Chapter 1
Introduction

On September 22, 2011, the U.S. Department of the Interior (DOI), acting as the National Environmental Policy Act (NEPA) Lead Agency and the California Department of Fish and Game (CDFG), acting as the California Environmental Quality Act (CEQA) Lead Agency, released the Klamath Facilities Removal Draft Environmental Impact Statement/Environmental Impact Report (Draft EIS/EIR) for public review and comment.

In compliance with NEPA, a Notice of Availability (NOA) was published by DOI's Office of Environmental Policy and Compliance in the Federal Register (Federal Register Vol. 76, No. 184, 58833) on Thursday September 22, 2011, and an associated NOA was published by the U.S. Environmental Protection Agency (USEPA) in the Federal Register (Federal Register Vol. 76, No. 190, 60822) on Friday September 30, 2011. A Notice of Completion (NOC) was also published in the State Clearinghouse (State Clearinghouse # 2010062060) on the same date, in accordance with CEQA.

The Lead Agencies conducted public involvement activities on the EIS/EIR during scoping and upon release of the Draft EIS/EIR. The scoping comment period and scoping meetings were held in June and July of 2010. Additionally the Lead Agencies held six public hearings during the comment period on the Draft EIS/EIR at the following locations in California and Oregon:

- Klamath County Fairgrounds, Klamath Falls, Oregon, October, 18, 2011;
- Chiloquin Community Center, Chiloquin, Oregon, October 19, 2011;
- Yreka Community Center, City of Yreka, California, October 20, 2011;
- Karuk Community Room, Orleans, California, October 25, 2011;
- Arcata Community Center, Arcata, California, October 26, 2011; and
- Yurok Tribal Administration Office, Klamath, California, October 27, 2011.

Written and verbal comments were accepted at meetings and written comments were accepted throughout the comment period. The comment period on the Draft EIS/EIR closed on December 30, 2011.

Since receipt of public comments revision of the Draft EIS/EIR has been underway to produce this Klamath Facilities Removal Final Environmental Impact Statement/Environmental Impact Report (Final EIS/EIR). This Final EIS/EIR consists of three volumes: the revised Volume I, revised Volume II, and new Volume III. Volumes I and II of the Final EIS/EIR have been revised in response to the comments.

Volume III of the Final EIS/EIR contains responses to all comments received during the comment period (see Chapter 10, Chapter 11, and Chapter 12), as well as all changes made to the public Draft EIS/EIR (see Appendix AB in Volume III).

During the process of addressing public comments, some notable content changes were made in the Final EIS/EIR from the prior Draft EIS/EIR. In this Final EIS/EIR, the Lead Agencies:

- Disclosed the Preferred Alternative as Alternative 2, Full Facilities Removal of Four Dams (Proposed Action) (see Executive Summary, ES.7.4 and Chapter 5, Section 5.9);
- Refined and more clearly articulated how stored sediment and suspended sediment volumes were calculated (see Section 2.4.3 "Sediment Weight and Volume in the Four Facilities and Erosion with Dam Removal");
- More clearly identified the City of Yreka pipeline relocation discussion as being a programmatic level of analysis (see Section 2.4.3.9);
- Added a determination on critical habitat for eulachon with information from the recent listing (see Section 3.3.4.3);
- Expanded and refined information on flow modeling and flow requirements on the Klamath River (see Section 3.3.3.3.7);
- Expanded and refined the discussion in the Algae Section (see Section 3.4.4.3);
- Expanded the discussion on wetlands, riparian communities, and mitigation for possible effects to these resources (see Section 3.5.4.3);
- Expanded the discussion and added a determination on amphibians and reptiles (see Section 3.5.4.3);
- Expanded and refined the discussion on effects on groundwater from the On-Project plan (see Section 3.7.4.3);
- Expanded discussion and added a determination on water rights assurances related to tribal water rights (see Section 3.8.4.3);
- Expanded discussion of the Tribal Trust for several of the federally recognized tribes (see Section 3.12);
- Expanded the Cultural Resources sections to more comprehensively address National Historic Preservation Act (NHPA) compliance and more clearly articulated the mitigation measures for Cultural Resources (see Section 3.13.4.1);
- Refined the discussion on real estate effects (see Section 3.15.3.6); and
- Added a Scenic Quality mitigation measure SQ-1: Measures to Minimize Scenery Disturbances (See Section 3.19.4.4).

1.1 Purpose and Approach of this Document

This EIS/EIR evaluates the potential impacts of the removal of the four PacifiCorp[1] dams on the Klamath River as contemplated in the Klamath Hydroelectric Settlement Agreement (KHSA [2010]). The Klamath Basin Restoration Agreement (KBRA [2010]), as well as the transfer of Keno Dam are treated and analyzed as connected actions.[2] The KBRA includes programs that will undergo detailed development and analysis in the future. Therefore, it is anticipated that additional NEPA and CEQA analyses for the suite of actions contained in KBRA will be tiered as appropriate to this EIS/EIR. CDFG recognizes that additional environmental analysis may be required by any California public entity with an approval or permitting obligation if required by CEQA.

The EIS/EIR is being prepared in compliance with NEPA and CEQA and will inform a determination by the Secretary of the Interior (Secretary) (i.e., Secretarial Determination) on whether dam removal will advance salmonid restoration and is in the public interest, including but not limited to, consideration of potential impacts on affected local communities and Indian Tribes.

The KHSA establishes a process for the Secretarial Determination.[3] This process includes additional studies, environmental review, and the decision by the Secretary. This process also includes decisions by the States of Oregon and California as to whether they concur with the Secretarial Determination.

The J.C. Boyle, Copco 1, Copco 2, and Iron Gate Dams and appurtenant facilities (herein referenced as the Four Facilities) are being evaluated for removal, and Keno Dam is being evaluated for transfer (not the removal of) from PacifiCorp to DOI as a connected action. These dams are affecting salmonid fisheries by blocking hundreds of miles of potential river habitat, by affecting downstream water quality (specifically, dissolved oxygen, water temperature, and algal toxins), and altering flows in sections of the mainstem of the river (Hamilton et al. 2011). If authorized through legislation, the Secretary will use the impacts analysis presented in this EIS/EIR to help determine whether and to what extent facilities removal should occur.

Conflicts over water and other natural resources in the Klamath Basin between conservationists, tribes, farmers, fishermen, and State and Federal agencies have existed for decades. In particular, several developments affecting the Klamath Basin have occurred in recent years:

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[1] PacifiCorp refers to the current utility and all previous owners/names.

[2] NEPA defines a connected action as an action that (i) automatically triggers other actions that may require environmental impact statements (ii) cannot or will not proceed unless other actions are taken previously or simultaneously (iii) is an interdependent part of a larger action and depends on the larger action for its justification. Connected actions are closely related and therefore should be discussed in the same impact statement (40 CFR Part 1508.25 (a)1).

[3] Secretarial Determination: Decision by the Secretary of the Interior based on a thorough scientific review of existing science, data and other information whether removal of the dams: (1) will advance restoration of the salmonid fisheries of the Klamath Basin; and (2) is in the public interest.

- In 2001, water deliveries to irrigation contractors in Reclamation's Klamath Project (described below) were substantially reduced.
- In 2002, returning adult salmon suffered a major die-off.
- In 2006, the commercial salmon fishing season was closed along 700 miles of the West Coast to protect weak Klamath River and other major river salmon stocks.
- In 2010, due to drought conditions,[4] Reclamation's Klamath Project had a reduction in water deliveries resulting in short-term idling of farmland and increased groundwater pumping.

Historical conflicts over the Klamath Basin's limited water resources stem in part from concerns over fish populations. The fish populations native to the Klamath River have decreased over time due to human activities in the basin. The Lost River and shortnose suckers have been affected by degradation and loss of habitat as a result of human activities in the Upper Klamath Basin over the last century (United States Fish and Wildlife Service [USFWS] 2008). Water resource development on the Klamath River and its tributaries (including the Shasta, Scott, and Trinity Rivers) has contributed to declines in salmonid fish populations that have harmed both in-river and coastal fishing for subsistence, commercial, and recreational fishing (Congressional Research Service 2005).

1.2 Physical and Biological Setting

The Klamath Basin geography, topography, hydrology, and biology are unique from other watersheds in the Pacific Northwest. Water in the Klamath River, unlike other watersheds in the Pacific Northwest, originates in relatively flat, open valleys before crossing the Trinity and Coast Ranges in a steep river canyon and intercepting cold water inputs from the Scott, Salmon, and Trinity Rivers. The flat topography, along with lower average precipitation in the Upper Klamath Basin than the Lower Klamath Basin, influences water flow and temperature in the river. Figure 1-1 illustrates many of the features of the Klamath Basin described in this section.

1.2.1 Geography and Topography

The Klamath River originates just downstream from Upper Klamath Lake in southern Oregon and flows 253 miles southwest through northern California to the Pacific Ocean. Along this course, the Klamath River crosses the Cascade Mountains; the Klamath is one of the only rivers to do so. The Upper Klamath Basin has five main lakes: Crater Lake, Upper Klamath Lake, Lower Klamath Lake, Clear Lake, and Tule Lake. The Lower Klamath Basin, with its border beginning at Iron Gate Dam, is almost 200 miles long and contains the four major Klamath River tributaries: the Shasta, Scott, Salmon, and Trinity Rivers. The basin is generally rural, with a total population of approximately 120,000. Its largest communities are Klamath Falls, Oregon, and City of Yreka, California.

[4] As declared by the Governor of Oregon (State of Oregon 2010).

Figure 1-1. The Klamath Basin.

The Upper Klamath Basin has broad, extending valleys shaped by volcanoes and active faulting. The fault-bounded valleys contain all of the large, natural lakes and large wetlands of the Klamath Basin, with the exception of Crater Lake.

As described above, the Klamath River is unlike most river systems, in that the river is warmer and flatter in its headwaters, while downstream portions, beginning near the dams, tend to be colder and steeper. The Klamath River flows through mountainous terrain from the Oregon-California State line to the reaches downstream from Iron Gate Dam. Downstream from Iron Gate Dam, and for most of the river's length to the Pacific Ocean, the river maintains a relatively steep, high-energy channel. Here, the Klamath River forms a deep canyon surrounded by mountains of the Trinity and Coast Ranges. Lower Klamath Basin valleys include those of the Shasta and Scott Rivers (National Research Council [NRC] 2004).

1.2.2 Climate and Hydrology

The basin receives widely varying precipitation. The climate in the Upper Klamath Basin is dry, with an annual precipitation of approximately 13 inches at the river's origin near Klamath Falls, Oregon. In contrast, the Lower Klamath Basin is wet, with an annual precipitation of approximately 80 inches near the river's mouth at Requa, California. At its higher elevations (above 5,000 feet), the Upper Klamath Basin receives rain and snow during the late fall, winter and spring. Peak stream flows generally occur during snowmelt runoff in late spring/early summer. After the runoff period, flows drop in the late summer/early fall. Fall storms may increase flows compared with the lower summer flows in the Lower Klamath Basin.

1.2.3 Biology

The Klamath Basin has some of the richest biological and ecological habitats in the United States. The Klamath Basin is within the Klamath Bioregion (California) and the East and West Slope Cascades (Oregon) eco-regions. Below are overviews of the biological resources within this unique and biologically important basin and effects of natural resource development on these resources in the Upper and Lower Klamath Basins. Chapter 3 and the appendices of this document describe these resources in detail.

1.2.3.1 Vegetation

Vegetation communities in these eco-regions include drier pine and fir forests in the mountain ranges of Siskiyou County and wetter forests near the coast. Recognized for their biological diversity, the Klamath-Siskiyou mountain ranges contain more than 3,000 known plant species, including 30 temperate conifer tree species, more than any other ecosystem in the world (CDFG 2006). Land cover in the basin consists of a combination of upland forest habitat, aquatic habitat, and wetland habitat. Sagebrush and interior valley vegetation communities also exist within lower elevation areas.

The Klamath River Canyon itself is a mosaic of mixed conifer forest communities and riparian habitats (Federal Energy Regulatory Commission [FERC] 2007).

In addition to their ecological significance, many plants, especially wetland plants, in the Klamath Basin are culturally important to Indian Tribes in the Klamath River region for food, basketry, regalia, and medicine, and some have importance for ceremonial use as well (Larson and Brush 2010; FERC 2007).

1.2.3.2 Wildlife

The Klamath Basin is home to a large number of wildlife species, with great diversity. Surveys have identified more than 200 vertebrate species, including amphibians, reptiles, birds, and mammals (PacifiCorp 2004a).

The Upper Klamath Basin is along the Pacific Flyway, and it supports the largest concentration of migratory waterfowl in North America, with up to 2 million migratory birds during fall migration and about half that number in spring (Jarvis 2002). Large numbers of water-related birds also use the Upper Klamath Basin for breeding (Shuford et al. 2004). In addition, the Upper Klamath Basin supports the largest wintering population of bald eagles in the coterminous United States (Shuford et al. 2004).

1.2.3.3 National Wildlife Refuges

The Klamath Basin National Wildlife Refuge (NWR) System comprises six refuges (Bear Valley, Clear Lake, Klamath Marsh, Lower Klamath, Tule Lake, and Upper Klamath). The refuges maintain critical wetland habitat in the river basin and provide a stopover point for three-quarters of the migratory waterfowl on the Pacific Flyway (USFWS 2010). The refuges provide vital feeding, nesting, and resting habitat for one to two million birds during the spring and fall migrations, all of which are highly dependent on the water resources of the area.

1.2.3.4 Fish

The Klamath Basin is home to 19 native fish species. The Klamath Basin once produced large runs of steelhead, Chinook salmon, coho salmon, green sturgeon, eulachon, coastal cutthroat trout, and Pacific lamprey. Runs of these anadromous fish (fish that migrate from salt water to spawn in fresh water) contributed substantially to tribal, commercial, and recreational fisheries (USFWS 1986; DOI Klamath Basin Task Force 1991; Gresh et al. 2000).

Some of these fish species are listed under the Federal Endangered Species Act (ESA) and California Endangered Species Act (CESA). Federally listed species include coho salmon, bull trout, Lost River sucker, shortnose sucker, southern distinct population segment green sturgeon, and southern distinct population segment eulachon. California listed species include coho salmon, Lost River sucker, shortnose sucker and longfin smelt. In addition, both the Lost River sucker and the shortnose sucker are fully protected under the California Fish and Game Code Section 5515(a)(3)(b)(4) and (6), respectively.

Upper Klamath Lake and other waterways in the upper watershed provide habitat for the Lost River and shortnose suckers. Suckers are an important part of tribal culture and were an important part of tribal diet. The Lost River and shortnose sucker spawning runs still constitute ceremonial events for the Klamath Tribes. In 1988, these fish were listed as endangered under the ESA (USFWS 1988) and CESA, eliminating the ability to fish for suckers and thus eliminating them from tribal diet and traditional cultural practices.

Copco 1 Dam, completed in 1918, was the first mainstem dam to block fish passage to the majority of the Upper Klamath Basin. Iron Gate Dam, completed in 1962, is the downstream-most dam that blocks upstream fish passage. Flow releases from Iron Gate Dam, and the quality of the water being released, affect the quantity and quality of fish habitat for listed and non-listed species in the mainstem downstream from Iron Gate Dam (FERC 2007). The other hydroelectric dams, with the exception of J.C. Boyle Dam, which is equipped with a ladder that does not meet current standards (Administrative Law Judge 2006), also block upstream fish passage and isolate fish populations between these dams. The dams have eliminated access for anadromous fish, including salmon and steelhead, to hundreds of miles of potential habitat in at least 49 tributaries upstream of Iron Gate Dam.

The text boxes below describes the development and use of natural resources in the basin and some of the corresponding effects on water supplies and water quality as well as vegetation and wildlife communities in the Upper and Lower Klamath Basin.

Effects of Natural Resource Development

In the Upper Klamath Basin

- Logging, road-building, farming, and ranching above Upper Klamath Lake have removed riparian vegetation, warmed streams, and increased the loads of nutrients and sediment entering the rivers and Upper Klamath Lake, contributing to water-quality problems.
- Draining tens of thousands of acres of wetlands around Upper Klamath Lake for agriculture land increased nutrient loads to the lake and eliminated near-shore habitat for aquatic biota.
- Link River Dam operations to meet irrigation water demand cause wider water-level fluctuation in Upper Klamath Lake.
- Upper Klamath Lake has become more enriched with nutrients, leading to pH and dissolved oxygen problems that are stressful to aquatic biota and nuisance blooms of blue-green algae that produce toxins (primarily microcystin) .
- Shortnose and Lost River suckers went from a dominant species in Upper Klamath Lake, and a food source for tribal members, to an endangered species in 1988, a closed fishery, and a fish population that continues to decline.
- The Keno Reach and Keno Impoundment/Lake Ewauna receives large loads of decaying organic matter (blue-green algae) from Upper Klamath Lake, producing extremely low dissolved-oxygen levels that persist in the summer and fall.

Sources:
Bortleson and Fretwell, 1993; CDFG 2004; Chesney and Yokel, 2003; National Academies Press, 2003; NOAA Fisheries 2009; Risley and Laenen, 1998; Snyder and Morace, 1997; Sullivan et al, 2008; USFWS 2009; Wood, 1999.

Effects of Natural Resource Development

In the Upper Klamath Basin

- Draining and farming hundreds of thousands of acres of wetlands below Upper Klamath Lake (and the Lost River Valley) has decreased habitat for waterfowl on the Pacific Flyway and affects the amount and timing of water released downstream for fish.
- Klamath River is blocked at Iron Gate Dam for passage of fall and spring run Chinook salmon, coho salmon, and steelhead, limiting fish production in the basin and access to salmon by tribes in the Upper Klamath Basin.

In the Lower Klamath Basin

- The four dams create a "thermal lag" in both the spring and the fall. This means that the river warms more slowly in the spring and cools more slowly in the fall than it would without the dams. The result of these thermal effects is a delay in timing of runs for the migration of fall Chinook salmon.
- Severe water quality problems in the two larger reservoirs, Copco 1 and Iron Gate, including blue-green algal toxins (that can affect humans and fish), low dissolved oxygen, high temperatures, and high pH, create stressful biological conditions.
- Use of water in major Klamath River tributaries (e.g.,Scott and Shasta Rivers) for farming and ranching has decreased habitat for coho salmon, which was federally listed in 1997.
- High nutrient concentrations leaving the Upper Klamath Basin result in the excessive growth of attached algae (periphyton) in the lower mainstem river, which causes stressful swings in pH and DO for aquatic biota.
- Reduced flows during extreme droughts have been identified as a factor in large fish die-offs, as occurred in the fall of 2002 when tens of thousands of pre-spawned salmon and steelhead died in the lower river.
- Weak Klamath salmon stocks in the ocean has required closure of fisheries and commercial and recreational fishing along 700 miles of the Oregon and California coasts, as occurred in 2006.

Sources:
Bortleson and Fretwell, 1993; CDFG 2004; Chesney and Yokel, 2003; National Academies Press, 2003; NOAA 2009; Risley and Laenen, 1998; Snyder and Morace, 1997; Sullivan et al, 2008; USFWS 1993; USFWS 2009; Wood, 2009.

1.3 People and Historic Setting

1.3.1 Tribes

Six federally recognized Indian Tribes live, work, hunt, and fish within the basin, including the Klamath Tribes, Quartz Valley Indian Community, Karuk Tribe, Hoopa Valley Tribe, Yurok Tribe, and Resighini Rancheria. Historically, the tribes depended on the fish populations of the Klamath Basin for food as well as ceremonial traditions. Prior to European settlement, generations of Indians resided along the Klamath, , Shasta, Scott, and Trinity Rivers, as well as in the Upper Klamath Basin, and depended on the fisheries for cultural, ceremonial, subsistence, and commercial purposes.

The decline in the fisheries has caused economic hardship for all the tribes. The Klamath Tribes, in the Upper Klamath Basin, have not had salmon harvest opportunities since 1918, when Copco 1 Dam was built. By contrast, the salmon harvest continues to provide revenue for the Yurok and Hoopa Valley Tribes (who reside in the Lower Klamath Basin).

1.3.1.1 The Klamath Tribes

The Klamath Tribes, headquartered in Chiloquin, Oregon, in the Upper Klamath Basin near Upper Klamath Lake, are composed of three historically separate tribes: the Klamath Tribe, the Modoc Tribe, and the Yahooskin band of Snake Indians. The Klamath Tribes' ancestral territory covers approximately 580,000 acres. The current membership is about 3,400 and the current total land base is approximately 600 acres.

1.3.1.2 Quartz Valley Indian Community

The Quartz Valley Indian Community is a federally recognized Indian Tribe representing people of Upper Klamath Basin (Karuk) and Shasta Indian ancestry. The Quartz Valley Reservation is in Siskiyou County near the community of Fort Jones. The population is around 126, with a tribal enrollment of about 150. Total reservation size is 174 acres.

1.3.1.3 Karuk Tribe

The Karuk Tribe has been federally recognized since 1979 and occupies territory along the middle section of the Klamath River. The 2000 U.S. Census reported tribal membership to be 2,702 individuals. In 2004, the California Department of Housing and Community Development reported tribal membership to be 3,164 individuals. Currently, the Karuk have one of the largest Indian Tribes in California with approximately 4,800 members.

1.3.1.4 Hoopa Valley Tribe

The Hoopa Valley Indian Reservation is in the northeastern corner of Humboldt County in northern California, approximately 50 miles inland from the Pacific Ocean, and encompasses roughly 20 percent of Hupa aboriginal territory. The reservation has nearly 92,160 acres, and is the largest reservation in California. The northern portion of the reservation is in Yurok ancestral territory. The Trinity River bisects the reservation, and a small length of the northern border of the reservation includes about a quarter mile

reach of the Klamath River. The 2000 U.S. Census counted 2,633 people on the reservation, and the tribe listed an enrollment of 2,130 in 2004.

1.3.1.5 Yurok Tribe

With more than 5,000 members, the Yurok Tribe is the largest Indian Tribe in California. The tribe's ancestral territory covers approximately 350,000 acres and includes approximately 50 miles of Pacific coastline. Today, the tribe's reservation in Del Norte and Humboldt Counties in California encompasses approximately 57,000 acres, bordered on the west by the Pacific Ocean, and consists of a strip of land extending a mile along each side of the Klamath River from just upstream of the confluence of the Klamath and Trinity Rivers about 50 miles inland.

1.3.1.6 Resighini Rancheria

The Resighini Rancheria is in Del Norte County, California, and encompasses 239 acres. The Resighini Rancheria is several miles inland from the mouth of the Klamath River and rests on the southern banks of the river, completely surrounded by the Yurok Reservation. It is primarily settled by Yurok Indians affiliated with the Yurok Coast Indian Community. A population of 36 was reported on Rancheria lands in the 2000 U.S. Census.

1.3.2 Early Euroamerican Settlement and Hydroelectric History

Before the influx of Euroamericans that began in the 1840s, the basin was settled by American Indians. Euroamerican exploration of the Klamath Basin began in the early 19th Century. The discovery of gold in California in 1848 prompted a dramatic influx of European immigrants to California and other areas, including the Klamath Basin. Euroamerican settlement in the Klamath River watershed continued throughout the 19th Century. Sustained logging enterprises appeared in the 1880s, and the first hydroelectric development in the Klamath Basin was established in 1891 in the Shasta River Canyon below Yreka Creek.

Envisioned in 1911, the Klamath Hydroelectric Project was built in phases, beginning with Copco 1 (1918), followed by Copco 2 (1925), J.C. Boyle (1958) and the Iron Gate facilities in 1962. The development of the Klamath Hydroelectric Project played a significant role in the area's economic development, both as part of a regionally significant, locally owned and operated private utility and through the role that increased electrical capacity played in the expansion of the timber, agriculture, and recreation industries during the 20th century.

Other historical developments have also influenced human uses of Klamath Basin resources. In 1906 the Bureau of Reclamation began constructing the Klamath Project, which converted wetlands to agricultural development and encouraged settlement of farmers in the Klamath Basin. Farmers in the Basin include off-project as well as project irrigators. In 1908 President Theodore Roosevelt established the Klamath Lake Reservation, the nation's first waterfowl refuge. The refuge, which was later renamed the Lower Klamath National Wildlife Refuge, is now part of a complex of refuges that

attracts wildlife viewers and waterfowl hunters. The commercial salmon fishery, which originated with gillnetters on California rivers in the early 1850s, was superseded by ocean trollers when the river fisheries were closed (in 1933 for the Klamath River). The ocean salmon fishery, which originated with a few fishermen operating from sailboats in Monterey Bay in the 1880s, expanded to northern California ports by 1916 due to changes such as the replacement of sails with gasoline engines. Ocean recreational fishing became popular with the development of the commercial passenger fishing vessel industry after World War II. The redband trout fishery in the Klamath Basin had become a renowned trophy fishery by 1920, and steelhead fishing on the Klamath River dates back to the early 1930s.

Multiple generations of farmers, fishermen and recreationalists have been a part of Klamath Basin and nearby coastal communities over the past century.

The text box below (p. 1-13) summarizes more detail of early settlement in the Klamath Basin and some of the effects of historic and current land and water use in the basin.

1.3.3 Water Use and Management

1.3.3.1 Water Management

Figure 1-2 presents a timeline for activities within the Klamath Basin that have resulted in current conditions. The timeline follows the development of several major institutions, Reclamation's Klamath Project, Oregon's Klamath Basin Adjudication, and PacifiCorp's Klamath Basin Hydroelectric Project and relicensing. Today these institutions influence the major water management decisions in the Klamath Basin and played a key role in the negotiations that eventually became the KHSA and KBRA.

1.3.4 Reclamation's Klamath Project

In addition to the Klamath Basin's distinctive setting, biological resources, and cultural history, the basin is also the site of one of the first developments authorized under the 1902 Reclamation Act (Public Law 57-161, 32 Stat. 388). Development and construction of Reclamation's Klamath Project took place between 1905 and 1966, with major features of the project completed by the early 1940s. As the largest water management effort in the Upper Klamath Basin, Reclamation's Klamath Project features include a system of reservoirs, dams, canals, and pumps (Figure 1-3), and use of Gerber Reservoir and Clear Lake to reduce flooding of lands in the Tule Lake area. The authorization for Reclamation's Klamath Project stated its purpose:

> *For project works to drain and reclaim lake bed lands of the Lower Klamath and Tule Lakes, to store water of the Klamath and Lost Rivers, including storage of water in Lower Klamath and Tule Lakes, to divert irrigation supplies, and to control flooding of the reclaimed lands.*

History of Land- and Water-Use Changes in the Klamath Basin

When settlers of European descent first arrived in the Klamath Basin in the 1800s, there was a vast complex of 350,000 acres of lakes and wetlands, interconnected by sloughs and river channels. Many of these wetlands were attractive for farming if drained and a reliable source of irrigation could be developed. Construction of Reclamation's Klamath Project began in the early 1900s to facilitate farming. The Klamath Project, the largest water delivery system in the basin, now includes 7 dams, 18 canals, 45 pumping facilities, and over 500 miles of ditches to supply irrigation water to over 224,000 acres of agricultural lands (DOI 2010b). Upper Klamath Lake's outlet was modified with the construction of Link River Dam (completed in 1921) to allow more active storage of irrigation water for the Klamath Project.

Farms and ranches above Upper Klamath Lake, and on tributaries in the lower Klamath River (e.g., Scott, Shasta, and Trinity Rivers) use surface water supplies that are not part of the Klamath Project. In total, about 80 percent of the wetlands in the Klamath Basin were converted to farming and ranching activities (Atkins 1970, Natural Resources Conservation Service 2007 as referenced in Larson and Brush 2010). However, some of these wetlands were retained, like the Lower Klamath National Wildlife Refuge, by President Roosevelt in 1908, creating the first waterfowl refuge in the United States and providing critical habitat along the Pacific Flyway.

Economic development of natural resources changed conditions in the Klamath Basin over the past 100 years, including extensive basin-wide logging, gold mining in the lower river basin, and construction of a railroad causeway in the early 1900s that isolated and dried Lower Klamath Lake. Construction of four main-stem hydroelectric facilities on the middle part of the Klamath Basin between 1918 (Copco 1 Dam) and 1962 (Iron Gate Dam) blocked the passage of migrating salmon and steelhead to the Upper Basin and represents that last major hydrologic modification in the basin.

The combination of these changes have contributed to significant loss of fish habitat, degradation of water quality, and declining fish populations -- especially for salmon and two endangered sucker species (shortnose and Lost River suckers). Hydrologic alterations, including water diversions, wetland losses, declining water quality, and dam construction are among the most significant land- and water-use changes in the Klamath Basin.

Land use patterns in the Klamath Basin will continue to reflect the value of natural resources in providing economic gain for local communities and the Nation. Returning to conditions seen in the 1800's is unrealistic; however, there are numerous opportunities to substantially improve fisheries, wildlife habitat, and water quality conditions in the Klamath Basin and reverse the pattern of environmental problems in the Klamath Basin.

Indian Tribe use of Klamath Basin since time immemorial

1855 Klamath River Reservation established (Yurok)

1864 Land for Hoopa Valley Indian Reservation set aside by Congress.

1864 Klamath Indian Reservation established (The Klamath Tribes)

1876 Boundaries of the Hoopa Valley Indian Reservation established by Executive Order

1905 Reclamation's Klamath Project Authorized by the Secretary of the Interior (May 15)

1906 Work on Reclamation's Klamath Project begins

1907 A-Canal completed

1908 President Theodore Roosevelt forms Lower Klamath Lake National Wildlife Refuge, the first in the nation

1910 Clear Lake Dam completed

1911 Clear Lake National Wildlife Refuge established

1912 Lost River Diversion Channel completed

1912 Wilson Diversion Channel completed

1917 Connection of Lower Klamath Lake to Klamath River blocked by a railroad embankment

1918 Copco I Dam completed; passage of salmon and steelhead to the Upper Basin blocked; harvest opportunities for Klamath tribes ends

1921 Anderson-Rose Dam on Lost River completed

1921 Link River Dam completed

1922 Copco 2 construction begins in order to meet additional electricity demand of timber industry and reregulate flows from Copco 1

1923 Malone Diversion Dam on Lost River completed

1924 Miller Diversion Dam on Miller Creek completed

1925 Copco 2 completed

1925 Gerber Dam completed

1928 Tule Lake (39,116 acres) and Upper Klamath Lake (15,000 acres) National Wildlife Refuges established

1930 Lost River Diversion Channel enlarged

1931 Keno Regulating Dam completed

1938 Land purchased for Resighini Rancheria

1939 Quartz Valley Indian Reservation established

1941 D-Pumping Plant completed

1941 Construction of Klamath Straits Drain which provided hydrologic connection between Lost River basin and Klamath River

1950 Lost River Diversion Channel enlarged

1954 Klamath Tribes' (Modoc, Klamath, and Yahooskins) federal recognition terminated

1956 FERC Relicensing for PacifiCorp or predecessor

1957 Klamath River Basin Compact ratified by California and Oregon "to facilitate ...the orderly ...development, use, conservation, and control" of Basin water for domestic and agricultural uses, as well as protection and enhancement of wildlife, fish, and recreational resources. To ensure equitable distribution and use of water between the two states and the Federal Government

1958 J.C. Boyle Dam completed, providing peaking power

1962 Iron Gate Dam completed

1966 Keno Dam replaced

1967 Lost River sucker listed as "Rare" by State of CA

1971 Shortnose sucker listed as "Rare" by State of CA

1971 Lost River and shortnose sucker identified as species of concern under the CESA

1975 Klamath Basin adjudication proceedings for State of Oregon begin

1975 North Coast Regional Water Quality Control Board adopts basin plan for the Klamath River Basin, including designation beneficial uses for the river

1979 Karuk Tribe becomes federally recognized

1981 Portion of the Lower Klamath River designated as a "Wild and Scenic" river

1984 Trinity River Restoration Program initiated

1986 Klamath Tribes reinstated as federally recognized tribes and close their sucker fisheries for conservation purposes. Hundreds of adult suckers are observed in a summer-time die-off in Upper Klamath Lake

1986 20 Year "Klamath River Basin Fishery Resources Restoration Act" - Public Law 99-552 (100 Stat. 3081, October 27, 1986), as amended by P.L. 100-580. Task Force formed

1988 Lost River and shortnose sucker listed as endangered under ESA

1988 Hoopa Yurok Act establishes an independent Yurok Reservation and Tribal government

1990 State of Oregon refuses to issue a permit for the federally-licensed Salt Caves Hydroelectric Project

1991 Long Range Plan for the Klamath River Basin Conservation Area Fishery Restoration Program completed by U.S. Fish and Wildlife Service

1992 Federal Government sets the Klamath tribal fishing to 50% of total available harvest for Fall Chinook

1994 Klamath River from J.C. Boyle Powerhouse to the California-Oregon state line designated "Wild and Scenic" river

1995 Adoption of the Klamath, Six Rivers, and Shasta-Trinity National Land and Resource Management Plans that included findings from the 1993 Forest Ecosystem Management Team and 1994 Record of Decision for the Northwest Forest Plan for the Aquatic Conservation Strategy that mandated watershed restoration, identified key watersheds as strongholds for salmon recovery, and standards and guidelines to protect and restore watershed conditions

Figure 1-2a. Klamath Basin Timeline Since 1905.

1995-1997 Many thousands of adult suckers observed in summer-time die-off in Upper Klamath Lake

1997 Coho salmon listed as Federally threatened by National Oceanic and Atmospheric Administration (NOAA) Fisheries Service under the ESA

1998 South Fork Trinity River sediment TMDL completed

2000 PacifiCorp begins re-licensing proceedings for the Klamath Hydroelectric Project

2001 NOAA Fisheries issues Biological Opinion specifying minimum Iron Gate Dam flow and ramping rates for the protection of SONCC coho salmon for April - September 2001

2001 Water deliveries to Reclamation's Klamath project are curtailed to protect ESA listed species due to drought

2001 Reclamation's Klamath project water delivery curtailments reversed

2001 Trinity River sediment TMDL completed

2002 NOAA Fisheries issues Biological Opinion on Reclamation's proposed operations of the Klamath Project from April 1, 2002 – March 31, 2012

2002 At least 33,000 returning adult salmon, primarily fall-run Chinook, die in the mainstem of the Klamath

2002 Upper Klamath Lake Drainage temperature, dissolved oxygen, and pH TMDLs completed

2002 Coho salmon listed as threatened under the CESA

2003 Construction of new A-Canal headgates and fish screen

2003 North Coast Regional Water Quality Control Board adopts Native American cultural use as a beneficial use of the Klamath River from the Seiad Valley Hydrologic Subarea downstream to the Klamath Glen Hydrologic Subarea

2004 PacifiCorp initiates dam relicensing application with FERC

2004 Construction of Lost River and shortnose sucker friendly fish ladder at Link River Dam

2004 PacifiCorp files Final License Application with FERC to re-license Klamath Hydroelectric Project

2005 KBRA/KHSA talks begin

2005 Commercial salmon ocean harvest restricted on California and Oregon Coast due to weak Klamath stocks

2005 Water quality studies show that Copco and Iron Gate Reservoirs have regular, prolonged blooms of toxic algae in the summertime. Warnings against human contact with the reservoir water begin to be routinely posted

2005 Salmon River temperature TMDL completed

2006 Federal Agencies release drafts of mandatory prescriptions and conditions for a new Klamath Hydroelectric Project license, which if finalized will require fishways, flow management changes, and other changes

2006 PacifiCorp challenges scientific foundations of Federal prescriptions and conditions in a trial-type hearing under the Energy Policy Act of 2005. Judge's rulings support scientific foundations of most Federal prescriptions and conditions

2006 KBRA/KHSA talks intensify

2006 PacifiCorp's license to operate the Klamath Hydroelectric Project expires. The relicensing process continues and the Project continues operation under annual license

2006 Agriculture's contracts for low power rates expire

2006 700 miles of Oregon and California coast closed to commercial salmon fishing due to weak Klamath stocks

2006 Scott River temperature and sediment TMDLs completed

2007 Federal agencies finalize mandatory prescriptions for a new Klamath Hydroelectric Project license, requiring fishways and flow management changes, among other things

2007 FERC issues a Final Environmental Impact Statement for the Klamath Hydroelectric Project

2007 Commercial salmon ocean harvest restricted on California and Oregon coasts due to weak Sacramento River salmon stocks

2007 Shasta River temperature and dissolved oxygen TMDLs completed

2008 California commercial ocean harvest closed due to weak Sacramento River salmon stocks

2008 Removal of Chiloquin Dam opens Lost River and shortnose sucker habitat

2008 Lower Sprague River pH and nutrients TMDLs completed

2008 Removal of Chiloquin Dam opens Sprague River and shortnose sucker habitat

2008 Klamath Hydroelectric Settlement Agreement in Principle Released

2009 Oregon legislature passes Senate Bill 76, which provides for $180 million in PacifiCorp rate-payer contributions to the cost of removing the lower four dams in the Klamath Hydroelectric Project

2009 California commercial ocean salmon harvest closed

2010 Oregon Public Utilities Commission approves Oregon rate-payer contributions of $180 million to dam removal fund

2010 Reclamation significantly decreases water deliveries from Upper Klamath Lake to its Klamath Project to reserve water in Upper Klamath Lake for ESA-listed suckers and provide flow augmentation for ESA-listed coho downstream of Iron Gate Dam to comply with USFWS and NOAA Fisheries Biological Opinions

2010 Public review draft of KBRA released

2010 KHSA and KBRA signed

2010 Klamath River temperature, organic enrichment/low dissolved oxygen, nutrient, and microcystin TMDLs completed

2011 California Public Utilities Commission approves California rate-payer contributions of $13.76 million to dam removal fund

2011 Upper Klamath River and Lost River temperature, dissolved oxygen, pH, ammonia toxicity, and chlorophyll-a TMDLs completed

Figure 1-2b. Klamath Basin Timeline Since 1905.

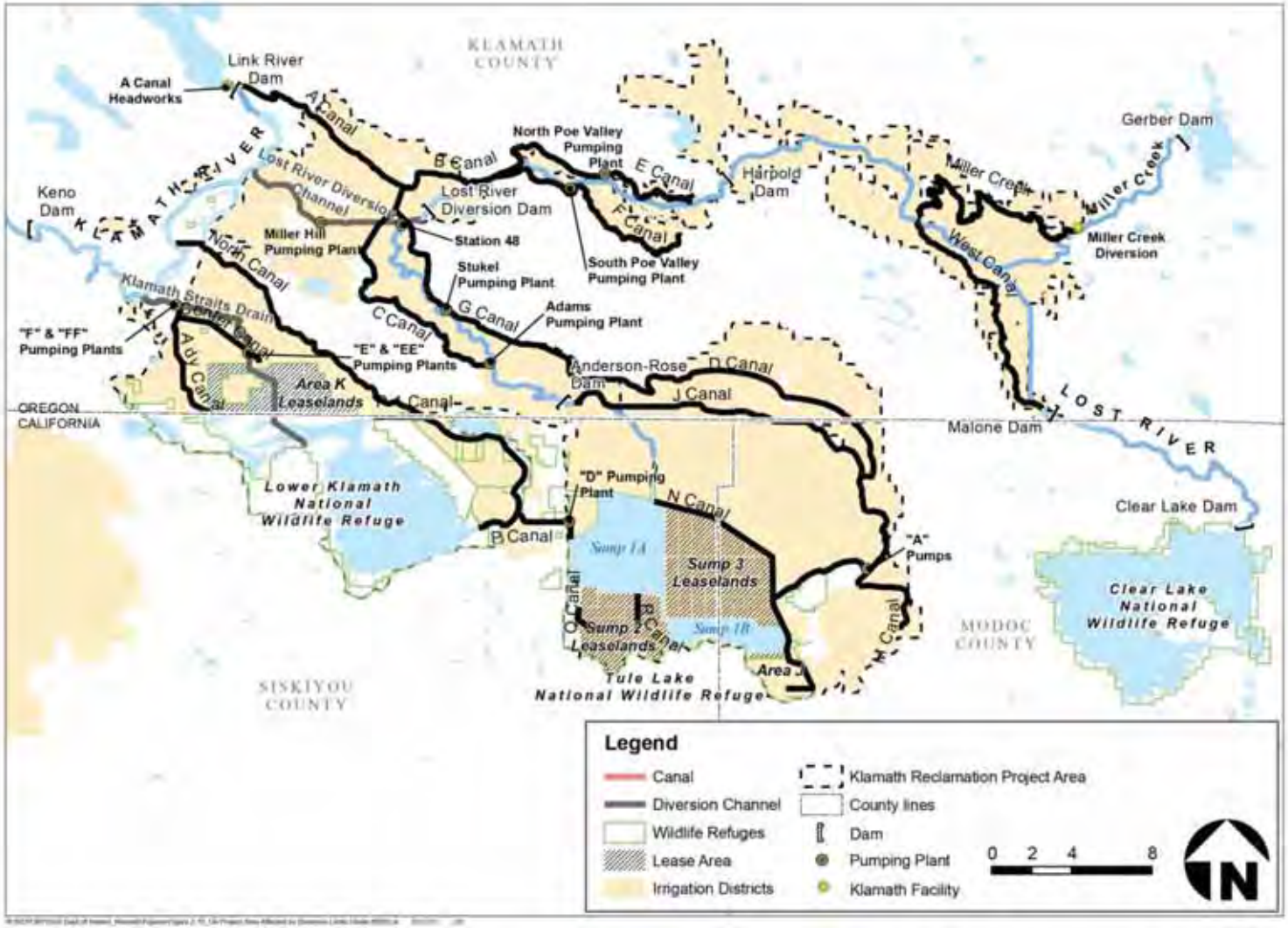

Figure 1-3. Reclamation's Klamath Project.

Reclamation's Klamath Project was originally authorized at a time when an increasing number of farmers were drawn to the fertile land in northern California and southern Oregon. Development of Reclamation's Klamath Project converted much of the Tule Lake and Lower Klamath Lake wetland complexes into farmland.

The first dams constructed for Reclamation's Klamath Project included Clear Lake Dam (1910), Lost River Diversion Dam (1912), and Lower Lost River Diversion Dam (1921). Also in 1921, the completion of Link River Dam, executed through a contract between PacifiCorp and the United States, allowed for additional water management in the Upper Klamath Basin. This included greater storage in Upper Klamath Lake, water releases reflecting natural conditions, and controlled releases from the lake to provide a source of irrigation water. The agreement between the power company and the government allowed for PacifiCorp to operate the dam for hydropower production, and in return, the company was to supply low-cost electricity to Reclamation and farmers in the region.

Today, Reclamation's Klamath Project irrigates up to 224,000 acres of land on which farmers grow wheat, malt barley, potatoes, onions, alfalfa, and other crops (DOI 2010b). Reclamation's Klamath Project also provides recreational opportunities for boating, water skiing, hunting, fishing, camping, and picnicking. In addition, the Klamath Basin National Wildlife Refuge System usually receives water from the operation of Reclamation's Klamath Project for the benefit of waterfowl and other species.

Reclamation's Klamath Project, with the exception of Clear Lake, does not include multi-year water storage facilities. Upper Klamath Lake represents most of its storage, but the lake is shallow, with an average depth of approximately 9 feet when full (Wood et al. 2006). Upper Klamath Lake can only provide small opportunities for carryover storage between years; therefore, Reclamation's Klamath Project operations are dependent on the amount of annual precipitation. During wet years, Reclamation's Klamath Project irrigators typically receive full contract deliveries of water. In the past few decades, however, Klamath Project irrigators and refuge managers have not always had their requests for water met during drought years because of the need to conserve water for fish in the Klamath River downstream from Iron Gate Dam and in Upper Klamath Lake.

Keno Dam (constructed in 1966 by PacifiCorp) also plays an important role in regulating water elevations in Keno Impoundment/Lake Ewauna for the gravity operation of irrigation canals. Keno Dam is owned by PacifiCorp and is not part of Reclamation's Klamath Project.

1.3.5 Oregon Water Rights Adjudication

If an appropriation of water was initiated prior to the enactment of the Oregon Water Rights Adjudication1909 water code and has not been forfeited or abandoned since then, a water user may have a "vested" water right. Federal reserved water rights vest no later than the date of the reservation, and as early as "time immemorial," regardless of whether they have been used. A claim to a vested water right is quantified and made a matter of record through an adjudication proceeding. The Oregon Water Resources Department

(OWRD) is responsible for gathering information about the use of water and presenting its findings to the County Circuit Court. This circuit court is responsible for resolution and issues a decree that states who has the right to use water, the amount and location of water use, and the priority date. A water right certificate is issued for each decreed right (State of Oregon 2009).

The Klamath Basin Adjudication is the adjudication process for pre-1909 and Federal reserved water right claims for the use of surface water within the Klamath Basin. The Klamath Basin proceeding began in 1975. Claims of water use have been gathered and contests have been filed on most of those claims. Administrative law judges have been holding hearings and issuing proposed orders determining the claims and contests. The OWRD will review those proposed orders, and any proposed settlements of contests, and submit its Findings and Order of Determination to the Circuit Court in December 2012. Water right claims have been filed by private water users, The Klamath Tribes, Klamath allottees, and the United States (the Klamath Project and for Indian and other Federal reservations of land). Once OWRD's findings are submitted to court there will be an opportunity for parties to file exceptions to those findings. The Klamath Circuit Court will resolve the exceptions and issue a decree. As of July 2010, 97 percent of contests and 92 percent of the claims in the Klamath have reached a proposed resolution, either by issuance of an administrative law judge's proposed order or by a proposed settlement of contests (State of Oregon 2010).

1.3.6 Klamath Hydroelectric Project and Relicensing

1.3.6.1 Klamath Hydroelectric Project

Constructed between 1911 and 1962, the Klamath Hydroelectric Project includes eight facilities: Iron Gate, Copco 1, Copco 2, J.C. Boyle, Fall Creek, and Keno Dams, and the East and Westside developments. The portion of the Klamath River that includes the four most downstream dams is referred to as the Klamath Hydroelectric Reach. Keno Dam was originally constructed to produce power, but hydropower facilities were never developed (PacifiCorp 2004b) and it currently has no generating facilities. Its primary purpose is to maintain water levels in Keno Impoundment/Lake Ewauna for gravity delivery of water into irrigation canals. Link River Dam was constructed for Reclamation's Klamath Project. Link River Dam is operated under Reclamation direction for regulating flows, storing water in Upper Klamath Lake, and hydropower production through the PacifiCorp's East and Westside powerhouses.

The purpose of the PacifiCorp Klamath Hydroelectric Project is power generation. In addition, the Four Facilities provide mid to late summer whitewater boating on the Hells Corner Reach as a result of hydropower peaking operations and other recreation opportunities at the existing reservoirs and associated facilities. PacifiCorp's total annual generation from the Klamath Hydroelectric Project is 716,800 megawatt-hours of electricity (FERC 2007). These dams were not designed to provide downstream flood protection or to provide water storage for drought relief (FERC 2007). The J.C. Boyle,

Copco 1, and Copco 2 facilities are hydro peaking[5] operations and Iron Gate Dam is operated as a re-regulating facility, so that on a daily basis roughly as much water enters the Hydroelectric Reach as leaves the Hydroelectric Reach. Chapter 2 presents additional information about the physical characteristics of the Four Facilities.

1.3.6.2 Federal Energy Regulatory Commission Relicensing

The Klamath Hydroelectric Project is regulated by FERC. The original 1956 license for these dams expired in 2006. The dams have been operating under annual licenses since the original license expired. The annual license specifies the same conditions as the original license. The 1956 PacifiCorp license pre-dated environmental laws, and did not include prescriptions (Section 18 of the Federal Power Act [16 USC 811]) for fish passage over or around the dams; only J.C. Boyle Dam has fish passage facilities, but these fishways do not meet current criteria (Administrative Law Judge 2006).

On February 24, 2004, PacifiCorp filed an application with FERC for a new operating license for the Klamath Hydroelectric Project. FERC prepared a Final EIS for relicensing the project, but no license has been issued. Currently, the relicensing proceeding remains active. Until a decision is made regarding its license application, PacifiCorp will continue to operate the dams under annual licenses from FERC.

As part of the process for the 2004 relicensing application, a variety of stakeholders (individuals, Indian Tribes, fishing interests, and conservation groups) expressed a strong desire that the four hydroelectric dams be decommissioned and removed to address declining fisheries in the lower Klamath River and reopen approximately 43 miles of blocked mainstem river habitat between Iron Gate and Keno Dams and hundreds of miles of stream habitat in Upper Klamath Basin tributaries. Fish considerations were a major subject during the relicensing process.

The National Oceanic and Atmospheric Administration (NOAA) Fisheries Service recommended to FERC under Federal Power Act Section 10(a) removal of the Four Facilities as the best alternative to contribute to restoration of all fish species of concern in the Klamath watershed. Concurrently under Section 18 authority of the Federal Power Act, NOAA Fisheries Service (the Secretary of Commerce's authority under the FPA has been delegated to the NOAA Fisheries Service) and DOI prescribed mandatory fishways and passage at each mainstem dam. Flows were conditioned from J. C. Boyle for riparian habitat, whitewater recreation, and attraction flows for fish passage by DOI under Section 4(e) authority. The fishway prescriptions by the NOAA Fisheries Service and the DOI were strongly supported by basin tribes, fishing interests, and conservation groups to address declining fisheries in the lower Klamath River and to reopen blocked habitat. The fishway prescriptions and the DOI's conditions were challenged by PacifiCorp and others under the Energy Policy Act of 2005, in a trial-type hearing that considered disputed issues of material fact relating to the prescriptions and conditions. The resulting Administrative Law Judge decision (*In the Matter of: Klamath Hydroelectric Project, Docket* Number 2006-NMFS-0001, September 27, 2006) found that PacifiCorp failed to

[5] Peaking: operation of a hydropower projects to meet peak electrical demands.

meet its burden of proof regarding most of the factual issues in dispute. FERC conducted environmental analysis of the proposed project, including the mandatory terms and conditions and prescriptions in 2007. However, the FERC relicensing proceedings are still active; accordingly, the mandatory terms and conditions and fishway prescriptions, and the terms of Biological Opinions issued by the USFWS and NOAA Fisheries Service to FERC for the new license, have not been incorporated as terms of the Klamath Hydroelectric Project license.

Before FERC relicenses the Klamath Hydroelectric Project, the states of Oregon and California must also issue water quality certification under Section 401 of the Clean Water Act. The California State Water Resources Control Board (SWRCB) cannot issue certification until environmental documentation, consistent with the requirements of the CEQA, is completed. The certification proceedings are currently being held in abeyance as requested in Section 6.5 of the KHSA. The SWRCB held a hearing on July 7, 2012, on this matter. The SWRCB decided to continue holding the certification in abeyance, however, SWRCB then noted they could not continue to do so indefinitely. In a February 2009 letter addressing their CEQA Notice of Preparation, the agency noted that failing to process the water quality certification in a timely manner risks a FERC determination that the Board has waived of certification, and the State of California would have no regulatory authority to address water quality issues associated with the Klamath Hydroelectric Project during the FERC relicensing.

1.4 KHSA and KBRA

The KHSA was an outcome of the FERC's Alternative Dispute Resolution Procedures (18 CFR 385.601, et seq.) wherein the parties elected to set aside differences to reach resolution on a settlement that is in furtherance of the interests of all of the parties. As established in Section 1.2 of the KHSA, many of the parties to the settlement maintain that removal will help restore basin resources and all signatory parties agree that settlement is in the public interest. As also specified in the KHSA, and in compliance with applicable law, the Secretary is undertaking a scientific and environmental analysis of potential facilities removal, and connected actions under the KBRA. The Secretary acknowledges that full implementation of the KHSA will depend on factors not entirely within the control of the settling parties and that failure to implement the KHSA, like any proposed settlement, could lead to a resumption of the underlying new licensing proceeding for the Klamath Hydroelectric Project that is pending before the FERC. As a consequence, should the FERC proceeding resume for any reason, we want to remind the reader that the analysis in this EIS/EIR was undertaken pursuant to the KHSA for the purpose of implementation of this settlement and to inform the Secretary in his determination under the KHSA regarding dam removal. This analysis and its comparison of alternatives is being conducted pursuant to NEPA and CEQA and solely in support of the determination to be made by the Secretary pursuant to the KHSA, a negotiated settlement agreement. It is not prepared to inform any other determinations made or environmental documents prepared pursuant to NEPA or CEQA outside the KHSA framework, including FERC’s determination in the Klamath Hydroelectric Project

licensing proceeding, which is to determine whether, and if so, under what conditions, to issue a new license for the Klamath Hydroelectric Project, or the States' determinations including whether, and under what conditions, to issue a Section 401 water quality certification for the Klamath Hydroelectric Project and associated environmental documents.

Negotiations leading to the KBRA began in 2005 after the water-related farming and fisheries crises in 2001 and 2002. The negotiation process also coincided with PacifiCorp's 2004 relicensing application. The proposed KBRA was released in January 2008. The KHSA and KBRA are negotiated agreements and reflect the cooperative effort by more than 40 parties in the basin, representing different interest groups. The agreements were negotiated and written to be executed together and are referred to herein as the Klamath Settlement. Representatives of Federal agencies, the states of California and Oregon, Indian Tribes, counties, farmers, and conservation and fishing groups agreed to the comprehensive solutions presented in the KHSA and KBRA.[6]

1.4.1 KHSA

The KHSA establishes the process for additional studies, including the development of a "Detailed Plan for Facilities Removal" (Detailed Plan) and environmental review to support the Secretary's Determination as to whether removal of the four downstream-most dams on the Klamath River that are owned by PacifiCorp (1) will advance restoration of the salmonid fisheries of the basin, and (2) is

From the KHSA…

"By March 31, 2012, the Secretary shall use best efforts to (i) determine whether the costs of Facilities Removal as estimated in the Detailed Plan, including the cost of insurance, performance bond, or similar measures, will not exceed the State Cost Cap, and (ii) otherwise complete his determination whether to proceed with Facilities Removal as described in Section 3.3.1, provided that any such determination shall not be made until the following conditions have been satisfied:

A. Federal legislation, which in the judgment of the Secretary is materially consistent with Appendix E, has been enacted;
B. The Secretary and PacifiCorp have agreed upon acceptable terms of transfer of the Keno facility pursuant to Section 7.5.2;
C. The States of Oregon and California have authorized funding for Facilities Removal as set forth in Section 4 of this Settlement;
D. The Parties have developed a plan to address the excess costs, consistent with Section 4.10 of the Settlement, if the estimate of costs prepared as part of the Detailed Plan (including the cost of insurance, performance bond, or similar measures) shows that there is a reasonable likelihood such costs are likely to exceed the State Cost Cap; and
E. The Secretary has identified a DRE[1]-designate, and, if the DRE-designate is a non-Federal entity: (i) the Secretary has found that the DRE-designate is qualified; (ii) the States have concurred in such finding; the (iii) the DRE-designate has committed, if so designated, to perform Facilities Removal within the State Cost Cap (KHSA Section 3.3.4)."

[1] DRE: Dam Removal Entity

[6] Although representatives of the Federal agencies participated in negotiations for both the KHSA and the KBRA, Federal agencies did not sign the KBRA.

in the public interest, which includes, but is not limited to, consideration of the potential impacts on affected local communities and Indian Tribes.

The KHSA also includes provisions for the interim operation of the Four Facilities by PacifiCorp and the process to transfer, decommission, and remove the dams.

1.4.1.1 Detailed Plan and Other Studies

The Parties[7] to the KHSA agreed further studies were needed to determine if the actions specified under the KHSA were feasible. These studies include analysis of the regional impacts of both the KHSA and the KBRA on water quality, economics, real estate, recreation, and biology. The findings of these studies are summarized in the *Final Klamath Dam Removal Overview Report for the Secretary of the Interior – an Assessment of Science and Technical Information* (DOI and DOC [NOAA Fisheries Service] 2012).

In addition, the Secretary's Determination and concurrence from the states will also be based, in part, on a Detailed Plan that describes the following:

- Physical methods to remove the dams and achieve a free-flowing condition.
- As necessary and appropriate, plans for management, removal, and/or disposal of sediment, debris, and other materials.
- A plan for site remediation and restoration.
- A plan for measures to avoid or minimize adverse downstream impacts.
- A plan for compliance with all Applicable Laws, including anticipated permits and permit conditions.
- Estimated costs.
- A statement of measures to reduce risks of cost overruns, delays, or other impediments to Facilities Removal.
- The identification, qualifications, management, and oversight of a non-Federal Dam Removal Entity (DRE), if any, that the Secretary may designate.

The Overview Report, Detailed Plan, and other studies produced as part of the Secretarial Determination process are available online at: www.klamathrestoration.gov.

1.4.1.2 State Cost Cap

The KHSA sets a cost cap of $450 million for removal of the Four Facilities. In addition, pending regulatory approval, the KHSA allows for PacifiCorp to recover the costs of the company's net investment in the facilities, the ongoing operating costs, and the costs of replacement power. The $450 million would come from the State of California and PacifiCorp's ratepayers. Specifically, an amount not to exceed $200 million would come from additional charges to PacifiCorp customers (residing in either state) and $250 million from the sale of California bonds or other means at the discretion of California. The United States would not be responsible for the costs of facilities removal.

[7] Parties: Signatories to the Klamath Hydroelectric Settlement Agreement.

1.4.1.3 Secretarial Determination

The KHSA establishes a process for the Secretarial Determination. This process also includes decisions by the States of Oregon and California as to whether they concur with the Secretarial Determination. Implementation of the KHSA requires both Federal legislation and for the Secretary to make a determination, in cooperation with the Secretary of Commerce and other Federal agencies as appropriate, regarding facilities removal, particularly whether, in his judgment, the conditions of the KHSA have been satisfied, and whether facilities removal should proceed. This process includes existing and additional studies, environmental review, and the decision by the Secretary.

1.4.1.3.1 Affirmative Determination

If the Secretary finds that the removal of the facilities would advance restoration of the salmonid fisheries and is in the public interest, an Affirmation Determination, as defined under Section 3 of the KHSA, can be made. Once the Secretary has made an Affirmation Determination, California and Oregon would also provide notice to the Secretary and other parties within 60 days on whether each State concurs with the Affirmative Determination. The KHSA provides for each State to consider two factors when deciding to concur or not: 1) whether significant impacts identified in its environmental review can be avoided or mitigated as provided under its State law, and 2) whether facilities removal will be completed within the State cost cap (defined as the collective maximum monetary contribution from the states of California and Oregon, described below and in Section 4.1.3 of the KHSA).

As part of an Affirmative Determination, the Secretary will also concurrently designate the entity that will serve as the DRE. The DRE, once identified, would develop a Definite Plan for Facilities Removal which would include all the information necessary to implement the Detailed Plan as well as the additional elements listed in KHSA Section 7.2.A. The Secretary must consult with the Parties to the KHSA prior to designating a non-Federal DRE and receive concurrence from the states with that selection.

In addition to the decommissioning and removal of the Four Facilities, actions associated with an Affirmative Determination would include the transfer of Keno Dam ownership from PacifiCorp to DOI, which is analyzed as a connected action in this EIS/EIR.

1.4.1.3.2 Negative Determination

If the Secretary determines not to proceed with facilities removal, the KHSA terminates unless the Parties can agree to a remedy for the issues leading to the Negative Determination.[8] Prior to adopting or public release of such a determination, the Secretary would notify the Parties of the tentative determination and its basis. The Parties would consider whether to amend the KHSA in a manner that would permit the Secretary to make an Affirmative Determination.

[8] Negative Determination: A determination by the Secretary of the Interior under Section 3 of the Klamath Hydroelectric Settlement Agreement that facilities removal should not proceed.

1.4.1.4 KHSA Implementation

If an Affirmative Determination is made, PacifiCorp would transfer ownership of each facility when the DRE provides notice that all necessary permits and approvals have been obtained for removal of a facility, all contracts necessary for facility removal have been finalized, and facility removal is ready to commence. After the transfer, the DRE would remove the facilities. The target date to begin deconstruction is January 1, 2020.

1.4.1.4.1 Local Power

Section 5 of the KHSA includes terms for collaborative efforts between PacifiCorp and the Parties to identify potential ways to reduce impacts of dam removal on local community power. However, the KHSA does not provide for specifics on this collaborative effort, and therefore is not included in the analysis presented in this EIS/EIR. For further information see Section 5 of the KHSA.

1.4.1.4.2 KHSA Interim Measures

The KHSA includes interim measures for the operation of the Klamath Hydroelectric Project by PacifiCorp from the effective date of the agreement (February 18, 2010) or as otherwise specified for each interim measure. If the Secretary makes an Affirmative Determination, PacifiCorp would continue to perform the interim measures until decommissioning. If there is a Negative Determination or the KHSA terminates for other reasons prior to decommissioning, then the interim measures may generally cease, except for the purposes of the Clean Water Act or the ESA. These measures include the implementation of measures included as part of PacifiCorp's Interim Conservation Plan (ICP).[9] Measures from the ICP (see Appendix C of the KHSA) are included in the Habitat Conservation Plan (HCP). The HCP requires PacifiCorp to fund projects to enhance the survival and recovery of ESA-listed coho salmon, turbine venting to improve dissolved oxygen concentrations downstream from Iron Gate Dam, funding for the development and implementation of a Hatchery Genetics Management Plan for Iron Gate Hatchery, increased flow variability at Iron Gate Dam, and studies on fish disease. On March 13, 2012, NOAA Fisheries Service issued an Incidental Take Permit (ITP) that authorizes potential take associated with Klamath Hydroelectric Project operations and Interim Measure implementation. Under the ITP, PacifiCorp is required to implement a HCP that contains measures to minimize and mitigate Project effects on coho salmon. The HCP was developed by PacifiCorp over a period of several years with involvement from NOAA Fisheries Service, CDFG, and other stakeholders in the basin. The HCP, ITP, and supporting documents are available at http://swr.nmfs.noaa.gov/nepa.htm.

Appendix D of the KHSA provides additional measures to be implemented during the interim period. These measures include funding restoration activities, increasing monitoring activities, removing the J.C. Boyle bypass barrier, funding water quality research, funding to the Bureau of Land Management for the land management measures

[9] As described in the KHSA, the Interim Conservation Plan was developed by PacifiCorp through technical discussions with the NOAA Fisheries Service and the USFWS describing measures for the enhancement of coho salmon and suckers listed under the ESA (see KHSA Appendix A). The Interim Conservation Plan was submitted to FERC on November 25, 2008 and can be found online through the FERC Web site (http://ferc.gov).

in Appendix C of the KHSA, possibly removing three diversions on Shovel and Negro Creeks, and funding for Iron Gate Hatchery operations and maintenance (including funding for an 8-year period after removal of Iron Gate Dam).

1.4.1.4.3 City of Yreka Water Supply

The City of Yreka has a municipal water supply intake on Fall Creek and a pipeline that crosses Iron Gate Reservoir; the pipeline would be affected if the Iron Gate Dam were removed. The KHSA addresses the possible impacts that facilities removal would have on the water supply pipeline for the City of Yreka and provides provisions for mitigation of impacts on this supply system. Signatories agree not to prevent use of the City of Yreka's Water Rights permit and will study the potential risks to the water supply system from facilities removal. Necessary actions for the continued use of the City of Yreka water supply infrastructure would be funded and implemented as part of implementation of the KHSA (Section 7.2.3).

1.4.1.4.4 Keno Facilities Transfer

The KHSA calls for transferring ownership and operation of Keno Dam from PacifiCorp to DOI. The Secretary and PacifiCorp are studying the proposed transfer of Keno facilities (the Keno Transfer). An Affirmative Determination by the Secretary depends on an agreement between the Secretary and PacifiCorp on terms for transfer of title of the Keno facility. Further, transfer of title shall be subject to completion of any necessary improvements to the facility to meet DOI directives and standards for dam safety identified by the DOI through its safety of dams inspection of the Keno facility. This EIS/EIR will analyze the impacts associated with the Keno Transfer as a connected action.

1.4.1.4.5 East and Westside Powerhouse Decommissioning

PacifiCorp's East and Westside facilities were proposed for decommissioning in PacifiCorp's 2004 relicensing application, and their decommissioning through the FERC process is described in the KHSA (KHSA 6.4.1(B)). Removing the two facilities would result in the loss of 3.8 megawatts of generating capacity and the removal of the generating infrastructure. The dams and associated infrastructure were built in 1921, and would require upgrading and maintenance to remain in compliance with DOI and FERC standards. This would include the installation of fish screens, which would require major construction changes and associated maintenance. The Link River Dam, which is the point of diversion for the two generating facilities, is already owned by Reclamation.

As noted above, the East and Westside facilities decommissioning would be carried out through application to the FERC. FERC will conduct any necessary environmental analysis and make a FERC determination. This EIS/EIR uses a programmatic analysis to evaluate the impacts associated with the East and Westside facilities decommissioning as a connected action.

1.4.2 KBRA

As a result of the Klamath Basin issues surrounding the limited availability of water to support agricultural, tribal, environmental, and fishery needs in many years, the United States;[10] the States of California and Oregon; the Klamath, Karuk, and Yurok Tribes; Reclamation's Klamath Project Water Users; and other Klamath Basin stakeholders (collectively the Parties) negotiated the KBRA to resolve the water conflicts among the many users, restore stressed fisheries, and identify reliable power supplies. The KBRA is intended to result in effective and durable solutions. The goals of the KBRA are to (1) restore and sustain natural fish production and provide for full participation in ocean and river harvest opportunities of fish species throughout the Klamath Basin; (2) establish more reliable water and power supplies which sustain agricultural uses, communities, and NWRs; and (3) contribute to the public welfare and the sustainability of all Klamath Basin communities. The Parties view these agreements as an important part of the resolution of long-standing, complex, and difficult-to-resolve concerns over resources in the Klamath Basin.

Negotiations leading to the KBRA began in 2005 after the water-related farming and fisheries crises occurred in 2001 and 2002. The negotiation process also coincided with PacifiCorp's 2004 relicensing application. The proposed KBRA was released in January 2008. The KBRA includes plans and programs that interrelate with each other and with facilities removal as contemplated by the KHSA, and is intended to benefit fish throughout the basin, water users in the Upper Klamath Basin, and the community overall. The KBRA brings many parties together, including Federal and State agencies, Indian Tribes, Reclamation's Klamath Project irrigators, and on- and off-Project water users to support one another's efforts to restore fish populations in the Klamath Basin and provide for sustainable communities with a strong agricultural base. The KBRA has required each party to make some concessions in order to secure assurances on other important interests. These compromises include:

- Through the agreement, the Klamath, Karuk, and Yurok Tribes, the signatory Indian Tribes, have agreed to water rights assurances as defined in KBRA Section 15.3. Under the KBRA, the tribes would benefit from a suite of fisheries restoration and reintroduction measures that would complement dam removal pursuant to the KHSA, improvements in water quantity and quality in the lakes and rivers of the basin, and other habitat improvements that would support a sustainable fishery throughout the basin.
- Representative organizations of water users and irrigators, both on-Project and off-Project, agreed to limit their water diversions in exchange for increased Representative organizations of water users and irrigators, both on-Project and off-Project, agreed to limit their water diversions in exchange for increased

[10] Agencies involved in KBRA negotiations include: NOAA Fisheries Service, U.S. Forest Service, U.S. Department of the Interior (including, the Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, and Fish and Wildlife Service).

predictability about seasonal water deliveries and affordable power supplies.[11] Increased predictability allows individual landowners to more efficiently plan annual operations and avoid the economic impacts that result from uncertainty. The economic impacts felt at the individual level ripple up through the whole community, so this increased certainty benefits everyone. As reintroductions of currently threatened and endangered fish species are successfully implemented, the KBRA envisions that landowners will benefit from regulatory assurances (under the ESA[12]) that their operations would not be additionally burdened by new regulatory restrictions to the extent legally possible.

Under this system of compromises, the question of who "goes first" becomes critical. Some of the provisions in the agreement may take over 10 years to be implemented and many of the proposed actions need to be started in good faith. The KBRA establishes a framework for interim actions and planning efforts that would involve the broader community and protect the Parties' interests during the interim period. The interim period is the time between the signing of the KBRA and full implementation of the limits on water diversions to Reclamation's Klamath Project. The plans and programs described in the KBRA lead through a series of milestones that culminate in the formal relinquishment of claims for damages, permanent assurances related to tribal water rights, and limitations on water diversions to Reclamation's Klamath Project.

An Affirmative Determination and Federal authorizing legislation are two early key milestones towards full implementation of the KBRA. Following an Affirmative Determination, the key milestones leading to the publication of a Secretarial Notice, which make Federal water assurances permanent and is a prerequisite to other water rights assurances and diversion limitations, are described below:

1) "The application deadline under Section 15.3.8.A for full implementation of the On-Project Plan has passed.
2) The required environmental analysis regarding the proposed project to reconnect the Wood River Wetlands to Upper Klamath Lake as described in Section 18.2.3 is completed, and any necessary funding to implement the preferred alternative of the required environmental analysis is authorized by Congress or that funding is otherwise committed by State, local, tribal, or private sources.
3) The required environmental analysis regarding the proposed project to reconnect Agency Lake and Barnes Ranches to Upper Klamath Lake as described in Section 18.2.2.C is completed, and any necessary funding to implement the preferred alternative of the required environmental analysis is authorized by Congress or that funding is otherwise committed by state, local, tribal or private sources.

[11] Off-project water users may also be eligible for affordable power benefits without reducing their surface water diversions, if other criteria are met (See KBRA § 17.3.2.C).

[12] These regulatory assurances do not apply to the Clean Water Act, the Porter-Cologne Water Quality Control Act, or to any other authorities beyond the Endangered Species Act.

4) Funding has been authorized for the Water Use Retirement Program described in Section 16.2.2.

5) The physical removal of all or part of each of the Hydroelectric Facilities has occurred and achieved a free-flowing condition and volitional fish passage." (KBRA Section 15.3.4.A).

Once the Federal and tribal water rights assurances have been made permanent, the diversion limits on Reclamation's Klamath Project, including a Refuge Allocation, would become permanent.

The Federal Lead Agency is analyzing the KBRA as a connected action. NEPA defines connected actions as those actions that are closely related or cannot or will not proceed unless other actions are taken previously or simultaneously (40 Code of Federal Regulations (CFR) 1508.25(a)(1)(ii)).[13] Some actions or component elements of the KBRA are independent obligations and thus have independent utility from the KHSA, but the implementation of several significant elements of the KBRA package would be different, if the determination under the KHSA is not to pursue full dam removal (see Table 1-1). Recognizing that implementation of many elements of the KBRA is unknown and not reasonably foreseeable at this time, the connected action analysis is being undertaken at a programmatic level. Consequently, appropriate NEPA compliance will be completed for the KBRA in the future. The KBRA and KHSA are available in their entirety from the Web site http://klamathrestoration.gov/. The updated table of KBRA programs (since February 2010) is available at: http://216.119.96.156/Klamath/2011/06/RevisedCostEstimates.pdf.

Table 1-1. Linkage of KBRA Programs, Plans, Commitments to Dam Removal[1]

Program, Plan, or Commitment	Linked to Dam Removal and Secretarial Determination	KBRA Programs Included in this analysis as a Connected Actions under NEPA
Fisheries Programs:		
Fish Habitat Restoration Activities	T	
Fisheries Restoration Phase I Plan	T	
Fisheries Restoration Phase II Plan	T	
Fisheries Reintroduction Plan – Phase I, Oregon	T	
Fisheries Reintroduction Plan – Phase II, Oregon	T	
Fisheries Reintroduction Plan – California	T	
Fisheries Monitoring Plan	T	
Additional Water Storage Projects:		X
Williamson River Delta Project		X

[13] We acknowledge, however, that the actions that constitute KBRA could also be analyzed as cumulative or similar actions under 40 CFR 1508.25(a)(2) and (3). We note that all three definitions (connected action, cumulative actions, and similar actions) are within the section that provides parameters for the "scope" of the action, which determines both the range of alternatives and the impacts to be considered in an EIS. Ultimately, however, we believe the important point is not the labeling but the analysis and whether the decision (in this case, whether to remove four dams) is informed by an EIS that is proper in scope.

Table 1-1. Linkage of KBRA Programs, Plans, Commitments to Dam Removal[1]

Program, Plan, or Commitment	Linked to Dam Removal and Secretarial Determination	KBRA Programs Included in this analysis as a Connected Actions under NEPA
Agency Lake and Barnes Ranches Project		X
Wood River Wetland Restoration Project		X
Future storage opportunities		X
Water Resources Program:		
Water Diversion Limitations for Reclamation's Klamath Project Including National Wildlife Refuges	O	
Water Deliveries for National Wildlife Refuges in Klamath Reclamation Project Area	O	
Groundwater Technical Investigations		X
On-Project Plan		X
Commitments among Project Irrigators, Party Tribes, and United States Related to Water Use/Rights	O	
Commitments Related to Finance Issues (§§ 15.4.2., 15.4.4.)		X
Operation of Klamath Reclamation Project Facilities (Link River and Keno Dams)	O	
Water Use Retirement Program (WURP)		X
Off-Project Water Settlement (OPWAS)		X
Off-Project Reliance Program		X
Power for Water Management Program and Plans		X
Drought Plan		X
Emergency Response Plan		X
Climate Change Assessment		X
Environmental Water Management		X
Interim Flow and Lake Level Program		X
Regulatory Assurances Programs:		
Fish Entrainment Reduction	T	
General Conservation Plan or Habitat Conservation Plan	T	
Regulatory Assurances from Non-Regulatory Parties	T	
County and Tribal Programs:		
Klamath County Economic Development Plan		X
California Water Bond Legislation (Siskiyou County Economic Development Funding)	O	
Tribal Programs Fisheries and Conservation Management		X
Tribal Programs Economic Revitalization		X
Mazama Forest Project		X
Klamath Tribes Interim Fishing Site		X

Notes
T means timing is related to dam removal or Secretarial Determination
O means other relationship to dam removal or Secretarial Determination through funding or other key milestones described in the KBRA
X means this Program, Plan, or Commitment is considered a connected action under NEPA for this analysis
1 As explained above, for purposes of this EIS/EIR, we have determined that the KBRA should be evaluated in its entirety as a connected action. The purpose of this table is to show those individual activities under the KBRA that are not linked to the removal of the Four Facilities in order to provide an understanding of the potential effect to the KBRA in the absence of facilities removal. It shows those individual KBRA activities that are expressly linked to removal of the Four Facilities and those individual activities under the KBRA that are not linked to facilities removal. In the absence of facilities removal these activities may still proceed independently but the KBRA will not include all of the components present in its current form and some activities could be substantially altered or even avoided by parties who seek dam removal as a primary pre-condition for the commencement of their obligations. While we have decided to analyze the KBRA in its entirety as a connected action, we believe it also appropriate to show the relationship to dam removal of each of its component parts.

1.5 NEPA/CEQA

1.5.1 NEPA/CEQA Requirements

This document is a joint EIS/EIR, developed to satisfy the requirements of both NEPA and CEQA by disclosing to decisionmakers and the public, significant environmental impacts of the Proposed Action, identifying feasible mitigation measures, and describing a reasonable range of alternatives prior to rendering any final decisions or issuing any permits, agreements, or authorizations on the Proposed Action or alternative. For the purposes of NEPA/CEQA analysis, the Proposed Action is to remove the four lower PacifiCorp dams on the Klamath River. As explained in Section 1.3.2, the KBRA and other actions are being discussed programmatically as actions connected to the Proposed Action. CDFG recognizes that additional environmental analysis may be required by any California public entity with an approval or permitting obligation if required by CEQA.

In general the period of analysis for this EIS/EIR extends, where possible, for 50 years through 2061. Certain contractual commitments in the KBRA extend beyond 50 years or are perpetual. Certain effects of actions as well as contract commitments in the KBRA and KHSA are expected to extend beyond 50 years. (See, for example, KBRA §§ 15.3.10).

This EIS/EIR has been prepared by the DOI, as lead NEPA agency, and the CDFG, as lead CEQA agency (collectively referred to herein as the Lead Agencies). Recognizing that elements of the Proposed Action would occur in California and Oregon, CDFG collaborated with DOI, with input from the State of Oregon, to make a reasonable, good faith effort in disclosing all significant environmental effects of the Proposed Action and the alternatives. Absent certain circumstances, CEQA does not apply to any project or portion thereof located outside of California which will be subject to environmental review pursuant to NEPA (Public Resources Code § 21080(b)(14); CEQA Guidelines § 15277).

NEPA requires the lead Federal agency to request the participation of other government agencies or Indian Tribes with jurisdiction by law or special expertise, collectively referred to as Cooperating Agencies. Table 1-2 lists the governmental entities and Indian Tribes that have agreed to be Cooperating Agencies in the preparation of the EIS/EIR.

CEQA requires a Lead Agency to identify a list of agencies that are expected to use the EIR in their decisionmaking. For the Proposed Action, CDFG anticipates that the California Coastal Commission, The SWRCB and the California North Coast Regional Water Quality Control Board (CNCRWQCB) will use this EIS/EIR in their decisionmaking.

Table 1-2. Cooperating Agencies

Agency/Entity
National Oceanic and Atmospheric Administration Fisheries Service
U.S. Forest Service
U.S. Environmental Protection Agency
Karuk Tribe
The Klamath Tribes
Quartz Valley Indian Community
Resighini Rancheria
Yurok Tribe
Hoopa Valley Tribe
Humboldt County
Trinity County
California State Water Resources Control Board
California North Coast Regional Water Quality Control Board
Oregon Department of Environmental Quality
Oregon Department of State Lands
Oregon Department of Fish and Wildlife
Oregon Water Resources Division
Klamath River Compact Commission
Klamath Water and Power Authority

Note: DOI is the Lead Agency under NEPA for this EIS/EIR, and although several agencies under the DOI have assisted with EIS/EIR development, including BLM, BIA, BOR, USGS, and USFWS, these agencies have not been included as separate Cooperating Agencies under NEPA. For the list of preparers of this EIS/EIR, please see Chapter 8.

1.5.2 Purpose and Need/Project Objectives

1.5.2.1 Purpose and Need

The stated Purpose and Need statement below has changed since the publication of the Notice of Intent in order to provide further clarification. These changes are not substantive and do not change any alternatives.

The Proposed Action is to remove the four lower PacifiCorp dams on the Klamath River. The need for the Proposed Action is to advance restoration of the salmonid fisheries in the Klamath Basin consistent with the KHSA and the connected KBRA. The purpose is to achieve a free flowing river condition and full volitional fish passage as well as other goals expressed in the KHSA and KBRA. By the terms of the KHSA, the Secretary will determine whether the Proposed Action is appropriate and should proceed. In making this determination, the Secretary will consider whether removal of the Four Facilities will advance the restoration of the salmonid fisheries of the Klamath Basin, and is in the public interest, which includes but is not limited to consideration of potential impacts on affected local communities and Tribes.

1.5.2.2 Project Objectives

This EIR is prepared in accordance with the CEQA, Public Resources Code Section 21000 et seq., to evaluate the potential environmental impacts associated with the implementation of the KHSA and KBRA to inform decisionmakers, including the Governor of the State of California, representatives of affected and responsible agencies, the public, and other interested parties of the potential environmental effects that may result from implementation of the Agreements as proposed. This EIR describes potential impacts relating to a wide variety of environmental issues and methods by which these impacts can be mitigated or avoided.

As required by CEQA, a Lead Agency must identify the objectives sought by the proposed project. For this project, CDFG as Lead Agency has identified the following objectives:

1. Advance restoration of the salmonid fisheries in the Klamath Basin.

2. Restore and sustain natural production of fish species throughout the Klamath Basin in part by restoring access to habitat currently upstream of impassable dams.

3. Provide for full participation in harvest opportunities for sport, commercial, and tribal fisheries.

4. Establish reliable water and power supplies, which sustain agricultural uses and communities and NWRs.

5. Improve long-term water quality conditions consistent with designated beneficial uses.

6. Contribute to the public welfare and the sustainability of Klamath Basin communities**.**

7. To be consistent with the goals and objectives of KHSA and KBRA.

1.5.3 Oregon Concurrence

The State of Oregon, and more specifically the “Klamath Team” consisting of OWRD, Oregon Department of Fish and Wildlife, and Oregon Department of Environmental Quality, will follow a distinct process for determining concurrence with an Affirmative Determination by the Secretary of Interior (as defined pursuant to Executive Order No. 10-10 by the Governor of Oregon) should such a determination be made.

The Klamath Team will evaluate two questions in order to determine concurrence:

1. Whether significant impacts identified in its environmental review can be avoided or mitigated as provided under State law.

2. Whether the facilities removal will be completed within the State Cost Cap.

The Klamath Team will provide the results of its evaluation in a recommendation to the Governor, for transmittal to the Secretary of Interior as a concurrence, if appropriate.

1.6 References

Administrative Law Judge. 2006. FERC Project 2082. Klamath Hydroelectric Project Decision.

Bortleson, Gilbert C., and Marvin O. Fretwell. 1993. A Review of Possible Causes of Nutrient Enrichment and Decline of Endangered Sucker Populations in Upper Klamath Lake, Oregon. U.S. Geological Survey, Water Resources Investigations Report 93-4087.

California Department of Fish and Game (CDFG). 2004. September 2002 Klamath River Fish-Kill: Final analysis of Contributing Factors and Impacts, July 2004. Northern California Region, the Resources Agency, State of California. Available at: http://www.pcffa.org/KlamFishKillFactorsDFGReport.pdf.

CDFG. 2006. California Wildlife: Conservation Challenges: California's Wildlife Action Plan. Chapter 11: North Coast- Klamath Region. Prepared by the U.C. Davis Wildlife Health Center for the California Department of Fish and Game. Available at: http://www.dfg.ca.gov/wildlife/wap/report.html.

Chesney, William R., and Erich M. Yokel. 2003. Annual Report Shasta and Scott River Juvenile Salmonid Outmigrant Study, 2001-2002 Project 2a1. California Department of Fish and Game, Steelhead Research and Monitoring Program, January 2003.

Congressional Research Service. 2005. Klamath River Basin Issues and Activities: An Overview. September 22, 2005.

Department of the Interior, Klamath Basin Fisheries Task Force. 1991. Long Range Plan for the Klamath River Basin Conservation Area Fishery Restoration Program, Prepared with assistance of William M. Kier Associates, U.S. Fish and Wildlife Service, City of Yreka, California.

Department of Interior (DOI), and Department of Commerce (DOC), National Oceanic Atmospheric Administration (NOAA) Fisheries Service. 2012. Final Klamath Dam Removal Overview Report for the Secretary of the Interior. An Assessment of Science and Technical Information. August 2012. Accessed online: http://klamathrestoration.gov. Accessed on August 10, 2012.

Federal Energy Regulatory Commission (FERC). 2007. Final Environmental Impact Statement for Hydropower License, Klamath Hydroelectric Project, FERC Project No. 2082-027, FERC/EIS-0201F. Washington, DC, Federal Energy Regulatory Commission, Office of Energy Projects, Division of Hydropower Licensing.

Gresh, T., J. Lichatowich, and P. Schoonmaker. 2000. An estimation of historic and current levels of salmon production in the Northeast Pacific ecosystem: evidence of a nutrient deficit in the freshwater systems of the Pacific Northwest. Fisheries 25(1): 15-21

Hamilton J., Rondorf D., Hampton M., Quiñones R., Simondet J., and Smith T. 2011. Fish Species of Two Management Scenarios for the Secretarial Determination on Removal of the Lower Four Dams on the Klamath River.

Institute for Fisheries Resources (IFR) and Pacific Coast Federation of Fishermen's Associations (PCFFA). 2006. Appendix to: Comments on Application and Section 4 Recommendations for Klamath Hydroelectric Project, FERC No .P-2082-027. Klamath Falls, Oregon, Institute for Fisheries Resources.

Jarvis, R.L. 2002. Effects on Waterfowl of the 2001 Water Allocation Decisions. In: Water Allocation in the Klamath Reclamation Project, 2001: An Assessment of Natural Resource, Economic, Social, and Institutional Issues with a Focus on the Upper Klamath Basin. A report by Oregon State University and the University of California. December.

Klamath Basin Restoration Agreement (KBRA). 2010. Signed Salem, OR. February 18, 2010. Accessed on May 18, 2011. Available at: http://klamathrestoration.gov/keep-me-informed/klamath-agreements.

Klamath Hydroelectric Settlement Agreement (KHSA). 2010. Signed Salem, OR. February 18, 2010. Accessed online May 18, 2011. Available at: http://klamathrestoration.gov/keep-me-informed/klamath-agreements.

Larson, R., and Brush, B.J. 2010. Upper Klamath Basin Wetlands: An Assessment. U.S. Fish and Wildlife Service, Klamath Falls, Oregon.

National Oceanic Atmospheric Association (NOAA) Fisheries Services. 2009. Klamath River Basin, 2009 Report to Congress. Available at: http://www.nmfs.noaa.gov/pr/pdfs/klamath2009.pdf.

National Research Council (NRC). 2003. Endangered and Threatened Fishes in the Klamath River Basin; Causes of Decline and Strategies for Recovery. Available at: http://www.nap.edu/openbook.php?isbn=0309090970.

NRC. 2004. Endangered and Threatened Fishes in the Klamath River Basin: Causes of Decline and Strategies for Recovery. Washington, DC. 2004. Accessed on: July 12, 2010. Available at: http://books.nap.edu/openbook.php?record_id=10838&page=52.

Oregon, State of. 2009. Water Rights in Oregon, Oregon Water Resources Department Centennial Edition 2009. Accessed on: December 15, 2010. Available at: http://www.oregon.gov/OWRD/ ADJ/docs/Status_of_the_Adjudication.pdf.

Oregon, State of. 2010. Office of the Governor, Executive Order No. 10-03. Determination of a State of Drought Emergency in Klamath County and Contiguous Counties Due to Drought and Extreme Weather Conditions. March 16, 2010. Accessed on July 22, 2011. Available at: http://cms.oregon.egov.com/gov/docs/ executive_orders/eo_1003.pdf.

PacifiCorp. 2004a. Terrestrial Resources Final Technical Report. Klamath Hydroelectric Project (FERC Project No. 2082). PacifiCorp, Portland, Oregon. February.

PacifiCorp. 2004b. Water resources for the Klamath Hydroelectric Project (FERC Project No. 2082). Final Technical Report. Prepared by PacifiCorp, Portland, Oregon.

Risley, John C., and Antonius Laenen. 1998. Upper Klamath Lake Nutrient-Loading Study - Assessment of Historic Flows in the Williamson and Sprague Rivers. U.S. Geological Survey Water-Resources Investigations Report 98-4198.

Shuford W.D., Thomson D.L, Mauser D.M., and Beckstrand, J. 2004. Abundance, distribution, and phenology of nongame waterbirds in the Klamath Basin of Oregon and California in 2003. Point Reyes Bird Observatory Conservation Science. Report to U.S. Fish and Wildlife Service, Klamath Basin National Wildlife Refuge Complex. July.

Snyder, Daniel T., and Jennifer L. Morace, 1997. Nitrogen and Phosphorus Loading from Drained Wetlands Adjacent to Upper Klamath and Agency Lakes, Oregon. U.S. Geological Survey, Water Resources Investigations Report 97-4059.

Sullivan, Annett B., Michael L. Deas, Jessica Asbill, Julie D. Kirshtein, Kenna Butler, and Jennifer Vaughn. 2008. Klamath Water Quality from Link River Dam to Keno Dam, Oregon, 2008. Open-File Report 2009-1105. Prepared by the U.S. Geological Survey in cooperation with the Bureau of Reclamation.

U.S. Fish and Wildlife Service (USFWS). 1986. Klamath River Fisheries Investigation Program. Annual Report 1985. July 1986. Available online at: http://www.fws.gov/ arcata/reports/annual%20reports/AFWO_1986_annual_report.pdf. Accessed on: June 29, 2011.

USFWS. 1988. Endangered and threatened wildlife and plants: Determination of endangered status for the shortnose sucker and Lost River sucker. Federal Register 53: 27130-27134.

USFWS. 1992. Investigations on the Lower Tributaries to the Klamath River. Klamath River Fisheries Assessment Program. Annual Progress Report FY 1991. February.

_____. 1993. Lost River (Deltistes luxatus) and Shortnose (Chasmistes brevirostris) Sucker Recovery Plan. Portland, Oregon. 108 pp.

_____. 2008. Formal Consultation on the Bureau of Reclamation's Proposed Klamath Project Operations from 2008 to 2018. April 2, 2008.

_____. 2009. Klamath Basin National Wildlife Refuge Complex, Pacific Southwest Region. Refuge History Web site, available at: http://www.fws.gov/klamathbasinrefuges/history.html. Accessed July 28, 2011.

_____. 2010. Effects of the Klamath Basin Restoration Agreement on Lower Klamath, Tule Lake, and Upper Klamath National Wildlife Refuges. Prepared by Dave Mauser, Supervisory Wildlife Biologist, USFWS, Klamath Basin National Wildlife Refuge, and Tim Mayer, Regional Hydrologist, USFWS, Water Resources Branch.

Wood, Tamara M. 1999. Sediment Oxygen Demand in Upper Klamath and Agency Lakes, Oregon, 1999. U.S. Geological Survey, Water-Resources Investigations Report 01-4080.

Wood, T.M., G.R. Hoilman, and M.K. Lindenberg. 2006. Water-quality conditions in Upper Klamath Lake, Oregon, 2002–04: U.S. Geological Survey Scientific Investigations Report 2006-5209.