitigation measures associated with the Proposal are summarized in this section. These impacts and mitigation measures are discussed in greater detail in Chapter 4.

S.3.1 No Action Alternative

Under the No Action Alternative, Lake Roosevelt would continue to be operated as it is currently, with no additional releases from storage. Impacts of the No Action Alternative for the Proposal were evaluated in Section 5.4 of the Final Programmatic Environmental Impact Statement for the Columbia River Water Management Program (Ecology, 2007). The Programmatic EIS concluded that the No Action Alternative would have no impacts on most elements of the environment. The following potential impacts were identified to ground water, water rights, fish, and socioeconomics:

- Ground water levels in the Odessa Subarea would continue to decrease at approximately the same rate that they do today.
- There would be less water available for pending municipal/industrial users, and no water from Lake Roosevelt would be available for interruptible water rights during drought years.
- No additional water would be available to supplement stream flows to benefit fish in the mainstem of the Columbia River.
- Farmers in the Odessa Subarea would continue to experience rising costs of pumping ground water, which would diminish the feasibility of irrigation. Some irrigators may shift to crops that require less water or cease operations. This could result in a loss of sales, jobs, and income in the area.

S.3.2 Proposal

Potential impacts associated with the Proposal were described generally in Section 5.1 of the Programmatic EIS (Ecology, 2007). A more detailed analysis of the impacts associated with the Proposal is presented in Chapter 4 of this Draft Supplemental EIS. The impacts are summarized below.

S.3.2.1 Short-term Impacts

In general, the Proposal would not require construction of additional facilities; therefore, there would be few short-term, construction impacts. The exceptions would be improvements to existing infrastructure or the construction of new irrigation infrastructure to deliver surface water to individual farms in the Odessa Subarea and possible infrastructure for the municipal industrial uses. Impacts associated with the individual construction projects were described in Section 5.1 of the Programmatic EIS (Ecology, 2007). Additional information on infrastructure improvements for delivery to the Odessa Subarea is provided in Section 4.2.3.

S.3.2.2 Long-term Impacts

This Supplemental EIS compared the potential impacts of the alternatives and options for flow releases under the Proposal to the No Action Alternative. This Supplemental EIS evaluates the impact of the incremental increases in flow releases to the Columbia River and drawdowns of Lake Roosevelt. These impacts are summarized below for each element of the environment.

Earth

No increased impacts to landslides or alluvial deposition were identified. Little additional lakebed area would be exposed as a result of the Proposal.

Climate

The Proposal will not increase emissions that could affect climate change except for temporary increases in carbon dioxide during construction associated with the Weber Siphons. The effects of climate change could alter runoff to the Columbia River Basin and affect water management of Lake Roosevelt. Ecology will coordinate with other management agencies in the Columbia River Basin to respond to changing conditions as they occur.

Surface Water

The Proposal would result in additional drawdowns of Lake Roosevelt. It is expected that the maximum drawdown for non-drought years would be approximately 1.1 feet on August 31. For drought years, the maximum drawdown would be approximately 1.8 feet on August 31. In both cases, the maximum drawdown is expected to last for a few days to a few weeks with refill of Lake Roosevelt beginning in early September. The timing and amount of flow changes in the Columbia River vary for the different alternatives and flow options. Average monthly flows in the Columbia River will increase between April and August to provide increased benefits to fish. For some alternatives and flow release options, flows will decrease during September. These decreases are most notable in drought years.

Ground Water

The Proposal is not expected to affect ground water levels.

Legal Considerations

The Proposal is not expected to negatively affect water rights, the Biological Opinion, or the Canadian Treaty. Ecology would determine appropriate mitigation measures when processing individual water rights. The Proposal would not reduce flows during the Biological Opinion "salmon flow objective period." If the Canadian Treaty is renegotiated in the future, the changes may affect water supply to Lake Roosevelt and could require Ecology to adapt the Proposal to changing conditions.

Fish

The Proposal is not expected to have significant negative impacts to fish in Lake Roosevelt. In most years, no additional shoreline would be exposed beyond what is routinely exposed during current operations. During drought years, more shoreline will be more exposed than currently occurs in the summer season, but the drawdown will not expose areas that are not exposed during current operations. The habitat of these shorelines areas has been severely compromised as a result of normal operations and will not be further degraded by the additional storage releases. The capacity of the lake to support growth or rearing of kokanee, rainbow trout, or white sturgeon should not be negatively impacted. The incremental storage releases would increase flows in the Columbia River by a minor amount in most months. Although the flow increases will be small, they are expected to help meet stream flow targets in the Columbia River and provide benefits to fish. Columbia River flows will decrease in September with the biggest decreases in drought years in years when water for Odessa is diverted from Lake Roosevelt in September. The decreases are small relative to Columbia River flows and are not expected to negatively impact fish. Flow targets under the Biological Opinion would be met during the salmon flow objective period from April to August. No negative impacts to fish are expected in Banks Lake. The Water Resources Management Agreements between the State of Washington and the Confederated Tribes of the Colville Reservation (CCT) and the Spokane Tribe of Indians (STI) provide mitigation for potential impacts to fish and aquatic resources in Lake Roosevelt.

Wildlife and Plants

No significant impacts to wildlife and plants are anticipated. The additional drawdown during drought years may slightly increase the distribution and abundance of Eurasian watermilfoil. No mitigation is proposed for impacts to wildlife and plants because impacts are not expected to be significant.

Cultural Resources

Impacts to cultural resources were identified in the Programmatic EIS (Ecology, 2007). No new impacts were identified in the Supplemental EIS. Under the various alternatives, additional drawdowns would occur at different times of the year than under current operations. However, under all alternatives, the drawdowns during peak recreation season are anticipated to be small and within the normal operational range. The agreements between the State of Washington and the CCT and STI provide mitigation for potential impacts to cultural resources on lands managed by the Tribes. Ecology will continue to work with the National Park Service (NPS) to develop appropriate mitigation for potential impacts to cultural resources on lands managed by NPS.

Environmental Health

The Proposal would slightly increase the potential for exposure of contaminated sediments during peak recreation periods. This could increase public exposure to the contamination. The contaminated sediments problem is being studied separately by the Environmental Protection Agency and Teck Cominco. Ecology will consider the results

when they are available to determine if mitigation is required. If it is determined that the project causes re-entraining toxic materials into the air or water, Ecology and the CCT will establish a working group to develop appropriate mitigation measures and pursue funding for the mitigation.

Recreation and Scenic Resources

The additional drawdown of Lake Roosevelt during peak summer recreation periods may cause some water-dependent facilities, primarily boat ramps, to be inoperable for a few days from late August through early September. During the worst-case drought years, a total of eight boat ramps would potentially be inoperable at times during July and August. When some boat ramps are inoperable, it is expected that boating use will shift to other ramps that are operable, similar to existing conditions. This may slightly increase congestion at these areas for a few additional days. Some developed swimming areas, mooring docks, and camping areas may be affected during worst-case drought years. Lower lake levels would also create a change in the lake viewscape for a few days under worst-case drought conditions. The Water Management Agreements between the State of Washington and the CCT and STI provide mitigation for any potential impacts to recreation resources. The NPS has identified potential impacts and mitigation measures for specific recreation facilities. Ecology will work with the NPS to prioritize and implement the mitigation measures. These mitigation measures would extend the time that boat ramps and marins would be operable.

Socioeconomics

The Proposal is not expected to have significant socioeconomic impacts. Although some additional boat ramps may be inoperable for slightly longer periods than under existing conditions, it is expected that visitor use will shift to other areas. Although there could be some decrease in total recreation visits to Lake Roosevelt with resulting economic impacts, data from the 2001 drought indicates that total visitor use did not decline, but shifted to operable ramps. The mitigation measures being developed by Ecology and the NPS are expected to minimize the economic impacts on specific facilities.

Public Services and Utilities

The Proposal would slightly increase hydropower production in spring and slightly reduce hydropower production in some Septembers and in October. The reduction is not expected to significantly affect regional power production. The agreement between the State of Washington and the CCT provides for compensation to mitigate the potential impact to CCT hydropower revenues.

Transportation

The Proposal would have no impact on transportation. The Proposal is not expected to affect operation of the Inchelium-Gifford ferry.

S.4 Areas of Significant Controversy and Uncertainty

Potential impacts associated with the contamination of Lake Roosevelt is an area of uncertainty. Data collection and monitoring are ongoing to better assess and quantify potential adverse impacts to human health and the environment from known sources of contamination; this includes, but is not limited to, contaminants discharged to the Upper Columbia River from the Teck Cominco Trail smelter facility. The Trail smelter facility is considered the primary source of metals contamination, and potentially other hazardous substances, to the Upper Columbia River.

Results of those studies will not be available for this Supplemental EIS, but Ecology will consider the results when they become available in the future. It is not expected that the Proposal will add significantly to the exposure of the contaminants. The Proposal will not expose areas that are not already exposed during normal reservoir operations. Under the Proposal, additional drawdowns will occur during different times than under normal operations, but are expected to last for only a few days to a few weeks. If it is determined that the Proposal adversely affects the Lake Roosevelt environment by re-entraining contaminated sediments, Ecology and the CCT will establish a work group to identify and seek funding for appropriate mitigation.

Operation of Grand Coulee Dam and all the water supply projects in the Columbia River Basin could be impacted in the future by changes in climate and by renegotiation of the Columbia River Treaty with Canada. Climate change may reduce snowpack and alter the amount and timing of runoff to Lake Roosevelt. Any renegotiation of the Columbia River Treaty could require changes in operation of Lake Roosevelt. Ecology will coordinate with other managing agencies in the Columbia River Basin to plan for and adapt to these changes as they occur.

CHAPTER 1.0 INTRODUCTION AND BACKGROUND

1.1 Introduction

The Lake Roosevelt Incremental Storage Releases Project (the Proposal) is one of the early actions proposed under the Columbia River Basin Water Management Program (Management Program). The Proposal involves releases of water from Lake Roosevelt to provide water for downstream uses, including drought relief, municipal and industrial supply, alternatives to ground water use in the Odessa Subarea, and stream flow enhancement for fish downstream of Grand Coulee Dam. Some water would be released annually with additional water released in drought years.

The 2006 Washington State Legislature passed the Columbia River Basin Water Management Act, an act relating to water resource management in the Columbia River Basin (Chapter 90.90 Revised Code of Washington [RCW]). The Act directs the Washington State Department of Ecology (Ecology) to "aggressively pursue the development of water supplies to benefit both instream and out-of-stream uses." The Act also establishes the Columbia River Basin Water Supply Development Account and authorizes its use to assess, plan, and develop new storage; improve or alter operation of existing storage facilities; implement conservation projects; or undertake any other actions designed to provide access to new water supplies within the Columbia River Basin.

The environmental impacts of the Management Program and the Lake Roosevelt Incremental Storage Releases Project were evaluated at a non-project level in a State Environmental Policy Act (SEPA) Programmatic Environmental Impact Statement (EIS) (Ecology, 2007). This Supplemental EIS evaluates impacts associated with releases from Lake Roosevelt in more detail.

1.2 Organization of the Document

Chapter 1 of this Supplemental EIS provides background information on water allocation issues in the Columbia Basin, current operations of Lake Roosevelt, and the proposed incremental storage releases from Lake Roosevelt. Chapter 1 also describes the purpose of the project and the EIS scoping process. Chapter 2 presents the Proposal and the alternatives for implementing the storage releases project. The Proposal includes a range of alternatives and options for the timing of the incremental storage releases. Policy alternatives for releasing and allocating the stored water and the No Action Alternative are also described. Preferred Alternatives are identified in Chapter 2 and alternatives that were considered by Ecology, but not carried forward, are also described.

An overview of the affected environment for the Lake Roosevelt area, the Columbia River downstream from Grand Coulee Dam, and the Odessa Subarea is provided in Chapter 3. Chapter 4 evaluates the impacts associated with the Lake Roosevelt Incremental Storage Releases Project. Impacts to Lake Roosevelt, the Columbia River downstream, and the Odessa Subarea are discussed. Potential mitigation measures for identified impacts are described. Comments received on the Draft Supplemental EIS and written responses to those comments are included in Chapter 5. The references used in the document are listed in Chapter 6. Several appendices are attached which include various documents that relate to the Columbia River Water Management Program and the incremental storage releases.

1.3 Background on the Incremental Storage Releases Project

Passage of the Columbia River Water Management Act was the result of nearly 20 years of effort to improve water management in the Columbia River Basin. The history and background of the legislation is described in Section 1.3 of the Programmatic EIS (Ecology, 2007). This section describes the actions that led to the development of the Lake Roosevelt Incremental Storage Releases Project.

1.3.1 Cooperative Agreements

Part of the process of developing the Columbia River Water Management Act included Ecology initiating cooperative agreements with federal and local partners. Three of those agreements relate specifically to the Lake Roosevelt Incremental Storage Releases Project—the Memorandum of Understanding (MOU) between the State of Washington and the Bureau of Reclamation (Reclamation) and the Columbia Basin Project Irrigation Districts, and the Water Resources Management Agreements between the State of Washington and the Confederated Tribes of the Colville Reservation (CCT) and the Spokane Tribe of Indians (STI).

1.3.1.1 MOU with Reclamation and the Irrigation Districts

In 2004, the State of Washington, Reclamation and the South Columbia Basin, East Columbia Basin, and Quincy-Columbia Basin Irrigation Districts entered into a MOU to work together to support projects to optimize existing water management and to explore new storage options to provide additional water for priority uses. A copy of the MOU is included in Appendix A. The MOU has been the basis for Ecology and Reclamation to initiate several projects with funding from the Columbia River Basin Water Supply Development Account, including the Lake Roosevelt Incremental Storage Releases Project, the Columbia River Mainstem Off-Channel Storage Study (Section 1.5.4), the Odessa Subarea Special Study (Section 1.5.2), and the Potholes Reservoir Supplemental Feed Route Project (Section 1.5.1). The MOU also includes an agreement for the parties to seek water from existing Canadian storage facilities.

The MOU specifies that storage releases from Lake Roosevelt will be used for drought relief, municipal and industrial supply, the Odessa Subarea, and enhanced stream flows for fish. The MOU includes specific water allocations for those uses:

- Municipal and industrial supply—25,000 acre-feet for municipal and industrial purposes in non-drought and drought years.
- Fish benefits—127,500 acre-feet available to benefit stream flows and fish in the Columbia River annually and in drought years.
- Odessa Subarea—30,000 acre-feet of water available for delivery to the Odessa Subarea in non-drought and drought years.
- Drought relief—50,000 acre-feet available during designated drought years with 33,000 acre-feet allocated for interruptible water rights and 17,000 acre-feet for stream flows for fish in the Columbia River.

1.3.1.2 Tribal Agreements

The state has developed cooperative agreements with the CCT and with the STI regarding management of Lake Roosevelt. The state entered into an Agreement in Principle (AIP) with the CCT in 2005 and extended that agreement in 2006. Provisions of the AIP included:

- Investigation of potential impacts of the drawdown of Lake Roosevelt and compensation for impacts to the CCT;
- Creation of an economic development capital fund for the CCT;
- Creation of a fisheries enhancement capital fund and provisions for joint work on fisheries management; and
- Tribal participation in investigation of the potential for new off-channel storage in the Columbia River system.

In December 2007, the state announced the signing of Water Resources Management Agreements with the CCT and the STI in support of the incremental storage releases from Lake Roosevelt. The state agreed to provide annual payments to the tribes to mitigate the damage to fish and wildlife, recreation and cultural activities resulting from the release of water from Lake Roosevelt, and for economic development investments to benefit the local economy. The agreements were approved by the 2008 State Legislature in Engrossed Second Substitute Senate Bill 6874, which have been codified in Chapter 90.90 RCW. The legislation also includes provisions to develop agreements with affected counties.

The legislation directs Ecology to allocate funds annually from the Columbia River Basin Water Supply Development Account to the CCT and the STI. Funds are allocated to the CCT to provide mitigation for effects of the Proposal on resident fish, cultural resources, recreation resources, additional exposure of contaminated sediments, and hydropower revenue. Funds allocated to the STI are to provide mitigation for effects of the project on power revenue, recreation resources, and cultural resources. Neither agreement affects the tribal water rights or any other tribal rights.

The legislation also authorizes a study of potential impacts to counties affected by the Proposal. Ecology will assist affected counties to explore options to ensure water resources are available for their current and future needs. A Memorandum of Understanding could be developed between the state and the affected counties.

1.3.2 Priority Needs in the Columbia River Water Management Act

The Columbia River Water Management Act lists the priority needs for developing new water supplies in RCW 90.90.020(3). These are:

- Alternatives to ground water for agricultural users in the Odessa Subarea aquifer;
- Sources of water supply for pending water right applications;
- A new uninterruptible supply of water for the holders of interruptible water rights on the Columbia River mainstem that are subject to instream flows or other mitigation conditions to protect stream flows; and
- New municipal, domestic, industrial, and irrigation water needs within the Columbia River.

1.4 Background on Lake Roosevelt

Lake Roosevelt is the reservoir formed by Grand Coulee Dam. Construction on the dam began in 1933 and was completed in 1941. Congress originally authorized the Grand Coulee project for irrigation, navigation, flood control, and hydropower. Storage and delivery of water for municipal and industrial purposes is a beneficial use and a project purpose. Since the original authorization, recreation and fish management have been added to the authorized purposes of the dam and reservoir. However, recreation and fish management continue to be secondary considerations for the overall operation of the reservoir (NPS, 2000).

Grand Coulee and Lake Roosevelt are part of the complex and highly regulated system of Columbia River dams and reservoirs. The general management and operation of the Columbia River system is presented in Section 3.1 of the Programmatic EIS (Ecology, 2007). The following sections present additional information specifically relevant to management of Lake Roosevelt.

1.4.1 Lake Roosevelt Operations

Reclamation currently operates the dam and reservoir for flood control, hydropower generation, irrigation, recreation, and fish and wildlife. The reservoir is operated in coordination with the U.S. Army Corps of Engineers (Corps) for flood control and the Bonneville Power Administration (BPA) for power production. Reclamation also coordinates with state and federal fish and wildlife agencies to release flows for fish in the Columbia River or to store water in the reservoir for resident fish.

At full pool, the surface elevation of Lake Roosevelt is 1,290 feet mean sea level (msl) and has a capacity of 9 million acre-feet. Lake Roosevelt receives large amounts of runoff from its tributaries with enough runoff to fill the reservoir approximately seven

times in an average year. The minimum pool level of Lake Roosevelt is 1,208 feet msl. To meet the purposes of its operation, Lake Roosevelt is drawn down and filled twice during the year—once for flood control and once for flow augmentation. Figure 1-1 illustrates typical lake levels at Lake Roosevelt for three different years that represent a dry (2003), wet (1997) and average year (2002

The reservoir is operated under a series of "rule curves" that regulate the amount of fill and drawdown for flood control. In late winter or early spring, flows are released from the reservoir to allow room to store upstream runoff to prevent flooding downstream. In an average year, with normal precipitation, the reservoir can be drawn down 50 feet or more. The level of draw down is set by the Corps based on daily, weekly, and monthly forecasts of precipitation and runoff and other factors. The reservoir typically refills by July 1.

For the remainder of the year, lake levels fluctuate from releases for irrigation and fish flows. Approximately 2.65 million acre-feet is pumped annually to Banks Lake to support irrigation in the Columbia Basin Project. The irrigation season is generally from March through October.

Lake Roosevelt is also operated to provide stream flows downstream to benefit fish. In the Columbia River system, there are 13 anadromous fish species listed as threatened or endangered under the Endangered Species Act (ESA). Under the ESA, NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS) have developed Biological Opinions that include objectives for Columbia River operations to benefit the listed species. The two agencies review annual water management plans developed by the Corps, Reclamation, and BPA to assist in meeting the Biological Opinion fish objectives. Additional information on the Biological Opinions, including on-going litigation, is provided in Section 3.6. The water management plans are intended to manage flows to avoid stranding fish, speed downstream migration of juvenile fish, meet water temperature needs, and avoid creating dissolved gas conditions (Section 3.4).

The general guidelines for Lake Roosevelt operations affecting fish include:

- Operate to achieve 85 percent probability of achieving the upper rule curve by approximately April 10, which will maximize spring flows.
- Inform Tribes of planned lake operations so that releases of kokanee into the lake can be scheduled.
- Refill by approximately July 1.
- Variable draft in July and August to elevation 1,278 or 1,280 feet msl based on the final July forecast for runoff at The Dalles.
- Maintain lake levels between 1,283 and 1,285 in fall to benefit kokanee in the lake.

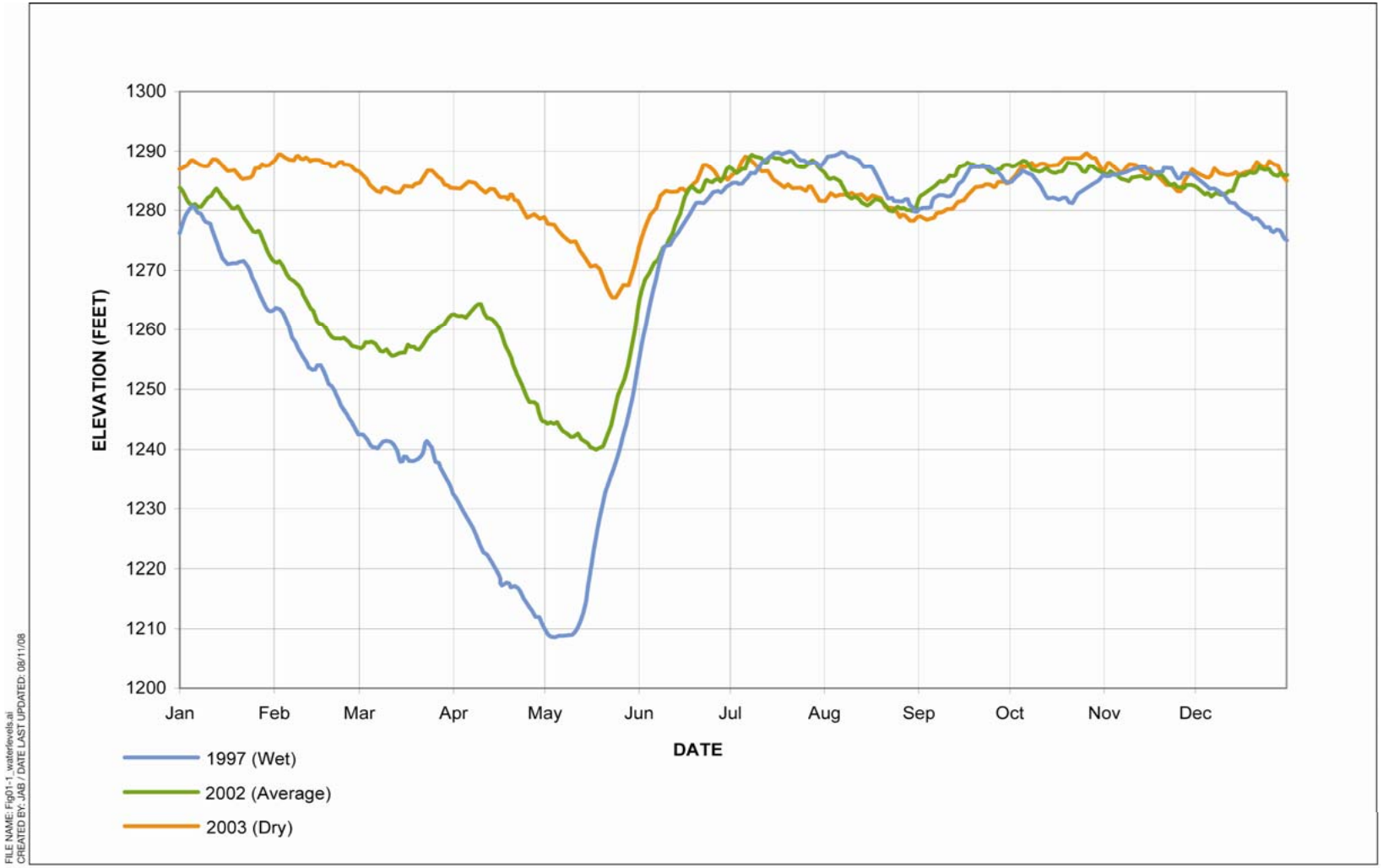

Figure 1-1
Lake Roosevelt Water Elevations

In addition to seasonal fluctuations, Lake Roosevelt fluctuates daily because of releases for hydropower production. Grand Coulee Dam is one of 11 hydropower generating facilities on the Columbia River mainstem. Grand Coulee Dam has three power plants with 32 turbines and a maximum generating capacity of 6,809 megawatts. The amount and timing of power generation is regulated by the Pacific Northwest Coordination Agreement (PNCA) and the Canadian Treaty (see Section 1.4.2). Additional information on hydropower production is provided in Section 3.13.

Reclamation also operates Lake Roosevelt for recreation purposes within the limitations of the rule curves for other reservoir purposes. To assure that boat launches and marinas are accessible and beaches and campgrounds can be optimally used, Reclamation tries to maintain lake levels at or above 1,280 feet msl during the summer recreation season.

1.4.2 River and Reservoir Management

The operation of Columbia River dams and reservoirs, including Lake Roosevelt, are governed by a complex system of international treaty, federal and state laws, and management agreements. The river and dams are managed as the Federal Columbia River Power System (FCRPS) and regulated by BPA, Reclamation, and the Corps. These agencies coordinate the operations of the reservoirs to meet their various authorized purposes. In addition, a number of other organizations have management responsibilities related to specific purposes. The FCRPS Regional Forum was established to provide regional discussion and decisions on the operation and configuration of the FCRPS (FCRPS, 2001). The Regional Forum consists of an Implementation Team, the Executive Committee, and various technical teams and work groups, including the Technical Management Team (TMT). The TMT consists of representatives from NOAA Fisheries, USFWS, Reclamation, Corps, BPA, Environmental Protection Agency (EPA), National Weather Service, state agencies, and Indian Tribes. The TMT is responsible for recommendations on day-to-day operations to optimize passage conditions for fish under the Biological Opinions.

Several native tribes have reservations and historic use areas in the Columbia River Basin. The native tribes have historic and treaty rights to take fish from the Columbia River and its tributaries and have treaty rights to fish, hunt, and gather in usual and accustomed places. The federal government has a trust responsibility to provide services that protect and enhance the treaty rights of native people. The tribes implement fish and wildlife management programs in the Columbia River Basin and participate in river governance decisions. In addition to the CCT and STI discussed previously, tribes with interest in the operation of Lake Roosevelt are the Yakama Nation and the Nez Perce, Umatilla, and Warm Springs Tribes.

1.4.3 Lake Roosevelt National Recreation Area

Lake Roosevelt, the reservoir behind the dam, is approximately 150 miles long and extends nearly to the Canadian border. The lake has approximately 600 miles of shoreline. The majority of the shoreline is managed as the Lake Roosevelt National Recreation Area (NRA). From 1946 until 1990, the NRA was managed solely by the

National Park Service (NPS). In 1990, cooperative management was established between NPS, the Confederated Tribes of the Colville Reservation (CCT), and the Spokane Tribe of Indians (STI). The NRA consists of a narrow band of land that extends upland from the maximum high water mark of the reservoir (1,290 feet msl). The NRA encompasses all the lands that were acquired or withdrawn by Reclamation for construction of the reservoir. The CCT and the STI manage the lands on their tribal reservations and the NPS manages the lands in the NRA. Reclamation retains management of the dam, its immediate area, and some other locations deemed necessary for operating the reservoir. Additional information on recreation and shoreline management are provided in Section 3.11.

1.5 Purpose and Objectives

The purpose of the Lake Roosevelt Incremental Storage Releases Project is to improve water management in the Columbia River Basin by releasing additional water from Lake Roosevelt to meet the following objectives:

- Improve municipal and industrial water supply in the Columbia River Basin by providing water to fulfill pending municipal and industrial water rights applications;
- Improve water management in the Odessa Subarea by providing water to replace some ground water withdrawals;
- Enhance stream flows in the Columbia River downstream of Grand Coulee Dam to benefit fish; and
- Provide water to holders of interruptible water rights during drought years.

These objectives address the purposes described in the MOU between Ecology, Reclamation, and the Columbia Basin Project Irrigation Districts (Section 1.3.1). These objectives also address the priority needs identified in RCW 90.90.020(3) (Section 1.3.2). The allocation of water to meet these objectives complies with the allocation in the MOU. In addition, although the Proposal does not involve new storage, it generally meets the allocation requirements of RCW 90.90.020(1)(a) that two-thirds of active new storage must be available for out-of-stream uses and one-third for augmenting instream flows.

1.6 Related Projects

Several other water resource projects are being undertaken in the Columbia River Basin both as part of the Columbia River Water Management Program and separate from it. These projects include some that are being undertaken jointly by Ecology and Reclamation. The potential impacts of these projects are being evaluated separately under SEPA and/or the National Environmental Policy Act (NEPA), as appropriate. These projects are briefly described below and are considered as part of the cumulative effects assessment in this Supplemental EIS. In addition to the projects described below in which Ecology is involved, other projects, such as new flood control and fish

operations at Libby and Hungry Horse Dams in Montana, may affect water resources management of the Columbia River Basin.

1.6.1 Potholes Reservoir Supplemental Feed Route

Reclamation, in cooperation with Ecology, has studied a Supplemental Feed Route to convey water from Banks Lake to Potholes Reservoir to supply water to parts of the East and South Columbia Basin Irrigation Districts. The project is intended to improve the distribution of water to Potholes Reservoir and will carry the same amount of water as the existing routes. This project was evaluated as an early action in the Columbia River Water Management Program Programmatic EIS (Ecology, 2007) which considered three alternative routes. Based on the Programmatic EIS, technical studies of the three routes, and a NEPA Environmental Assessment (EA) prepared by Reclamation (Reclamation, 2007), Reclamation has selected a Supplemental Feed Route that will utilize both Crab Creek, a natural water body, and the existing Frenchman Hills Wasteway.

The Supplemental Feed Route will be constructed in phases. In the first phase, Reclamation and Ecology expanded the culverts at the crossing of Frenchman Hills Wasteway with Road C SE to allow additional flows in Frenchman Hills Wasteway. Ecology prepared a SEPA Checklist on the culvert expansion project and issued a Mitigated Determination of Nonsignificance (MDNS) in January 2008. Construction was completed in March 2008. Reclamation has received funding to proceed with the Supplemental Feed Route project and may begin the remaining phases in 2009. At the time that project is carried forward, Ecology will prepare additional SEPA documentation on the Crab Creek route. Additional information on the Supplemental Feed Route can be found at: www.ecy.wa.gov/programs/wr/cwp/cr_potholes.html.

1.6.2 Odessa Subarea Special Study

The Odessa Ground Water Management Subarea (Odessa Subarea) was designated by Ecology in response to declining ground water levels. Reclamation, in conjunction with Ecology, is studying options for replacing ground water currently used for irrigated agriculture with surface water from the Columbia River. The replacement water would be for the portions of the Odessa Subarea that lie within the Columbia Basin Project. Reclamation has considered four alternatives for conveyance infrastructure to provide surface water to the Odessa Subarea:

- Construct a new East High Canal;
- Construct the northern portion of the East High Canal and enlarge and extend the East Low Canal;
- Enlarge the East Low Canal; and
- Use the existing East Low Canal configuration.

The appraisal level study of the alternatives was completed in April 2008. In that study, Reclamation selected the alternative that includes construction of the northern portion of the East High Canal and enlarging and extending the East Low Canal south of Interstate 90 for further study. Reclamation and Ecology will conduct additional technical and

economic studies and will prepare a joint NEPA/SEPA evaluation starting in 2008. Additional information on the Odessa Subarea Special Study can be found at: http://www.usbr.gov/pn/programs/ucao_misc/odessa/index.html. The proposed release of 30,000 acre-feet of water from Lake Roosevelt proposed in this Supplemental EIS is not considered as an alternative in the Odessa Subarea Special Study. However, the release would supply a portion of the needed replacement water.

1.6.3 Columbia-Snake River Irrigators Association Voluntary Regional Agreement

The Columbia River Water Management Act provides for groups or organizations to enter into Voluntary Regional Agreements (VRAs) with Ecology for the purpose of finding new water for out-of-stream use, streamlining the application process, and protecting instream flow. The VRAs must meet requirements described in RCW 90.90.030(2) to be approved. The 2007 Programmatic EIS evaluated the impacts of VRAs in general, but also focused specifically on a preliminary VRA proposal submitted by the Columbia-Snake River Irrigators Association (CSRIA).

Ecology conducted additional environmental review and negotiated a revised agreement with CSRIA. In July 2008, Ecology signed the CSRIA VRA. The VRA will be implemented in two phases. Phase 1 includes the issuance of drought permits as provided below and pilot projects to demonstrate that proposed conservation projects will result in saved water that could be used for issuing new water rights. Phase 2 would be continued implementation of Phase 1 permits and projects and additional projects that would support the issuance of new water rights. Phase 2 would only be implemented if the pilot projects in Phase 1 demonstrate that conservation projects can provide sufficient water for the issuance of new water rights and if a foundation has been established for a long-term working relationship between Ecology and the CSRIA.

Under Phase 1 of the VRA, Ecology commits to issue supplemental drought permits to interruptible water rights holders that are CSRIA members, provided that mitigation water from efficiency measures and other measures is available to offset their water use during July and August on the Columbia River (and from April to August on the Snake River). In exchange, participating CSRIA members commit to implementing and maintaining state-of-the-art water use efficiency measures and best management practices, and submit their water rights to Ecology for "recalibration" (determination of extent and validity) of actual beneficial use. Any water saved through the recalibration would be placed into Ecology's Trust Water Rights Program. Ecology is obligated to make a "good faith" effort to develop water supplies necessary to allow issuance of supplemental drought permits consistent with the mitigation standards contained in Chapter 90.90 RCW.

If the Phase 1 pilot projects demonstrate that conservation projects can provide sufficient water, Ecology could grant new interruptible water rights to CSRIA members in Phase 2 of the VRA. The new interruptible water rights would be granted in exchange for CSRIA members agreeing to install or maintain water use efficiency practices. The new water rights would only be issued if the provisions of 90.03.290 are met and if stream flows in

the Columbia and Snake Rivers are not impacted during the critical months. Applicants would need to submit new water rights to Ecology for recalibration and Ecology must certify their best management practices. Where possible, Ecology would manage the saved water in the Trust Water Rights Program to mitigate for out-of-stream water uses for the next water rights applicant and to help meet instream flow objectives. Participating CSRIA members will provide annual mitigation payments that would be placed in the Columbia River Water Supply Development Account. The funds will be used by Ecology to obtain mitigation water. Additional information on the CSRIA VRA can be found at: www.ecy.wa.gov/programs/wr/cwp/cr_vra.html.

1.6.4 Columbia River Mainstem Off-Channel Storage Options

Under the provisions of their MOU with the three Columbia Basin Irrigation Districts (Section 1.3.1), Reclamation and Ecology jointly evaluated the potential for development of a new large, off-channel storage site in the Columbia River Basin. In an appraisal, or preliminary, evaluation released in May 2007, the agencies evaluated four potential sites for a reservoir—Hawk Creek, Foster Creek, Sand Hollow, and Crab Creek. Of the four potential sites, Crab Creek appeared to be viable from a technical and cost perspective, but also appeared to have the most significant adverse environmental impacts. No decision has been made concerning whether to pursue a Feasibility Study, the next step in the federal process for evaluating potential water projects. A Feasibility Study requires Congressional authorization and appropriation, which has not yet been granted. The Feasibility Study, if authorized, would include preparation of a NEPA/SEPA EIS. Additional information on the off-channel storage projects can be found at: www.ecy.wa.gov/programs/wr/cwp/crbwmp_mainstem_storage.html.

1.6.5 Yakima River Basin Water Storage Feasibility Study

Reclamation and Ecology are studying alternatives to improve water supply in the Yakima River Basin. The purpose of the Yakima River Basin Water Storage Feasibility Study according to Congressional authorization is to:

- Improve fish habitat,
- Improve water supply for irrigation, and
- Meet future municipal needs.

Reclamation and Ecology jointly considered three storage alternatives in the Feasibility Study—Black Rock Reservoir, Wymer Reservoir, and Wymer Reservoir combined with a Yakima River pump exchange. The Black Rock alternative would pump water from the Columbia River during high flows and store it in a reservoir near Moxee for release to the Yakima River to provide irrigation water. The Wymer Reservoir alternatives would pump water from the Yakima River during high flows and store it in a reservoir at Lmuma Creek for release during the irrigation season.

In addition, Ecology considered three non-storage alternatives—enhanced water conservation, market-based reallocation of water resources, and ground water storage. The Draft Planning Report and EIS for the Storage Feasibility Study was released in

January 2008. For additional information on the Yakima Storage Project and the Feasibility Study see: www.usbr.gov/pn/programs/storage_study/reports.html.

Based on comments received on the Draft Planning Report and EIS, Ecology determined that it might not have fulfilled its requirements under SEPA to identify and evaluate all reasonable water supply alternatives. Therefore, Ecology has separated from the joint NEPA/SEPA process and is continuing to evaluate a broad range of alternatives to improve water resource management in the Yakima River basin. Ecology plans to issue a Supplemental Draft EIS on the additional alternatives in Fall 2008 with the Final EIS completed in March 2009.

The Columbia River Water Supply Development Account is funding part of the Yakima Storage Feasibility Study, but the project has its own Congressional and legislative authorization.

1.6.6 Lake Roosevelt Remedial Investigation and Feasibility Study

Sediments in Lake Roosevelt have been contaminated by elevated levels of heavy metals, including lead, copper, zinc, arsenic, mercury, and cadmium. Studies also show high levels of dioxins, furans, and polychlorinated biphenyls (PCBs). Smelting operations in Trail, British Columbia are recognized as the primary source of legacy metals contamination to the Upper Columbia River. This metal contamination is considered relevant to the Lake Roosevelt Incremental Storage Releases Project; other secondary point sources of legacy metals pollution of lesser magnitude also may remain, but have yet to be fully documented and characterized. Pulp mill operations near Castlegar, British Columbia, while recognized as a primary source of organochlorine compounds to the Upper Columbia River, may be less relevant to the Proposal. The Trail, British Columbia smelter, owned by Teck Cominco, is approximately 10 miles north of the U.S. and Canadian border. Until the mid 1990s, the smelter discharged metals-laden slag directly to the Columbia River. Contaminant loading has decreased since smelter operations changed in the 1980s and discharges were discontinued in 1995. Sediments in Lake Roosevelt still have high concentrations of the metals and there is evidence that the contaminants are having long-term effects on organisms.

The U.S. Environmental Protection Agency (EPA) began investigating human health and environmental risks of sediment contamination in 1999. In 1999, the CCT petitioned EPA to conduct an assessment of the contamination under U.S. federal law. Because the source of the contamination was outside the United States, there was legal debate over whether the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) regulations applied. In July 2006, the Ninth Circuit Court ruled that CERCLA applied to Teck Cominco even though the contamination originated in Canada. In January 2008, the U.S. Supreme Court denied Teck Cominco's appeal of that ruling.

Teck Cominco entered into a voluntary agreement with EPA in 2006 to assess the extent of the contamination in a Remedial Investigation Study. EPA is currently evaluating Teck Cominco's work plan for the Remedial Investigation Study. The Remedial

Investigation Study will include studies of soils, water quality, and fish along with a human health risk assessment. The results of these studies will not be available for inclusion in this Supplemental EIS.

1.7 Scoping Process

In accordance with SEPA, Ecology implemented a scoping period for the Supplemental EIS on the incremental storage releases from December 13, 2007 to January 4, 2008. A total of 63 letters or emails were received during the scoping period. Written comments were received from the Yakama Nation; Columbia River Intertribal Fish Commission; Washington Departments of Ecology, Natural Resources, and Fish and Wildlife; Okanogan, Stevens, and Ferry Counties; the Cities of Kettle Falls, Bridgeport, and Brewster; American Rivers and the Washington Environmental Council; Center for Environmental Law and Policy; Center for Water Advocacy; Stevens County Farm Bureau; CSRIA, Columbia Basin Development League; and numerous individuals.

The comments received covered a number of subjects and represented a range of viewpoints. The major areas of concern were:

- Effect of lower lake levels on fisheries, wildlife habitat, water quality, bank sloughing, exposure of contaminated sediments, exposure of buried cultural resources, and recreational facilities;
- Effects of increased or decreased flows in the Columbia River on anadromous fish, water quality, riparian vegetation and wildlife;
- Economic impacts to the communities and tribes around Lake Roosevelt;
- Impacts to ground water and tributaries to Lake Roosevelt;
- Impacts to hydropower production at downstream dams;
- Impacts of increased development at areas receiving the storage releases;
- Cumulative impacts of all the water management projects proposed in the Columbia River Basin;
- Ecology should stop "piecemealing" the SEPA analysis of the projects;
- The recommendations of the National Research Council should be considered; and
- Comments opposed to new reservoir construction or allocation of more water to municipal or irrigation uses.

The scoping comments were used to determine which elements of the environment should be evaluated in the Supplemental EIS. In addition, the comments that were received on the Draft Programmatic EIS on the Columbia River Water Management Program were reviewed, and comments relevant to the Proposal were used to develop the scope of the Supplemental EIS.

This Supplemental EIS addresses the relevant and substantive issues identified during scoping. Ecology determined that some of the issues that were raised during scoping merited separate responses. These comments and responses are attached in Appendix B.

CHAPTER 2.0 PROPOSAL AND ALTERNATIVES

2.1 General Description of the Proposal

The Lake Roosevelt Incremental Storage Releases Project involves withdrawing additional water from Lake Roosevelt to provide water for downstream uses, including drought relief, municipal and industrial supply, alternatives to ground water use in the Odessa Subarea, and enhanced stream flows for fish. The storage releases would be diverted from Reclamation's existing 6.4 million acre-foot storage right for water behind Grand Coulee Dam. The storage releases would result in additional drawdown of the lake level during the spring and summer months. The additional drawdown would be within the normal operating range of Lake Roosevelt. Ecology would issue secondary permits to Reclamation for release of water stored in Lake Roosevelt under Reclamation's 1938 storage right. Ultimately, Ecology would issue new water rights for municipal and industrial uses and standby-reserve permits for interruptible water rights holders.

This Supplemental EIS considers two alternatives for the Incremental Storage Releases Project—the No Action Alternative and the Proposal. The No Action Alternative was described in Section 2.5.1.2 of the Programmatic EIS (Ecology, 2007) and is summarized in Section 2.2. The Proposal includes a range of alternatives and options for the timing of the flow releases as well as allocation of the water. These alternatives and options are described in Section 2.3. Ecology has selected variations of Alternatives 1C and 1E as the Preferred Alternatives for the incremental flow releases. The Preferred Alternatives are described in detail in Sections 2.3.1, 2.3.2.3, and 2.3.3.

2.2 No Action Alternative

Under the No Action Alternative, no incremental storage releases would be made from Lake Roosevelt. The reservoir would continue to be operated under existing conditions. Lake levels would continue to fluctuate as they do under the existing operating schedule.

No additional releases would be made from Lake Roosevelt to improve municipal and industrial water supply or provide water for Columbia River mainstem interruptible water right holders. The water users with pending water right applications for municipal and industrial uses would need to seek other sources of water or water rights or reduce their expected water use. The water users with interruptible water rights would continue to have their water diversions interrupted during drought years as conditioned on their existing water rights. There would be no additional water released from Lake Roosevelt to supplement stream flows for fish in the Columbia River during non-drought or drought years. Lake Roosevelt water would not be available to help replace ground water in the Odessa Subarea during non-drought years. Irrigators in the Odessa Subarea would continue to deplete the Odessa Aquifer, find new sources or water, alter their agricultural practices to use less water, or convert to dry land farming.

Other entities may propose releases of water from Lake Roosevelt as separate projects. Those projects would be evaluated under separate environmental review.

2.3 Proposal

Under the Proposal, storage water would be released from Lake Roosevelt to provide water for Columbia River mainstem interruptible water right holders, improve municipal/industrial supply, replace some ground water supplies in the Odessa Subarea, and improve stream flows downstream of Grand Coulee Dam. The Proposal includes withdrawals that would occur annually and withdrawals that would occur only during drought years. The amount of water allocated for each of these uses is prescribed in the MOU between Washington State, Reclamation and the three Columbia Basin Project Irrigation Districts (Section 1.3.1.1).

The water that will be released from Lake Roosevelt is water that is currently stored in the lake as part of Reclamation's 1938 storage water right. Under the Proposal, Ecology would issue Reclamation two secondary water use permits to use the water for the purposes designated in the MOU. Permit 1 is for 37,000 acre-feet for enhanced stream flows with 25,000 acre-feet of that amount to be placed in trust for mitigation of future municipal and industrial use. The instantaneous flow limit on Permit 1 is 305 cfs with 204.66 cfs for municipal and industrial use and 101.33 cfs for fish flows. Permit 2 is for 30,000 acre-feet for the Odessa Subarea to be provide an alternative water supply to existing ground water use and 15,000 acre-feet for stream flow enhancement. The instantaneous flow limit on Permit 2 is 303 cfs with 181 cfs for the Odessa Subarea and 122 cfs for fish flow enhancement.

Annually, 82,500 acre-feet would be released to supply municipal and industrial uses, offset some ground water use in the Odessa Subarea, and provide increased stream flows (Figure 2-1a). In drought years, a total of 132,500 acre-feet (an additional 50,000 acre-feet) would be released with additional water to supply interruptible water rights and for stream flows (Figure 2-1b). See Sections 2.3.2 and 2.3.3 for details on the proposed flow releases.

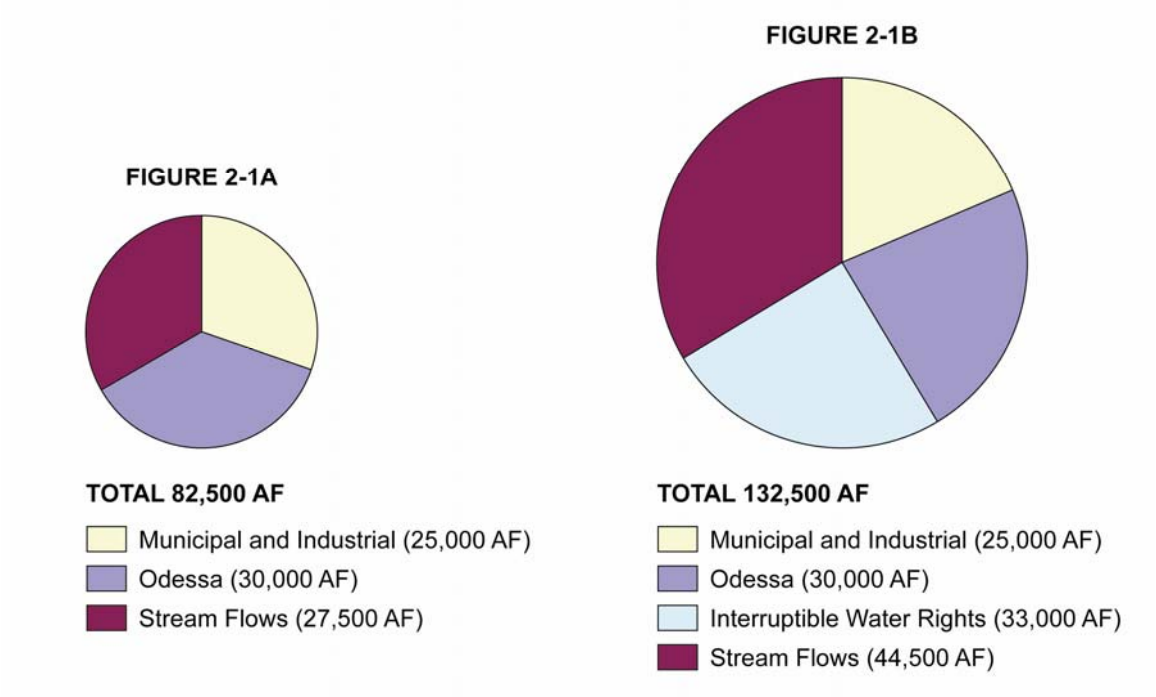

Figure 2-1 Flow Releases for the Purposal

Ecology considered different options for the timing of both annual and drought year flow releases. The different timing is intended to improve benefits to fish. The different options would be used during average, dry, and drought years. The definition of these conditions is based on the amount of runoff predicted at The Dalles Dam.

A drought year is defined by administrative rule and is any year when the March 1 forecast for April through September runoff at The Dalles Dam is less than 60 million acre-feet (WAC 173-563-056). The forecast is made by the National Weather Service. For drought year conditions to apply, Ecology must also make a formal request in accordance with the Reclamation States Drought Relief Act of 1991 (P.L. 102-250). By this definition, a drought year occurs on average once every 26 years based on the period of record (Slattery, 2002).

For the purposes of this Proposal, Reclamation and Ecology have developed definitions for other water year conditions. Unlike the drought year which is defined by state law, the forecast for these years is made for runoff between April and August. A dry year is defined by Reclamation and Ecology as any year in which the predicted runoff is less than 73 million acre-feet at The Dalles Dam. This corresponds to 20 per cent of the driest years which trigger April to June water releases under the Water Resource Management Agreement with the CCT. For the purposes of describing the alternatives in this Proposal, all other years with runoff above 73 million acre-feet are termed “average” years. The term “average” does not imply that the runoff for those years is a mathematical average of historic flows.

Flow releases for the Odessa Subarea would remain the same under all alternatives except for Alternative 1A. To meet irrigation needs, the flows would be released to and

withdrawn from Banks Lake during the entire irrigation season from April to October, except during September. Because Reclamation must meet its target of refilling Lake Roosevelt by October 1 for kokanee and because of the need to meet hydropower production schedules, Reclamation cannot release water for the Odessa Subarea from Lake Roosevelt in September of some years. To meet irrigation needs in September in those Septembers when water is not available from Lake Roosevelt, Reclamation would release the water for Odessa directly from water stored in Banks Lake with no input from Lake Roosevelt. Since all water in Banks Lake is provided by Reclamation's 1938 storage water right, the water is still part of the Lake Roosevelt Incremental Storage Releases Project.

In wet and average years, there would be no additional drawdown of Banks Lake because Reclamation typically pumps additional water from Lake Roosevelt to Banks Lake over Labor Day when power demands are low. This raises the level of Banks Lake above its typical level of 1,565 feet msl. Reclamation is not able to do the Labor Day weekend releases to Banks Lake during dry and drought years. In those years, Reclamation would draft down Banks Lake in September to provide water for the Odessa Subarea. Banks Lake would also be drawn down during years when insufficient time exists between August 31 and Labor Day for sufficient refill to occur to allow pumping from Lake Roosevelt. The Banks Lake drawdowns would occur approximately once every three years and would lower the lake approximately 1.5 inches by the end of September. In all situations, flows released for the Odessa Subarea would not be available for downstream uses in the Columbia River.

Under some of the options for the timing of flow releases, the flows would not be released from Lake Roosevelt at the same time that water would be diverted or withdrawn for some specific beneficial uses. For example municipal and industrial withdrawals would occur year-round, but no flow releases would occur from September to April. Most of the alternatives and options for flow releases do not match the expected out-of-stream water demands; therefore it is likely that new permits would either require a determination of overriding consideration of the public interest (OCPI) or be conditioned to the adopted minimum instream flows.

An OCPI determination is required when water uses would conflict with the instream flow rule for the Columbia River (Chapter173-563 WAC). The administrative rule authorizes the director of Ecology to approve future uses of water that would conflict with the provisions of Chapter 173-563 "only in those situations when it is clear that overriding considerations of public interest will be served" (WAC 173-563-080).

Consideration of the public interest by the director of Ecology includes an evaluation of all uses of the river and their impact on the state of Washington. The uses to be considered include, but are not limited to, uses of water for domestic, stock watering, industrial, commercial, agricultural, irrigation, hydroelectric power production, mining, fish and wildlife maintenance and enhancement, recreational, thermal power production, and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state (WAC 173-563-080). The OCPI determination is to be made in consultation with the directors of the Washington Department of Fish and Wildlife (WDFW) and the state Department of Agriculture, and the state Commissioner of Public Lands.

A 2008 trial court ruling invalidated portions of the state's Municipal Water Law (Lummi Indian Nation v. State of Washington), including the definition of municipal water suppliers. For the purpose of this Proposal and consistent with that ruling, Ecology considers the following public institutions to be municipal water suppliers: cities and towns, counties, public utility districts (PUDs), and water and sewer districts. Other public institutions will be considered on a case-by-case basis.

Ecology would enter into a Memorandum of Agreement (MOA) with Reclamation for service contracts for the incremental storage releases. The MOA would cover annual releases for municipal and industrial uses and flow enhancement for fish and drought water for interruptible water rights and fish flow enhancement. The MOA would govern the term of the service contracts, cost, and other administrative details. Reclamation's service contract with the East Columbia Basin Irrigation District would cover releases for the Odessa Subarea.

2.3.1 Preferred Alternatives

Ecology has selected Preferred Alternatives for the incremental storage releases based on analysis in the Draft Supplemental EIS; further discussions with Reclamation, WDFW, and other interested parties; and comments received on the Draft Supplemental EIS. The Preferred Alternatives, one for annual releases and one for additional releases during drought years, are variations of Alternatives 1C and 1E. These alternatives are intended to maximize the benefits for fish in the Columbia River. In the Draft Supplemental EIS, Alternatives 1C and 1E included specific flow releases for each month and each purpose. Ecology determined that setting specific flows in advance would not allow flexibility in managing the flows for fish under differing conditions. Therefore, the Preferred Alternatives only specify in which months varying flows would be released for the different purposes.

The specific amount of flow released each month would be determined by a panel of fisheries and water managers from Ecology, Reclamation, tribes, the Columbia River Intertribal Fish Commission (CRITFC), WDFW, NOAA Fisheries, and the U.S. Fish and Wildlife Service. The panel would determine specific releases each year based on the March 1 forecast for April through September runoff at The Dalles Dam with the goal of scheduling releases to maximize fish benefits under the specific conditions in any year. The panel would also consider anticipated river conditions and the status of fish runs and outmigration. Ecology is negotiating an MOA with Reclamation to incorporate the adaptive management strategy for the Preferred Alternatives into river operations.

Ecology has determined that the match demand alternatives, Alternatives 1Ba, 1Bb, and 1D evaluated in the Draft Supplemental EIS are not workable alternatives. The intent of those alternatives was to match the releases with the actual demand for specific project purposes. Based on the analysis in the Draft Supplemental EIS, Ecology determined that water was not available in all years to meet the demand. Therefore, those alternatives are not being carried forward. Alternative 1A is also not being carried forward because releasing all the water only in July and August does not fully meet the purpose of providing water for the various project purposes.

The Preferred Alternatives, including the new variations are described in Sections 2.3.2.3 and 2.3.3 below. Revisions have been made to the impacts discussion of the Preferred Alternatives in Chapter 4 as needed.

2.3.2 Annual Releases

Annually, an additional 82,500 acre-feet would be diverted or released from Lake Roosevelt to provide the following:

- 25,000 acre-feet of municipal and industrial supply,
- 30,000 acre-feet of irrigation water for replacement of ground water supplies in the Odessa Subarea, and
- 27,500 acre-feet for stream flow enhancement downstream of Grand Coulee Dam.

Figure 2-1a illustrates the allocation of the flows. Nearly all of the flows for municipal and industrial supply and for stream flow enhancement would be released to the Columbia River below Grand Coulee Dam. The water for the Odessa Subarea would be released to Banks Lake and transported through the existing East Low Canal system to farms in the Odessa Subarea. Water diverted to the Odessa Subarea would not be available downstream on the Columbia River for stream flows or hydropower production.

The water for stream flow enhancement and municipal and industrial uses would be transferred to the Trust Water Rights Program based on the term negotiated under the service contract with Reclamation. After that time, water rights permits would be issued for the water placed in the Trust Program for mitigation for municipal and industrial uses (25,000 acre-feet) with 12,500 acre-feet remaining in the Trust Program for instream flow support. A party that wants to use water for municipal and industrial purposes would be required to file an application with Ecology to obtain a water right permit or have already filed an application.

Reclamation would enter into a contract with the East Columbia Basin Irrigation District which would issue contracts to irrigators for the water released to meet irrigation needs in the Odessa Subarea. It is not known at this time which irrigators would receive the water or how much of the water would be distributed north or south of Interstate 90 (I-90). Reclamation will determine the steps necessary for NEPA compliance on the contracts at the time they are issued.

The annual diversion would result in a maximum additional drawdown of the reservoir of approximately 1.1 feet. The full effect of the drawdown would be observed on August 31. The maximum drawdown would last for a few days. For all release alternatives, the reservoir would refill rapidly after the end of August because Reclamation begins to refill the reservoir at that time to meet lake level requirements for kokanee salmon.

Three alternatives were considered for the annual flow releases. These are described as Alternatives 1A, 1B, and 1C. Alternative 1A represents the alternative considered in the Programmatic EIS (Ecology, 2007), with all releases occurring during July and August. Alternative 1B incorporates flow releases that best match demand, and Alternative 1C times flow releases to maximize benefits downstream for fish. Both Alternatives 1B and 1C include different flow options that would provide different benefits to fish. These

options are described for average and dry year conditions. Ecology has selected Alternative 1C, which would provide maximum benefits to fish as the Preferred Alternative for annual releases.

2.3.2.1 Alternative 1A Releases during July and August

Under Alternative 1A, all storage releases would occur during July and August. This alternative was evaluated in the Programmatic EIS. The July and August period was originally selected to agree with the requirement in the Columbia River Water Management Act (the Act) that Columbia River mainstem flows must be protected during those months (RCW 90.90.030). The requirement for protecting flows during those months specifically relates to the approval of Voluntary Regional Agreements and does not apply to all aspects of the Columbia River Water Management Program. The legislature selected the July and August period based on its interpretation of information contained in the National Resources Council report, *Managing the Columbia River: Instream Flows, Water Withdrawals, and Salmon Survival* (National Resources Council, 2004).

Because this alternative was evaluated in the Programmatic EIS, additional evaluation is provided in this Supplemental EIS only to clarify impacts or to supply additional information received since the Programmatic EIS. For this alternative, flows would be released equally during the months of July and August (Table 2-1). Flows to Odessa would be diverted to and released from Banks Lake while the flows for stream enhancement for fish and municipal and industrial users would be released to the Columbia River. This alternative is not being carried forward because releasing all the water in the two month period would not meet the purposes of the project. Alternative 1A was not selected as a preferred alternative because the release of flows in only July and August would not make water available at the times needed to meet the purposes of the Proposal.

Table 2-1. Alternative 1A—Average Year

Purpose of Flow Releases	***Total Release (acre-feet)***	***Schedule of Incremental Releases from Lake Roosevelt (average cfs)***						
		April	May	June	July	August	September	October
Odessa	30,000	0	0	0	181	181	0	0
Fish	27,500	0	0	0	223	223	0	0
Municipal/ Industrial	25,000	0	0	0	204	204	0	0
Total	82,500	0	0	0	608	608	0	0

2.3.2.2 Alternative 1B Demand Alternative

Under Alternative 1B, the timing of water released from Lake Roosevelt from April to October is intended to match the seasonal demand for the water as closely as possible. Water for municipal/industrial uses and stream flows would be released to the Columbia River between April and September, although water may not be available in all Septembers. Water for the Odessa Subarea would be released to Banks Lake during the irrigation season—April to October, although water may not be available in all Septembers necessitating occasional drafting of Banks Lake. The operational scenarios for Alternative 1B vary for average and dry year conditions (Tables 2-2 and 2-3). The tables show the amount of water that would be released from Lake Roosevelt for the months April to October.

For Demand Option 1B(a), flows for all uses would be released every month throughout the April to October period (Table 2-2). The flows for the Odessa Subarea and for municipal and industrial uses will be prorated by the April to September demand. Those demands are estimated based upon historic use patterns. The exact distribution of demands may vary because of changes in climate conditions and crop types and different municipal and industrial use patterns than assumed. Releases to improve flows for fish were developed by WDFW to benefit outmigration of juvenile salmon in the April to June period and upstream migration of adults in the July to September period. Water for Odessa would be released to Banks Lake.

Table 2-2. Demand Option 1B(a)—Average Year

Purpose of Flow Releases	*Total Release (acre-feet)*	*Schedule of Incremental Releases from Lake Roosevelt (average cfs)*						
		April	May	June	July	August	September	October
Odessa	30,000	34	65	101	130	97	51	17
Fish	27,500	118	57	34	32	106	110	0
Municipal/ Industrial	25,000	46	62	80	73	77	75	0
Total	82,500	198	184	214	235	281	236	0

Demand Option 1B(b) represents flow releases during dry years (Table 2-3). For this option, flows for the Odessa Subarea and municipal and industrial uses would be the same as Demand Option 1B(a), but all of the flows for fish would be released in April, May and June. The April through June releases would meet the requirements of the Water Resources Management Agreement with the CCT (Washington and CCT, 2008). The highest total flows would be released from Lake Roosevelt to the Columbia River during May and June. Based on the analysis in the Draft Supplemental EIS, Ecology determined that water would not be available for release in September because releasing the water would not allow Reclamation to meet its target of refilling Lake Roosevelt in September to benefit kokanee.

Alternative 1B was not carried forward because water is not available in all months to meet demands. Flow releases are constrained by river operations and the instantaneous flow limit of Reclamation's water right.

Table 2-3. Demand Option 1B(b)—Dry Year

Purpose of Flow Releases	*Total Release (acre-feet)*	*Schedule of Incremental Releases from Lake Roosevelt (average cfs)*						
		April	May	June	July	August	September	October
Odessa	30,000	34	65	101	130	97	51	17
Fish	27,500	155	149	154	0	0	0	0
Municipal/ Industrial	25,000	46	62	80	73	77	75	0
Total	82,500	235	216	334	203	175	126	17

2.3.2.3 Preferred Alternative 1C – Maximize Fish Flows

Under Alternative 1C, the flow releases for fish and municipal and industrial users would be timed to maximize the benefits for fish in the Columbia River. Ecology would rely on a panel of fisheries and water managers to determine the release schedule each year that best achieves the fisheries benefits within the constraints of the water budget. Options 1C(a) and 1C(b) represent the differences that could be expected in response to varying water supply and fishery objectives. The amount of water that can be released for municipal and industrial uses or for fish would be constrained by the instantaneous flow limits of Reclamation's secondary water use permit (see Section 2.3). For example, if the advisory panel determined that all of the water should be released in June to benefit fish, the release schedule could not be met because of the instantaneous flow limits.

Option 1C(a) would attempt to provide flexibility to spread water available for fish (fish flows plus municipal and industrial flows) throughout the April to August period and in September when water is available. Water would be released to the Columbia River under a schedule that would be developed by the advisory panel. Table 2-4 illustrates the general flow release strategy. The shading on the table illustrates the months when water would be released for fish and municipal and industrial uses.

Water would be distributed to the Odessa Subarea from Banks Lake in all months. This water would not be available for downstream uses in the Columbia River. Water to supply Odessa would be released from Lake Roosevelt to Banks Lake in all months except in September of some years when it would be drawn directly from Banks Lake (see Section 2.3). The demand hydrograph for the Odessa Subarea in Table 2-4 shows average monthly releases. The actual demand would be dependent on the delivery schedule and lands served. Peak water use could exceed the monthly average.

Table 2-4. Preferred Alternative—Maximize Fish Flows Option 1C(a)- Average Year

Purpose of Releases	***Total Release (acre-feet)***	***Schedule of Incremental Releases from Lake Roosevelt (average cfs)***						
		April	May	June	July	August	September	October
Odessa	30,000	34	65	101	130	97	51[1]	17
Fish	27,500						[1]	
Municipal/ Industrial	25,000						[1]	
Total	82,500							17

Months in which flow releases can occur

[1]Water may not be available in all Septembers.

For the dry year Option 1C(b), all flows for fish would be released to the Columbia River between April and June to meet the requirements of the Water Resources Management Agreement with the CCT (Washington and CCT, 2008) (Table 2-5). Releases for municipal and industrial uses would be on the same schedule to coincide with the fish releases and obtain the maximum benefit for fish. This option would provide the highest release for spring migrating salmonids. Only the flows for Odessa, which go to Banks Lake and not the Columbia River, would be released in July, August, and October. Some water could also be released for municipal and industrial uses in July and August to meet mitigation requirements of Voluntary Regional Agreements. To meet lake level targets for kokanee, no water for Odessa would be diverted from Lake Roosevelt in September of dry years. The 51 cfs for Odessa would be released directly from water stored in Banks Lake during September. Similar to average years (Alternative 1C), Table 2-5 shows the average demand for the Odessa Subarea. Actual demand could vary.

Table 2-5. Preferred Alternative—Maximize Fish Flows Option 1C(b)– Dry Year

Purpose of Releases	***Total Release (acre-feet)***	***Schedule of Incremental Releases from Lake Roosevelt (average cfs)***						
		April	May	June	July	August	September	October
Odessa	30,000	155	149	154	130	97	0	66
Fish[3]	27,500							
Municipal/ Industrial	25,000				0[1]	0[1]		
Total	82,500				130	97	0	66

Months in which flow releases can occur

[1] Mitigation for projects participating in a Voluntary Regional Agreement (VRA) is required by statute in July and August on the Columbia River and April through August on the Snake River. If Ecology agrees to a municipal/industrial VRA, releases would be scheduled to meet or exceed the consumptive impact of projects associated with the VRA.

Table 2-6 summarizes the August 31 lake levels under the proposed flow options. The lake levels were calculated by subtracting the volume released from actual lake levels in a dry year (2003) and an average year (2002). The Biological Opinion Releases represent the lake levels that would result from operations to meet the requirements of the Biological Opinion (Sections 1.4 and 3.6).

Table 2-6. Summary of August 31 Lake Levels Under Average and Dry Year Conditions (feet msl)

Water Year Conditions	*Biological Opinion Requirements*	*Recorded August 31 Water Level*	*Elevation with Incremental Flow Releases*
Alternative 1B(b) (Dry Year, 2003)	1.278	1,278.41	1,276.91
Alternative 1C(b) (Dry Year, 2003)	1.278	1,278.41	1,276.91
Alternative 1B(a) (Average Year, 2002)	1,280	1,280.39	1.278.92
Alternative 1C(a) (Average Year, 2002)	1,280	1.280.39	1.278.92

2.3.3 Releases for Drought Years

During drought years, 50,000 acre-feet would be diverted or released from Lake Roosevelt in addition to the annual diversion of 82,500 acre-feet. This diversion would provide:

- 33,000 acre-feet of water for Columbia River mainstem interruptible water right holders; and
- 17,000 additional acre-feet for stream flow augmentation in the Columbia River downstream of Grand Coulee Dam.

Figure 2-1b illustrates the additional releases that would occur during drought years. Ecology would enter into a service contract as directed by the MOA with Reclamation for delivery of water during drought years (see definition in Section 2.2). The service contract would be issued under the Federal Drought Relief Act (see Section 5.1.2.5 of the Programmatic EIS (Ecology, 2007) for a discussion of the Act).

Use of the 33,000 acre-feet by interruptible water rights holders would require the holder to obtain a standby-reserve permit from Ecology. The drought year diversion would result in a maximum additional drawdown of approximately 0.8 feet in addition to the 1-foot drawdown during non-drought years. Ecology would issue standby-reserve permits for interruptible water rights holders for the entire irrigation season. Allocation of interruptible water rights would be managed through Ecology's drought insurance program. Holders of standby-reserve permits would be required to call the Ecology drought hotline on a weekly basis in a drought year. For weeks when instream flows are met, water right holders could divert water pursuant to their interruptible water rights. For weeks when instream flows are not met, water right holders could divert water pursuant to their standby-reserve permits, subject to the availability of water in Ecology's drought insurance program. Ecology's drought insurance program would include the 33,000 acre-feet from storage releases at Lake Roosevelt, but is also anticipated to include other trust water holdings from dry-year leases, conservation projects, aquifer and surface storage projects and other sources. The amount of water available to an individual standby-reserve permit holder would be dependent on the drought allocation policy options described in Section 2.4.

There are two options for flow releases during drought years—a release option that matches demand (Alternative 1D) and an option to maximize flow enhancement for fish (Alternative 1E). Ecology has selected a variation of Alternative 1E as the Preferred Alternative for drought years. Tables 2-7 and 2-8 illustrate the two options for flow releases.

2.3.3.1 Alternative 1D—Match Demand Drought Years

Under Match Demand Option 1D, all releases to the Columbia River to enhance flows for fish would occur during the April to June period (Table 2-7). Municipal and industrial releases would occur from April through September, but would not be available in some Septembers. Releases for interruptible water rights would occur from April through August. These releases are intended to benefit spring salmonid migration and meet the municipal and industrial and interruptible water rights demand. The highest total flow releases would occur in June. Releases to Banks Lake for the Odessa Subarea would occur from April to October, but would not be available in some Septembers. The water released to Banks Lake would not be available for downstream uses in the Columbia River. Alternative 1D was not carried forward because analysis indicated that water would not be available in all years to meet demand.

Table 2-7. Match Demand Option 1D

Purpose of Flow Releases	*Total release (acre-feet)*	*Schedule of Incremental Releases from Lake Roosevelt (average cfs)*						
		April	May	June	July	August	September	October
Odessa	30,000	34	65	101	130	97	51	17
Fish	44,500	250	242	250	0	0	0	0
Municipal/ Industrial	25,000	46	62	80	73	77	75	0
Interruptible Water Rights	33,000	111	108	111	108	108	0	0
Total	132,500	441	476	542	310	282	126	17

2.3.3.2 Preferred Alternative 1E—Maximize Fish Benefits Drought Years

Under the Preferred Alternative, Maximize Fish Flows Option 1E, flows to benefit fish would be released from April through June, with flows for municipal and industrial uses and interruptible water rights released to the Columbia River from July through September subject to September availability (Table 2-8). This alternative allows the municipal and industrial and interruptible water rights releases to offset the early season releases for fish. This results in a more even seasonal distribution of flows. Ecology would rely on a panel of fisheries and water managers to determine the release schedule each year that best achieves the fisheries benefits within the constraints of the water budget. The timing of the releases would be constrained by the instantaneous flow limit of Reclamation's water use permit as described in Section 2.3.

If out-of-stream uses relying on these releases for mitigation of their impacts are not offset "in-time," an OCPI determination would be required to prevent the uses from being curtailed. Alternatively, if the public benefits were insufficient to support an OCPI finding, the release schedule could be altered to provide "in-time" offsets. This would alter the release schedule presented in Table 2-8. Interruptible water right holders covered under a VRA are not subject to OCPI, but are limited by the statutory mitigation standard of no impact to the Columbia River during July and August. If water is unavailable to meet the July and August mitigation standard, interruptible water right holders covered under a VRA would be subject to curtailments.

Water would be delivered the Odessa Subarea throughout the irrigation season. The numbers shown in Table 2-8 represent an average monthly demand. Actual demand would be dependent on the delivery schedule and lands served. In September, water would be released directly from Banks Lake with no releases from Lake Roosevelt. Under the drought year conditions shown in Table 2-8, Reclamation would not be able to

release water to Banks Lake over Labor Day weekend. Banks Lake would be drawn down during that month with a maximum drawdown of approximately 1.5 inches at the end of September (see Section 2.3).

Table 2-8. Preferred Alternative—Maximum Fish Flows Alternative 1E

Purpose of Flow Releases	***Total Release (acre-feet)***	***Schedule of Incremental Releases from Lake Roosevelt (average cfs)***						
		April	May	June	July	August	September	October
Odessa	30,000	34	65	101	130	97	51	17
Fish	44,500							
Municipal/ Industrial	25,000	[1]	[1]	[1]	[1]	[1]		
Interruptible Water Rights	33,000	[1]	[1]	[1]	[1]	[1]		
Total	132,500							17

Months in which flow releases can occur

[1] Mitigation for projects participating in a VRA is required by statue in July and August for the Columbia River or April through August for the Snake River. If Ecology agrees to address municipal/industrial or interruptible water right holders in a VRA (e.g., the CSRIA VRA), releases would be scheduled to meet or exceed the consumptive impact of projects associated with the VRA.

Table 2-9 summarizes the lake levels that would result from Alternatives 1D and 1E. The Biological Opinion Releases represent the lake levels that would result from releases to meet the requirements of the Biological Opinion.

Table 2-9. Summary of August 31 Lake Levels Under Drought Year Conditions (2001) (feet msl)

Water Year Conditions	*Biological Opinion Requirements*	*Recorded August 31 Water Levels*	*Elevation with Incremental Flow Releases*
Alternative 1D	1,278	1,278.35	1,276.24
Alternative 1E	1,278	1,278.35	1,276.24

2.3.4 Construction Required for the Proposal

No construction will be required to accommodate the incremental storage releases from Lake Roosevelt. The water can be released from the reservoir using existing infrastructure. Municipal and industrial users who receive water from the Proposal may need to construct new conveyance facilities to deliver the water. Irrigators in the Odessa Subarea would need to construct conveyance systems to deliver the water from existing canals to individual farms. The impacts of construction of these facilities were described in Section 5.1.2 of the Programmatic EIS.

Since the Draft Supplemental EIS was released, Reclamation and the East Columbia Basin Irrigation District have identified construction projects that could be required to deliver water from the Lake Roosevelt Incremental Storage Releases Project to the Odessa Subarea. Reclamation has determined that it may need to make improvements to existing facilities to improve delivery efficiency. Specifically, the East Columbia Basin Irrigation District has stated that improvements will be required to the East Low Canal to deliver water to users located south of I-90. The area south of I-90 has experienced the greatest declines in ground water levels and there is a high demand for replacement water supplies. The improvements include upgrading siphons and increasing pumping capacity. The construction needed for the two siphons is described below. Impacts associated with the construction are included in Section 4.2.3.

The two siphons are located near or at the East Low Canal near the canal crossing of I-90, approximately 10 miles east of Moses Lake (Figure 2-2). The siphons are the Weber Branch Siphon and the Weber Coulee Siphon. The first, or upstream, siphon is the Weber Branch Siphon. It is 3,215 feet long and crosses a valley that is approximately 80 feet deep (below the invert of the East Low Canal). U Road SE is located in the center of the valley. The siphon is comprised of reinforced concrete and is 14 feet 8 inches indiameter.

The second siphon, Weber Coulee Siphon, is 6,166 feet long and crosses Weber Coulee, a valley that is approximately 110 feet deep (below the invert of the East Low Canal). Interstate 90 is located in Weber Coulee. The Coulee also contains a wasteway that

conveys some natural runoff and primarily runoff and drainage from agricultural lands. The wasteway drains to Lind Coulee and eventually to Potholes Reservoir. The existing Weber Coulee Siphon is also reinforced concrete and 14 feet 8 inches in diameter. When I-90 was built, a tunnel for a second siphon was constructed for part of the route to avoid having to dig under or tunnel through I-90 when a second siphon was needed. The existence of the tunnel will avoid traffic impacts to I-90 during construction.

Although the size of the new siphon pipe has not been selected, the existing structures and the tunnel for the second siphon were constructed to accommodate a new second siphon identical in size to the existing siphon. The inlet and outlet structures for the existing siphons have already been constructed to the size needed to connect a new second siphon, so minimal work would be needed on those structures.

The new siphons would be constructed adjacent to the existing siphons with approximately 6 feet separation between the new and old siphons. The siphons would be constructed at the same grade as the existing siphons. Excavation would be required to provide a trench for the siphon pipe. The pipe trench would be backfilled and a berm placed over the pipe to ensure a minimum cover is established. The area needed for construction would likely range from 50 to 100 feet wide along the length of the siphon. The right-of-way width for the siphons ranges from 200 feet to 315 feet, so all construction should be contained within existing rights-of-way.

SOURCE: USDA, 2006 (air photo); ESA Adolfson, 2008

Lake Roosevelt SEIS . 207301

Figure 2-2
Weber Siphons
Grant County, Washington

2.4 Policy Options for Water Allocation

Ecology considered a number of alternatives for allocating the water released from Lake Roosevelt to different users. The MOU between Ecology, Reclamation, and the Columbia Basin Project Irrigation Districts specifies how much water will be released from Lake Roosevelt. The MOU and the Columbia River Water Management Act (Chapter 90.90 RCW) describe how the water is allocated to different types of uses. For the releases to supply municipal and industrial users during non-drought years, and the drought year releases for interruptible water right holders, Ecology must develop a program to determine how the water would be allocated among the pending municipal and industrial water rights and to the interruptible water rights holders. For the Preferred Alternatives for allocation of the water from the flow releases, Ecology would charge municipal and industrial water users and holders of interruptible water rights to offset the transaction costs of acquiring the water (RCW 90.90.010(1)).

2.4.1 Allocation for Municipal and Industrial Supply

There are approximately 128 municipal and industrial water right users with pending applications located within one mile of the Columbia River. Other applicants are located farther from the river. In the Draft Supplemental EIS, Ecology proposed four options for allocating storage releases to fulfill pending applications for municipal and industrial uses. This section presents the alternatives that were considered, but not selected by Ecology followed by the Preferred Alternatives for the allocation for municipal and industrial supply.

2.4.1.1 Alternatives Considered but not Selected

Ecology considered the following alternatives for allocation to municipal and industrial users in the Draft Supplemental EIS. Based on comments received and further analysis, these alternatives were not selected.

Allocation only to those Applicants Who Can Physically Capture the Water

Under this allocation option, only those municipal and industrial users who have applications on file that propose to withdraw water from the Columbia River, or ground water in close proximity to the Columbia River, would receive permits. Mitigation for issuing the permits would be provided by the Lake Roosevelt Incremental Storage Releases Project. Ground water applications within one mile of the Columbia River would be evaluated on a case-by-case basis to investigate the proposed well locations, continuity with the Columbia River and propagation of pumping effects on the Columbia River. It is assumed that wells more than one mile from the Columbia River proposing to withdraw water will be largely withdrawing water from tributary aquifers or intercepting ground water flowing to the Columbia River, rather than pumping water directly from the Columbia River itself. The 25,000 acre-feet of water released would mitigate for municipal and industrial applicants in order of priority date of the application. This allocation alternative was incorporated into the Preferred Alternative (Section 2.4.1.2).

Allocation to Users Whose Water Use Would Impact the Columbia River

In addition to those users described in Section 2.3.1.1, this option would allow Ecology to use Lake Roosevelt water to mitigate for municipal and industrial users who cannot physically capture the water from the river, but whose proposed water use would impact Columbia River stream flows. This would include municipal and industrial users that propose tributary surface water diversions or ground water withdrawals that reduce flows in the Columbia River within the same year or storage release period.

For example, an applicant proposing to divert water on a tributary river a few miles upstream of the confluence with the Columbia River may cause impacts to the Columbia River hours or days later. The same applicant proposing to divert water from tributary ground water may have an impact on the Columbia River days to weeks, months or even years later. Allocation of Lake Roosevelt water to these users would mitigate the impact that these users would have on flows in the Columbia River. However, it would not mitigate for local impairment on adopted instream flows in the tributary or to tributary ground water users, which could limit how far away from the Columbia River the Lake Roosevelt mitigation would be practical. A case-by-case determination of each application would be required. Since the timing of mitigation would not coincide exactly with storage releases, an OCPI determination would likely be necessary. This allocation alternative was incorporated into the Preferred Alternative (Section 2.4.1.2).

Allocation Based on Priority Needs

Among the pending municipal and industrial water rights applications are some that could be considered to have higher priority needs than others. One priority need would be those municipalities with moratoria on development because of limited water supplies. Jurisdictions with development moratoria are not permitted to issue building permits for new construction under the Washington State Growth Management Act.

Another priority need identified by Ecology is meeting the obligations of the settlement agreement between the Center for Environmental Law and Policy (CELP); the Cities of Kennewick, Pasco, Richland, and West Richland (Quad-Cities); and Ecology which resulted in the issuance of Permit S4-30976P. The settlement requires Ecology to provide mitigation of consumptive use impacts associated with the first 10 cfs of diversions under the permit when biological flow objectives are not met. Ecology has provided approximately 1,995 acre-feet of this obligation through Trust Water Rights Program acquisitions. Water from the Lake Roosevelt storage releases could provide the remaining mitigation water, estimated at 3,787 acre-feet. This action is supported by RCW 90.90.020(3)(c) which states that Ecology should focus its water allocation efforts on “other mitigation conditions to protect stream flows.”

Depending on the release scenario selected for the municipal and industrial water, the 3,787 acre-feet of water that could be used for the Quad-Cities mitigation may not be sufficient. For example, if the municipal and industrial water were only released in July and August, it could not mitigate for pumping in June when the flows for the Biological Opinion are not met. Ecology would have to rely on other sources of mitigation.

Allocating water based on priority needs, either for cities with moratoria or for the Quad-Cities, could be combined with the alternatives described in Sections 2.3.1.1 and 2.3.1.2. This allocation alternative was incorporated into the Preferred Alternative (Section 2.4.1.2).

Allocation to Achieve Regional Equity

Ecology would develop a system to allocate water on a regional basis with an objective to distribute the benefits evenly throughout the Columbia River Basin. Under this system a certain number of water rights or amount of water could be allocated per county or per Water Resource Inventory Area (WRIA). Water could also be allocated regionally by specifying that a certain amount of water would be allocated above and below Priest Rapids Dam.

Another regional equity issue relates to the pending municipal and industrial water rights applications that would withdraw water from behind Grand Coulee Dam. Another regional allocation option would be to allocate some water to those users. That water would not be released from Lake Roosevelt. The amount of water allocated to the upstream users would be subtracted from the 25,000 acre-feet of water released from Lake Roosevelt for municipal and industrial uses. Because this water for municipal and industrial uses would not be released to the Columbia River, benefits to fish downstream on the Columbia River would be reduced.

These allocation options would more equitably allocate water between upstream and downstream users and could be combined with the any of the allocation alternatives described earlier. This allocation alternative was incorporated into the Preferred Alternative (Section 2.4.1.2).

2.4.1.2 Preferred Alternatives

Based on further analysis and comments received on the Draft Supplemental EIS, Ecology selected the following two alternatives as the Preferred Alternatives for the allocation to municipal and industrial users. The two alternatives are variations of the alternatives that were considered in the Draft Supplemental EIS. The first covers the geographic extent of applicants who can receive mitigation water and the second covers the order in which they will be processed. Ecology intends to charge municipal and industrial users a fee to cover the transaction costs of acquiring the water (RCW 90.90.010(1)).

Allocation to Users Whose Water Use Would Impact the Columbia River and Allocation to Achieve Regional Equity

Ecology will consider the use of Lake Roosevelt incremental flow releases to mitigate for municipal and industrial users who:

1. Can physically capture the released water at their point of diversion or withdrawal, and

2. Cannot physically capture the water from the river, but whose proposed water use would impact Columbia River stream flows within the same season or year without requiring mitigation of impacts in subsequent seasons or years.

Municipal and industrial users whose impacts can be mitigated by Lake Roosevelt releases include:

a. Surface water diverters on the Columbia River in Lake Roosevelt or downstream of Grand Coulee Dam.

b. Surface water diverters on the Snake River in the McNary Pool and Ice Harbor Pool.

c. Surface water diverters, tributary to the Columbia River, where water is available in the tributary[1], and if the impacts of those upstream diversions are mitigated by Lake Roosevelt releases within the same year or season. The objective is to prevent carry-over of impacts to subsequent seasons or years[2].

d. Ground water diverters tributary to the Columbia River, where local availability is not limiting, and whose ground water sources are in bank storage. The objective is to prevent carry-over of impacts to subsequent seasons or years[3]. Wells located in bank storage have a near-immediate effect on the Columbia River.

Ecology will use the one-mile corridor as the surrogate for ground water users in bank storage. Ground water users outside the one-mile corridor could petition for inclusion where hydrogeologic evidence supports it.

Ecology will also apportion mitigation water to pending municipal and industrial applicants to achieve regional equity in Columbia River counties. Ecology will convene an annual meeting of municipal and industrial stakeholders and describe its permitting progress each year. Although there is diversity in the location of pending applicants up and down the Columbia River, until a case-by-case evaluation is made of the 20-year-old applications, it is difficult to conclude whether allocation based on first-in-time, first-in-right will result in regional equity. Ecology will use this annual review process (which could also be described in each year's legislative report and associated public review) to determine whether its regional equity goals are succeeding. It is anticipated that it will take several years to permit all of the municipal/industrial water. If Ecology determines that regional equity is not occurring, it could amend WAC 173-563 to reserve the

[1] If a tributary closure or instream flow would prevent the issuance of a new water right, then Lake Roosevelt releases would not be allocated to an applicant unless tributary mitigation was also available.

[2] In practicality, some carry-over of impacts on the order of days may occur. Consider a year-round municipal right issued on a tributary whose impact on the Columbia River occurs two days later. Impacts on December 31, Year 0 would then accrue to the Columbia River on January 2, Year 1.

[3] Pumping effects of wells located outside of bank storage can persist well into future years, which creates difficulty in matching supply and demand or justifying OCPI determinations when the effects are not fully known.

remaining water for a specific geographic location. As an initial screen, Ecology will track permits issued by WRIA, and those issued upstream and downstream of Priest Rapids Dam.

Allocation Based on Priority Needs

Ecology intends to process applications in the order they were received with two exceptions based on priority needs:

1. Applicants that meet the criteria for expedited processing under WAC 173-152.

2. Water required to meet existing settlement agreements or contractual obligations.

Quantities of water allocated to these priority needs will be made with public input and will be summarized in each year's annual legislative report.

All applicants will be expected to meet conservation criteria as part of the public interest test for issuing new water rights. Ecology will meet with the Department of Health and external stakeholders to determine how best to integrate its own statutory conservation mandates with those adopted in rule by the Department of Health and voluntary measures adopted by individual communities through water system planning.

2.4.2 Allocation for Interruptible Water Rights

There are approximately 379 holders of interruptible water rights in the Columbia River Basin totaling 309,159 acre-feet. Most of those water rights are for irrigation along with municipal, power and other uses. Ecology would run a drought insurance program for the 33,000 acre-feet and notify interruptible water right holders of program requirements. Each interruptible water right holder would file an application for a standby-reserve permit. Ecology considered six options for allocating the 33,000 acre-feet of water to those water users during drought years in the Draft Supplemental EIS. This section presents the alternatives that Ecology considered, but did not select followed by the Preferred Alternatives for the allocation for interruptible water rights.

2.4.2.1 Alternatives Considered but not Selected

The following alternatives were considered for allocation of interruptible water rights in the Draft Supplemental EIS, but were not selected as Preferred Alternatives.

Even Distribution Allocation

Under this option an equal percentage of the 33,000 acre-feet of water from Lake Roosevelt would be allocated to all holders of interruptible water rights. No effort would be made to prioritize the water uses or distribute the water equally throughout the basin. This allocation alternative was incorporated into the Preferred Alternative (Section 2.4.2.2).

Allocation Based on Hierarchy of Beneficial Use

Ecology would establish a hierarchy for allocating water rights based on the type of beneficial use. Water would be allocated based on the type of crop being irrigated and the risk to the user of not receiving water. For example, water could be allocated to users with perennial crops such as orchards who risk losing their crops if they cannot irrigate every year. Water could also be allocated based on a priority of use, i.e., between irrigation, power generation and municipal uses. Allocating water based on hierarchy of beneficial use could potentially be supported by the maximum net benefit policy in RCW 90.03.005. The policy states:

> *It is the policy of the state to promote the use of the public waters in a fashion which provides for obtaining maximum net benefits arising from both diversionary uses of the state's public waters and the retention of waters within streams and lakes in sufficient quantity and quality to protect instream and natural values and rights.*

Ecology did not select this allocation alternative as part of the Preferred Alternative because it would not provide flexibility in allocation to holders of interruptible water rights.

Market-Based Allocation

Ecology would allocate the incremental storage release water using a market-based allocation such as an auction or by establishing a rate structure for the water. One option for implementing a market-based allocation would be to charge users for the water. This option would allow Ecology to achieve a return on its water investments to offset the costs of acquiring the water. Any funds received would be placed in the Columbia River Basin Water Supply Development Account to be used for other water management projects in the Columbia River Basin (RCW 90.90.010).

The Market-Based Allocation Alternative could be used in combination with other allocation alternatives to improve the allocation of water. For example, if users who received an even distribution of water (Section 2.3.2.1) were allowed to assign their water to other users, a higher and better use of crops could be promoted. If the Market-Based Allocation Alternative were combined with the Allocation by Lottery (described below), a similar promotion of higher and better use of crops could occur. This allocation alternative was incorporated into the Preferred Alternative (Section 2.4.2.2).

Allocation by Lottery

Ecology would establish a lottery to allocate the storage releases. Holders of interruptible water rights who want the water would buy a lottery ticket and a system would be established for selecting lottery winners. Funds received from the lottery would be placed in the Columbia River Basin Water Supply Development Account. This allocation alternative was not incorporated into the Preferred Alternative because of the complexity of implementing a lottery.

Allocation Based on Priority Date

Under this option, Ecology would allocate water based on the priority date of the interruptible water rights. Those rights with the oldest priority dates would receive the water first. This system would be similar to the existing system for allocating water rights. It is anticipated that this system would result in more water being allocated to users in the lower portion of the basin where the oldest interruptible water rights are located. Ecology did not incorporate this alternative into the Preferred Alternative because it would limit flexibility of the Proposal.

Voluntary Allocation

This option would allocate water to those interruptible water rights holders who request the water. Based on experience with the 2001 drought, Ecology believes that not all interruptible water rights holders would request additional water. Those users have historically found other ways to mitigate the drought. This alternative was combined with other alternatives and included in the Preferred Alternative (Section 2.4.2.2).

2.4.2.2 Preferred Alternatives

Based on further analysis and comments on the Draft Supplemental EIS, Ecology selected a Preferred Alternative that combines even distribution allocation with market-based allocation through a voluntary enrollment program. The selected alternative is a combination of some of the original alternatives described in the Draft Supplemental EIS. For the Preferred Alternatives, Ecology would charge water users to offset the transaction costs of acquiring the water (RCW 90.90.010(1)). The Preferred Alternative is intended to provide Ecology with maximum flexibility in meeting the purpose of the Proposal.

Even Distribution Allocation, Market-Based Allocation, and Voluntary Enrollment

Under this Preferred Alternative, Ecology will run a voluntary enrollment program for the Drought Insurance Program. All interruptible water right holders will be notified of the program requirements and may choose to enroll if the program meets their needs. This will be similar to the program run by Ecology in the 2001 drought. In that instance, about two-thirds of the interruptible water rights holders enrolled in the program. The remaining water right holders either curtailed their use during periods of interruption or sought other temporary water right changes to meet their needs.

Ecology will develop guidelines for its Drought Insurance Program so enrollees understand the criteria. Elements of the Program will include:

1. An equal percentage of the 33,000 acre-feet of water from Lake Roosevelt would be allocated to all holders of interruptible water rights.[4] Water uses would not be

[4] If every interruptible water right holder enrolled in the program, each water right holder would receive an additional 10.7 percent of supply during drought (e.g., 33,000 acre-feet / 309,159 acre-feet). For example,

prioritized or distributed to achieve regional equity. However, significant geographic diversity already exists in the location of interruptible water rights (see Figure 4-12).

2. Water users who receive an even distribution of water would be allowed to assign their water to other users in a drought year. Ecology would develop and manage its permit system to accommodate and reflect the redistribution of the initial allocation through the secondary market-based reallocation.

3. The program will include some mandatory conservation or use restrictions. Ecology may apply the same criteria used in 2001. These could include requirements for best management practices, limits on expansion of permitted acreage during droughts, caps on water duties or other elements.

4. Reimbursement of Ecology's costs to make the water available and to manage it would be required. Any funds received would be placed in the Columbia River Basin Water Supply Development Account to be used for other water management projects in the Columbia River Basin (RCW 90.90.010).

Each standby/reserve permit would issue for the same quantities as the interruptible water right because of the inherent uncertainty about the level of drought to plan for. Ecology's only "on-the-ground" drought experience was in 2001 when instream flows were not met. In 2001, there were 16 weeks of interruption (11 with the critical flow adjustment taken in 2001 by the Ecology Director). Climate change, changes in river operations and other factors may lead to greater drought management needs in the future.

Although the standby/reserve permit would issue for the full interruptible quantity (e.g., 100 acre-feet in the example in Footnote 4), each right would be provisioned to the water availability in the Drought Insurance Program at the time of the next drought. Although initially the 33,000 acre-feet of Lake Roosevelt releases would be the only volume of drought water available, in the future Ecology plans to have a portfolio of drought supplies including Trust Water holdings from conservation, storage releases, dry-year lease acquisitions, and others. Ecology will use the Columbia River Webmap to display how much drought supply it has available for each interruptible water right holder.

2.4.3 What Happens to Water Rights When the Program Ends?

The 2004 MOU between the state, Reclamation, and the Columbia Basin Project Irrigation Districts directs Ecology to find a long-term source of replacement water for the 132,500 acre-feet of storage releases. There is no term or expiration under the agreement; rather, this section of the MOU describes the intent of the parties to provide a meaningful immediate supply of water to benefit both instream and out-of-stream needs in the Columbia River Basin, and to work on other long-term storage and conservation

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a water right holder with 100 acre-feet of interruptible supply would receive a standby/reserve permit for 10.7 acre-feet to use when the interruptible right is curtailed.

alternatives. Similarly, there are elements of the contracts with Reclamation that cannot be indefinite because of federal law. The water service contract for the municipal and industrial water will be a long-term supply, with renewal options. The supply for interruptible water rights is subject to continued Congressional authorization of the Federal Drought Relief Act. These types of agreements are in place throughout the West, and Ecology views them as permanent sources of supply for the purposes of new water right permitting.

Ecology plans to continue to evaluate long-term storage and conservation plans to add to its water supply development portfolio and at some point replace the water described herein. If the MOU is terminated because Ecology has found replacement water, Ecology intends to provide such water in-kind, in-place, and in-time with this environmental analysis. If this is not possible, Ecology will conduct a separate environmental review prior to terminating the MOU.

Water rights based on the proposed water service contract would be the same as any other water rights held by irrigation districts, municipalities, and individuals in many areas in Washington and the western United States. The federal contracts are for a period of no more than 40 years and can be extended. To the extent that water supplies created through program funding are not permanent or may not be completely reliable, Ecology intends to develop contingency plans to manage the risks associated with the potential future loss of that supply.

2.5 Alternatives Considered but Not Carried Forward

Ecology has considered a number of different alternatives to meet the purposes of the proposal that were not being carried forward for the reasons described below.

2.5.1 New Storage Reservoir

One alternative that was considered was to build a new off-stream reservoir to store the 132,000 acre-feet of water that is proposed for release from Lake Roosevelt. To allow for evaporation from the reservoir, infiltration, sedimentation, and required dead storage, the reservoir would need to have a larger capacity than 132,000 acre-feet to store that amount of water. For planning purposes, Ecology considered a reservoir of approximately 150,000 acre-feet. Allocation of the 132,000 acre-feet of water would be the same as the Proposal. This alternative is not being carried forward because Ecology has determined that releasing water from the existing reservoir would have fewer environmental impacts than constructing a new reservoir.

2.5.2 Conservation

Another option that has been advocated in comments on the Programmatic EIS and scoping comments on this Supplemental EIS is conservation. Commenters have suggested that Ecology should require conservation for all water users and not issue new water rights. Conservation is an important component of the Columbia River Basin Water Management Program which encourages and allocates funding for conservation

projects. A number of conservation projects are being actively pursued in the Columbia River Basin, including on the Columbia Basin Project and in the Odessa Subarea. However, conservation alone is not expected to provide enough water to meet demand in those areas. In its 2007 report to the Washington State Legislature (www.ecy.wa.gov/programs/wr/cwp/cr_07legrpt.html), Ecology reported on the potential water savings from conservations projects identified in the water supply inventory. The report concluded that if all the conservation projects identified in the inventory were implemented (at a cost of $523 per acre-foot), approximately 1,000,000 acre-feet of water could be saved. Most of the projects identified would result in water savings that would be available on a temporary basis and would only provide benefits between the point of diversion and point of return. Therefore, the saved water could not be used to issue new permits. Ecology is continuing to evaluate potential conservation projects.

As described in Sections 2.4.1 and 2.4.2, Ecology will require conservation measures for municipal and industrial users and holders of interruptible water rights who receive water from the Lake Roosevelt Incremental Storage Releases Project.

2.5.3 Water Markets

Ecology is considering expansion of water marketing opportunities in the state. The State of Washington has established a pilot water bank program in the Yakima River Basin and is exploring additional water marketing and banking opportunities as part of the Yakima River Basin Storage Feasibility Study (see Section 1.5.5).

Ecology considered using water markets or banks to resolve water supply problems in the Columbia River Basin; however, it would be cost-prohibitive for the state to acquire the needed volumes of water exclusively through the purchase of water rights. Another water market option would be to allow individual water rights holders to acquire additional water through market mechanisms. Although water transfers are not precluded, Ecology is not promoting the large-scale water marketing that would be required to provide the necessary volumes of water. Ecology chose not to aggressively pursue water marketing because of concerns about the impact to local economies from the transfer of the needed volumes of water. The Market-based Allocation Alternative (Section 2.3.2.3) would incorporate a market-based allocation into the storage releases program.

2.5.4 Different Allocations for the Incremental Storage Releases

Releasing less water from Lake Roosevelt would decrease the amount of drawdown of the reservoir. Changing the allocation of the storage releases could provide more water for stream flows by allocating less water to municipal and industrial uses or interruptible water rights, for example. As described in Section 1.3.1.1, the MOU between Ecology, Reclamation and the Columbia Basin Project Irrigation Districts specifies the purpose of the storage releases and the allocation of those releases. Releasing less water or allocating that water differently would not meet the purposes of the MOU.

2.5.5 In-Time Storage Releases for Municipal Demand

Ecology considered a flow option for non-drought years that would allow releases for municipal and industrial use spread over the entire year. The releases would match estimated demands for municipal and industrial uses, which tend to be year-round. This alternative would have required an OCPI determination (Section 2.3). In coordination with Reclamation, Ecology determined that this option was not possible because of other obligations that must be met to release flows from and to fill Lake Roosevelt.