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DEPARTMENT OF JUSTICE
GENERAL COUNSEL DIVISION

May 25, 2005

Judge Michael Grant
Administrative Hearings Division
Oregon Public Utility Commission
550 Capitol St. NE, Suite 215
Salem, OR 97301

RE: In The Matter of Pacific Power & Light Klamath Basin Irrigation Rates,
Docket No. UE 171

Dear Judge Grant:

I am writing to advise you about a recent Federal Energy Regulatory Commission's (FERC) Scoping Document that Staff believes is relevant to the issue of whether the OPUC should withhold a decision on the irrigation rate until the FERC rules on issuing either an annual or new license for PacifiCorp's Klamath Hydroelectric Project. On May 17, 2005, FERC issued the following document: Scoping of environmental issues for a new license for the Klamath Hydroelectric Project, FERC No. P-2082-27, Oregon and California (*Scoping Document 2 or SD2*). On page 57 of SD2, the following Klamath Water Users Association (KWUA) and US Department of Interior (Interior) comment and FERC response is listed:

> **Comment**: KWUA and Interior comment that we should evaluate the environmental and economic consequences related to discontinuing the 1956 contract between PacifiCorp and USBR. Interior notes that increased power costs that would result from discontinuing the 1956 contract would represent a significant economic component to irrigators that we should thoroughly analyze and describe in our EIS, and we should identify increased power costs as an economic issue in SD2.
>
> **Response**: While the rate that PacifiCorp charges its customers is not an appropriate issue for analysis in this proceeding, we have added socioeconomic values to our listing of potentially cumulatively affected resources in SD2 and will consider the effects of the expiration of the 1956 contract in our cumulative effects analysis of socioeconomic values.

A copy of Scoping Document 2 is enclosed.

Staff was not aware of this document until after oral argument in this case on May 19, 2005. Staff requests that you take official notice of Scoping Document 2 under OAR 860-014-0050.

Sincerely,

David B. Hatton_____
David B. Hatton
Assistant Attorney General
Regulated Utility & Business Section

Enclosure
cc: Service List
DBH:dbh/GENM7661

CERTIFICATE OF SERVICE

I hereby certify that on the 25th day of May 2005, I served the foregoing by mailing a true and correct copy, postage pre-paid by U. S. Mail, or hand delivery (hardcopy without enclosure) and by email (with enclosure) upon the parties indicated below:

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*Neoma A. Lane*_____
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Legal Secretary
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FEDERAL ENERGY REGULATORY COMMISSION
Washington, DC 20426

DATE: May 17, 2005

MEMORANDUM TO: The Agency/Party Addressed

SUBJECT: Scoping of environmental issues for a new license for the Klamath Hydroelectric Project, FERC No. P-2082-027, Oregon and California

The Federal Energy Regulatory Commission (Commission or FERC) is reviewing an application for a new license for the continued operation of PacifiCorp's Klamath Hydroelectric Project (FERC No. 2082), located primarily on the Klamath River in Klamath County, Oregon, and Siskiyou County, California, between Klamath Falls, Oregon, and Yreka, California.

The Commission intends to prepare an environmental impact statement (EIS) for the Klamath Project, which will be used by the Commission to determine whether, and under what conditions, to issue a new hydropower license for the project. To support and assist our environmental review, we are undertaking a public scoping process to ensure that all pertinent issues are identified and analyzed, and that the environmental document is thorough and balanced.

In our April 16, 2004, Scoping Document 1 (SD1), we disclosed our preliminary view of the scope of environmental issues associated with the Klamath Hydroelectric Project. Based on the verbal comments that we received at the May 18, 20, and 21, 2004 scoping meetings in Klamath Falls and Ashland, Oregon, and Yreka and Redding, California, and the June 22, 2004 scoping meetings in Eureka, California, as well as written comments we received during the scoping process, we prepared the enclosed Scoping Document 2 (SD2). We appreciate the participation of governmental agencies, non-governmental organizations, tribes, and the general public in the scoping process. The enclosed SD2 for the proposed project is intended to serve as a guide to the issues and alternatives to be addressed in the EIS.

The SD2 is distributed to parties on the Service List for this proceeding, as well as to other individuals and organizations that we have identified as having previously expressed an interest in this project; no response is required. The SD2 is also available from our Public Reference Room at (202) 502-8371. It also can be accessed online at http://www.ferc.gov/docs-filing/elibrary.

We previously determined that additional information is needed before we can begin our independent environmental analysis of this proceeding. Once we determine that we have sufficient information to proceed with our analysis, we

will issue our Ready for Environmental Analysis notice for this relicensing proceeding.

If you have any questions concerning the development of the EIS for this project, please contact John Mudre by telephone (202) 502-8902 or e-mail john.mudre@ferc.gov.

Enclosure: Scoping Document 2

cc: Mailing List
Public Files

SCOPING DOCUMENT 2

KLAMATH HYDROELECTRIC PROJECT

OREGON AND CALIFORNIA

FERC Project No. 2082-027

Federal Energy Regulatory Commission
Office of Energy Projects
Washington, DC

May 2005

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ACRONYMS AND ABBREVIATIONS

APE	area of potential effects
BiOp	Biological Opinion
BLM	U.S. Bureau of Land Management
CCC	California Coastal Commission
CDFG	California Department of Fish and Game
CEC	California Energy Commission
cfs	cubic feet per second
CIP	Conservation Implementation Program
Commission	Federal Energy Regulatory Commission
Conservation Groups	American Rivers, California Trout, Trout Unlimited, and World Wildlife Fund
CSBS	County of Siskiyou Board of Supervisors
DO	dissolved oxygen
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
Forest Service	U.S. Department of Agriculture, Forest Service
FPA	Federal Power Act
FWS	U.S. Fish and Wildlife Service
Interior	U.S. Department of the Interior
KDD	Klamath Drainage District
KRITFWC	Klamath River Inter-Tribal Fish and Water Commission
KSAGA	Klamath Salmon Anglers and Guides Association
kV	kilovolt
KWUA	Klamath Water Users Association's
MW	megawatt
MWh	megawatt-hours
NCRWQCB	California North Coast Regional Water Quality Control Board
NEC	Northcoast Environmental Center
NEPA	National Environmental Policy Act
NGO	non-governmental organization
NOAA Fisheries	National Oceanic and Atmospheric Administration, Fisheries
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife
PCFFA	Pacific Coast Federation of Fisherman's Association
REA	Ready for Environmental Analysis
RM	river mile
SD	Scoping Document
SRRC & KFA	Salmon River Restoration Council and Klamath Forest Alliance
SWRCB	State Water Resources Control Board
TMDL	total maximum daily loads
USBR	U.S. Bureau of Reclamation

1.0 INTRODUCTION

The Federal Energy Regulatory Commission (Commission), under the authority of the Federal Power Act (FPA),[1] may issue licenses for terms ranging from 30 to 50 years for the construction, operation, and maintenance of non-federal hydroelectric projects. On February 25, 2004, PacifiCorp filed an application with the Commission for a new license for the 151-megawatt (MW) Klamath Project, FERC No. 2082, located principally on the Klamath River in Klamath County, Oregon and Siskiyou County, California, in between Klamath Falls, Oregon and Yreka, California (figures 1 through 5). The existing project occupies 219 acres of lands of the United States, which are administered by the U.S. Bureau of Land Management (BLM) and the U.S. Bureau of Reclamation (USBR).

The National Environmental Policy Act of 1969 (NEPA),[2] the Commission's regulations, and other applicable laws require that we independently evaluate the environmental effects of licensing the project as proposed, and also consider reasonable alternatives to the proposed action. The Commission staff intends to prepare an environmental impact statement (EIS) that describes and evaluates the probable effects, including an assessment of the site-specific and cumulative effects, if any, of the proposed action and alternatives. The EIS preparation is supported by a scoping process to ensure the identification and analysis of all pertinent issues.

2.0 SCOPING

2.1 PURPOSE OF SCOPING

Scoping is the process used to identify issues, concerns, and opportunities associated with a proposed action; the process, according to NEPA, should be conducted early in the planning stages of the project.

The purposes of scoping are as follows:

- Invite participation of federal, state, and local resource agencies; non-governmental organizations (NGOs); Native American tribes; and individuals to identify significant environmental issues related to the proposed action.

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[1] U.S.C. § 791(a)-825(r).

[2] National Environmental Policy Act of 1969, as amended (Pub. L. 91-190. 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L.94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, section 4 (b), Sept. 13, 1982).

Figure 1
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Public access for the above information is available only through the Public Reference Room, or by e-mail at public.referenceroom@ferc.gov.

Figure 1. Klamath River Basin showing major rivers, reservoirs and lakes within the watershed. (Source: Bioanalysts Inc, 2004)

Figure 2
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Public access for the above information is available only through the Public Reference Room, or by e-mail at public.referenceroom@ferc.gov.

Figure 2. General site location of the Klamath Hydroelectric Project, Link River dam to Keno reservoir. (Source: PacifiCorp, 2004)

Figure 3
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Public access for the above information is available only through the Public Reference Room, or by e-mail at public.referenceroom@ferc.gov.

Figure 3. General site location of the Klamath Hydroelectric Project, Keno reservoir to downstream of J.C. Boyle powerhouse (the peaking reach). (Source: PacifiCorp, 2004)

Figure 4
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Public access for the above information is available only through the Public Reference Room, or by e-mail at public.referenceroom@ferc.gov.

Figure 4. General site location of the Klamath Hydroelectric Project, from the J.C. Boyle peaking reach to Copco reservoir. (Source: PacifiCorp, 2004)

Figure 5
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Public access for the above information is available only through the Public Reference Room, or by e-mail at public.referenceroom@ferc.gov.

Figure 5. General site location of the Klamath Hydroelectric Project, from Copco reservoir to Iron Gate dam. (Source: PacifiCorp, 2004)

- Determine the depth of analysis and significance of issues to be addressed in the EIS.
- Identify how the project would or would not contribute to cumulative impacts in the project area and the Klamath River Basin.
- Identify reasonable alternatives to the project that we should evaluate.
- Eliminate from detailed study issues and resources that do not require detailed analysis during review of the project.

We issued Scoping Document 1 (SD1) on April 16, 2004, to enable appropriate resource agencies, NGOs, Native American tribes, and other interested parties to more effectively participate in and contribute to the scoping process. In SD1, we requested clarification of preliminary issues concerning the Klamath Hydroelectric Project and identification of any new issues that needed to be addressed in the environmental documents. We revised SD1 following the scoping meetings and our review of written comments filed during the scoping comment period. This Scoping Document 2 (SD2) presents our current view of issues and alternatives to be considered in the EIS. Additions from SD1 are shown in ***bold italic type*** except for the following entirely new section that summarizes scoping comments received and provides our responses to those comments.

2.2 SCOPING MEETINGS AND WRITTEN COMMENTS

We conducted six scoping meetings to identify potential issues associated with the Klamath Hydroelectric Project. The scoping meetings were announced in local newspapers and in the Federal Register. An evening scoping meeting was held on May 18, 2004, in Klamath Falls, Oregon, and five individuals provided oral testimony. A morning scoping meeting was held on May 20, 2004, in Redding, California, and 10 individuals provided oral testimony. An evening scoping meeting was held on May 20, 2004, in Yreka, California, and 10 individuals provided oral testimony. A morning scoping meeting was held in Ashland, Oregon on May 21, 2004, and four individuals provided oral testimony. Afternoon and evening scoping meetings were held on June 22, 2004, in Eureka, California, and 15 and 53 persons, respectively, provided oral testimony. A court reporter recorded oral comments made during the scoping meetings. We also held a site visit, which was also announced in local newspapers and in the Federal Register, to the Klamath Hydroelectric Project facilities and surrounding environment on May 18 and 19, 2004.

Besides the oral comments received at the scoping meetings, the following 51 agencies, tribes, and NGOs filed written comments on the SD1, and we received 83 letters from individuals:

Entity	Date of Letter
Rivers Dancers	April 22, 2004
Shasta Nation	April 23, 2004
Momentum River Expeditions	April 26, 2004
Noah's River Adventures	April 26, 2004
Shasta River Coordinated Resources Management and Planning Group	April 26, 2004
State of California Resources Agency	May 10, 2004
Oregon Parks and Recreation Department[3]	May 27, 2004
Klamath Drainage District	June 16, 2004
U.S. Representative Mike Thompson	June 21, 2004
County of Humboldt Board of Supervisors	June 22, 2004
Northcoast Environmental Center (NEC)	June 22, 2004
Pacific Coast Federation of Fisherman's Association (PCFFA)	June 23, 2004
Patty Berg, Chair, Joint Committee on Fisheries and Aquaculture, California Legislature	June 30, 2004
The City of Arcata (Mayor and City Council)	July 8, 2004
Klamath River R.V. Park	July 11, 2004
County of Siskiyou Board of Supervisors (CSBS)	July 12, 2004
Community Clean Water Institute	July 13, 2004
Karuk Tribe	July 13, 2004
Oregon Public Utility Commission[3]	July 15, 2004
Institute for Fisheries Resources, Pacific Coast Federation of Fisherman's Associations, Friends of the River, Endangered Species Coalition, Oregon Natural Resources Council, WaterWatch of Oregon, and Northcoast Environmental Center	July 16, 2004
Oregon Department of Fish and Wildlife (ODFW)[3]	July 16, 2004
Quartz Valley Indian Community	July 16, 2004 and January 30, 2005
California North Coast Regional Water Quality Control Board (NCRWQCB)	July 19, 2004
U.S. Department of Agriculture, Forest Service (Forest Service)	July 19, 2004

[3] Filed under the Oregon Water Resources Department comment letter, dated July 16, 2004.

Entity	Date of Letter
PacifiCorp	July 19, 2004
Resighini Rancheria	July 19, 2004
Mid Klamath Watershed Council	July 19, 2004
California Department of Fish and Game (CDFG)	July 20, 2004
National Oceanic and Atmospheric Administration, Fisheries (NOAA Fisheries)	July 20, 2004
Redwood Region Audubon Society	July 20, 2004
Salmon River Restoration Council and the Klamath Forest Alliance (SRRC & KFA)	July 20, 2004
Sierra Club California, Nevada, Hawaii Regional Office	July 20, 2004
Yurok Tribe Heritage Preservation Office	July 20, 2004
The Klamath Tribes Tribal Council	July 21, 2004
Yurok Tribe	July 21, 2004
Redwood Chapter, Sierra Club	July 21, 2004
North Group, Redwood Chapter, Sierra Club	July 22, 2004
American Whitewater	July 22, 2004
California Coastal Commission (CCC)	July 22, 2004
California Energy Commission (CEC)	July 22, 2004
California Indian Basketweavers Association	July 22, 2004
Hoopa Valley Tribe	July 22, 2004
Klamath River Inter-Tribal Fish and Water Commission (KRITFWC)	July 22, 2004
Klamath Salmon Anglers and Guides Association (KSAGA)	July 22, 2004
Klamath Water Users Association (KWUA)	July 22, 2004
Northcoast Environmental Center (NEC)	July 22, 2004
Oregon Department of Environmental Quality (ODEQ)[3]	July 22, 2004
State Water Resources Control Board (SWRCB)	July 22, 2004
U.S. Department of the Interior (Interior)	July 22, 2004
U.S. Environmental Protection Agency (EPA)	July 22, 2004
American Rivers, California Trout, Trout Unlimited, and World Wildlife Fund (Conservation Groups)	July 22, 2004

All comments received are part of the Commission's official record for the project. Information in the official file is available for inspection and reproduction at the Commission's Public Reference Room, located at 888 First Street, N.E., Room 2A, Washington, DC 20426, or by calling (202) 502-8371. Information also may be accessed through the Commission's eLibrary using the "Documents & Filing" link on the Commission's web page at http://www.ferc.gov. Call (202) 502-6652 for assistance.

The general concerns raised by participants in the scoping process are summarized below by subject area. Oral comments received at the scoping meetings are similar to those written comments submitted to the Commission during the comment period. The summaries do not include every oral and written comment made during the scoping process. For instance, we do not address comments that are recommendations for license conditions or schedule. Such comments will be addressed in the EIS or any license order that is issued for this project. We will request final terms, conditions, recommendations, and comments when we issue our Ready for Environmental Analysis (REA) notice.

2.3 ISSUES RAISED DURING SCOPING

General

Comment: Numerous entities request that our assessment of retirement of additional developments, besides those proposed by PacifiCorp, consider removal of all project-related dams or various combinations thereof, including those associated with the Fall Creek and Keno developments as well as Link River dam. Many also suggest that we assess converting any developments where dams are not removed to run-of-river operations with state of the art upstream and downstream fish passage. In addition, some entities request that we assess reduction of project reservoir volumes, which would expedite passage of anadromous fish through impounded reaches.

Response: We will assess retiring additional developments (besides the East Side and West Side developments) without project dams in place and potential operational changes. Using the applicable factors in the Interagency Task Force NEPA Procedures in FERC Hydroelectric Licensing, we will determine whether a more thorough analysis of retiring additional developments is warranted. If reasonable development retirement alternatives are identified, then we would evaluate those alternatives in our EIS.

Comment: Conservation Groups, Resighini Rancheria, and the Quartz Valley Indian Community request that we specify the different retirement alternatives that will be included in the EIS in SD2. EPA requests clarification of plans to retire additional developments (as indicated in section 4.3 of SD1). Conservation Groups recommend that we list each of the 17 factors for consideration of project decommissioning that were identified in the Interagency Task Force Report on NEPA Procedures in FERC Hydroelectric Licensing (issued on May 22, 2000) in SD2 and identify the information that we have received related to those factors, stating that this could serve as a basis for

determining options for retiring additional developments. SRRC & KFA and KSAGA also request that we assess each of the 17 factors that may warrant a more detailed dam decommissioning analysis, but suggest that we address this in the EIS, rather than SD2.

Response: We will identify which development retirement with dam removal options would represent reasonable alternatives following our review and analysis of relevant information, some of which has not yet been filed with the Commission. We will include our assessment of the appropriate factors specified in the Interagency Task Force Report in the draft EIS. Given the number of possible project development retirement options and the lack of analysis to date, it is premature to specify in SD2 which combination of development retirement options we propose to analyze.

Comment: Interior, NOAA Fisheries, and ODEQ suggest that we assess installation of generation facilities at Keno dam. Interior and NOAA Fisheries also request that we assess the potential to enhance generation at other remaining developments.

Response: PacifiCorp has proposed to remove Keno Dam from the project boundary and has expressed no interest during this proceeding of adding generating facilities to the dam. We note that the Klamath Drainage District (KDD) filed a preliminary permit application for the development of generating capacity at Keno dam on July 31, 2003, and the Commission issued a notice accepting this filing on March 29, 2005. The Commission will determine whether the installation of generating facilities at Keno dam is in the public interest in the proceeding that would follow the filing of a license application by KDD. We will assess the potential for PacifiCorp to enhance generation at the remaining developments based on material on the record for PacifiCorp's project.

Comment: CSBS comments that dam removal would have too many negative effects and we should instead support the environmental measures associated with fish recovery efforts through the Shasta Scott Recovery Team process. Klamath Drainage District is also opposed to removal of any of PacifiCorp's dams and generating facilities. KWUA supports the No-action Alternative identified in SD1.

Response: We will evaluate the positive and negative effects that would be associated with the retirement of project-related developments and make appropriate recommendations based on our analysis in our EIS.

Comment: EPA requests more clarification of the No-action Alternative. ODFW requests clarification of what project operating parameters and facilities are considered current and/or the No-action Alternative and that we state how long various operational scenarios were in effect. California SWRCB, NOAA Fisheries, and Interior comment that SD1 confuses the existing condition and the No-action Alternative. They note that existing conditions are different from the No-action Alternative because current operations are different from continued operation under the existing license. Similarly,

they comment that the existing conditions represent environmental conditions at a fixed point in time, whereas under the No-action Alternative, there would be changes in the environment. Under the No-action Alternative (continued operation of the project as it is currently licensed and operated over the term of a new license), they note that there would be effects on various resources and we should analyze and document those effects. They suggest that we use existing conditions as the baseline and clearly compare them to the No-action Alternative in the scoping document and EIS, as well as define and include a without-project alternative to disclose the past and future effects of the project.

Response: As we indicated in section 4.4 of SD1, the No-action Alternative represents a continuation of operations under the terms and conditions of the existing license, and this is our baseline for environmental comparison. We recognize that PacifiCorp may, at times, operate the project in a different manner for a variety of reasons (e.g., to provide lower or higher minimum flows as specified by USBR as it attempts to comply with a Biological Opinion [BiOp]). Therefore, the existing baseline conditions could at times be slightly different than they may have been historically. Because environmental studies conducted during pre-filing consultation reflect existing conditions, our baseline for comparison reflects the point in time when the studies were conducted. We will identify where existing operating conditions differ from historical operations in our description of the existing project in the EIS. Our restructured EIS outline in SD2 better accommodates the description of baseline conditions.

Comment: The Hoopa Valley Tribe, Resighini Rancheria, and Quartz Valley Indian Community argue that the range of alternatives is not reasonable and is too vague. They recommend an alternative that would provide more dam releases to increase flows for anadromous fish, and to alleviate the factors that lead to fish kill events. American Whitewater indicates that, in SD1, we provided no details on what would be included in the Staff Alternative, and hopes that SD2 contains sufficient details regarding this alternative to enable meaningful comment.

Response: The range of alternatives that we will assess in our EIS is by necessity vague at this point in the relicensing proceeding. For example, we cannot specify what project features, operational procedures, and environmental measures would be included in the Staff Alternative because we have not yet conducted our analysis of PacifiCorp's proposed measures, or the agencies' and tribes' recommended measures (which are expected to be filed later this year, in response to our REA notice). We do not yet have sufficient information nor have we conducted our analysis of which additional developments should be considered for retirement. We will be conducting an analysis of releases from project dams that would enhance anadromous fish habitat, but our recommendations pertaining to this important consideration will be based on our analysis and are, therefore, unknown at this time.

Comment: Interior and NOAA Fisheries suggest that our description of existing project facilities in our SD2 should mention that there is no fish screening at the East and West Side developments, that USBR is constructing a new fish ladder at Link River dam, and that the USBR A-canal fish screen gravity bypass exits immediately downstream of the Link River dam primary headgates, with the bypassed pipe passing through the mid-point of the dam. Interior suggests that we indicate that Link River dam is located on USBR-managed lands. PacifiCorp indicates that the new USBR fish ladder will be located between the mechanical spill gates and the headworks of the West Side canal.

Response: We modified the description of Link River dam to reflect the information provided about existing structures and land management. Regarding the lack of fish screens, it is not appropriate to include non-existent facilities in our description of existing facilities. We will consider Interior's and NOAA Fisheries information concerning fish screens in our environmental analysis.

Comment: PacifiCorp indicates that the estimated cost for fish screens at the East Side and West Side developments is $17 million, not $30 million as we indicated in SD1.

Response: We made the suggested correction to SD2.

Comment: Conservation Groups note that, in our description of releases from Link River dam in section 4.1.1 of SD1, we indicate that PacifiCorp has some flexibility but this operational flexibility has not been realized. Conservation Groups asks us to clarify whether any of the flexibility has been realized. KWUA disagrees with the implication in SD1 that PacifiCorp no longer benefits from the 1956 contract with USBR because releases from Link River dam are specified by the BiOp and therefore PacifiCorp no longer benefits from the operational flexibility that previously existed. KWUA and others assert that PacifiCorp still enjoys the ability to shape river flows and optimize its power generation when Upper Klamath Lake elevations or river flows exceed the minimum target levels specified in the BiOp, and our analysis should be conducted accordingly.

Response: We have modified the text of SD2 to indicate that PacifiCorp claims that its operational flexibility has not been fully realized in recent years. We will assess the basis for PacifiCorp's claim in our EIS.

Comment: Conservation Groups note that, in our description of future operation of Link River dam in section 4.1.4 of SD1, we state that it is expected that USBR would solely and at its own discretion operate Link River dam and would be responsible for releasing water to meet any downstream minimum flow requirements. Conservation Groups point out that if this assumption is incorrect, our EIS would suffer from an analytical flaw. Therefore, they state that, prior to beginning preparation of our EIS, we should determine

whether there is any reasonably foreseeable future event where any other federal, state, or local plan exists or is contemplated to encompass Link River dam.

Response: We indicated in SD1 that USBR owns Link River dam and PacifiCorp currently operates and maintains the dam at USBR's direction under a contract that will expire in 2006. Because USBR owns the dam, it would continue to be responsible for operation of the dam following expiration of its contract with PacifiCorp.

Comment: The Hoopa Valley Tribe, Yurok Tribe, Klamath Tribes, KRITFWC, Institute for Fisheries Resources et al., Conservation Groups, Klamath Drainage District, ODEQ, and Interior comment that Keno dam should not be removed from the project license because it is an important flow regulation dam that has been included in past licenses. They request that we assess a project alternative that includes retention of Keno development. Conservation Groups request that our Staff Alternative provide recommendations regarding environmental measures at Keno development.

Response: In our EIS we will address whether Keno dam should remain part of the project. We will assess whether this development serves project purposes and therefore whether or not it should continue to be subject to the Commission's jurisdiction, and we will make recommendations in our EIS based on this assessment.

Comment: Interior and NOAA Fisheries comment that Keno development is not a re-regulation facility in the traditional sense, as we indicated on page 9 of SD1. They state that Keno reservoir is operated to hold the pool water level constant, and the outflow to the Klamath River fluctuates with inflows and irrigation returns (which are 600 to 900 cfs during the summer). Interior states that specific operating parameters for Keno need to be developed and potential consequences of those operations identified.

Response: Keno dam serves to regulate the level of Lake Ewauna and the Klamath River upstream of Keno dam. Although PacifiCorp characterized Keno dam as a re-regulating dam in its license application (Exhibit B, page 8-1), we agree that the dam serves to regulate water level in Keno reservoir, rather than to re-regulate flows downstream of Keno dam. We have modified the text of SD2 accordingly. We will assess the current operation at Keno development to determine whether it serves project purposes and the need for specific operating parameters for Keno development if it is included in a new license.

Comment: Interior suggests that we indicate in SD2 that Keno dam is partially located on USBR-managed lands, and Interior and NOAA Fisheries state that the existing fish ladder does not meet state or federal criteria, and does not provide effective fish passage for resident fish species, including federally listed suckers.

Response: We have added to SD2 the fact that the dam is partially located on USBR-managed land, but it is not appropriate to comment on the effectiveness of the fish ladder in SD2's description of the existing facilities. We will consider fish passage issues in our EIS.

Comment: Interior indicates that our description of the Keno development in the SD2 should be expanded to note that about 41 percent of the lands irrigated by the Klamath Irrigation Project and the Lower Klamath Lake National Wildlife Refuge receive their water directly or indirectly from gravity flow from Keno reservoir. In addition, there are a number of privately owned diversions from the reservoir for irrigation of non-federal lands, and significant wildlife and recreational resources have developed along the shores of the reservoir.

Response: We have made the suggested additions to SD2.

Comment: Interior indicates that our description of the J.C. Boyle development should indicate that the powerhouse is located on BLM-managed land. Interior and NOAA Fisheries both ask us to note in SD2 that the existing fish ladder and screen do not meet state or federal criteria and do not provide effective fish passage.

Response: We have added to SD2 the fact that the powerhouse is located on BLM-managed land, but it is not appropriate to comment on the effectiveness of the fish ladder in the description of the existing facilities. We will consider fish passage issues in our EIS.

Comment: Interior and NOAA Fisheries suggest that our description of the Copco No. 1, Copco No. 2, and Iron Gate developments should state that there are no upstream or downstream fish passage facilities at any of these developments.

Response: It is not appropriate to include non-existent facilities in our description of existing facilities. We will consider Interior's and NOAA Fisheries information concerning fish screens in our environmental analysis.

Comment: Interior states that our EIS should include an assessment of the effective life of the Copco No. 1 development, which was constructed in 1918. KRITFWC and Yurok Tribe state that our EIS should include a structural and economic analysis of life expectancy of all project dams.

Response: The Commission monitors, assesses, and ensures the integrity of project structures under its jurisdiction, including the Klamath Project, through its Division of Dam Safety and Inspections. This ongoing review occurs independently of this relicensing proceeding. Although an applicant for a new license may elect to conduct a structural and economic analysis of life expectancy of project features to determine

whether or not to accept a new license with the environmental conditions specified by the Commission, such an analysis is not an appropriate component of our environmental analysis. We also note that, with proper inspections and maintenance, water retaining structures do not have a prescribed finite life expectancy.

Comment: PacifiCorp states that our description of the total storage capacity of Copco No. 1 reservoir is incorrect. The correct value should be 46,900 acre-feet.

Response: We have modified SD2 accordingly.

Comment: Interior suggests that our description of the Spring Creek diversion in SD2 note that this diversion is located on BLM-managed land within the Cascades-Siskiyou National Monument and that Spring Creek is an important fish-bearing stream encompassed in a Northwest Forest Plan Tier 1 Key Watershed.

Response: We have added the suggested text pertaining to the Spring Creek diversion being on BLM-managed land to SD2. However, it is not appropriate to include information on the ecological importance of Spring Creek in the description of the proposed project facilities. This information will be considered in our environmental analysis.

Comment: Interior indicates that our description of the Klamath Irrigation Project on page 25 of SD1 is not adequate, and provides additional information to enhance our description of this USBR project.

Response: We have added information provided by Interior to SD2 that further describes the Klamath Irrigation Project.

Comment: KSAGA and SRRC & KFA ask that we join with other entities that are developing water distribution, water quality, and anadromous fish restoration strategies for the Klamath River Basin to develop a process for promoting a coordinated strategy for these actions, possibly through USBR's ongoing Conservation Implementation Program (CIP) development. NOAA Fisheries and Interior suggest we consider numerous other ongoing habitat restoration projects, programs or initiatives, and/or water rights transfers, exchanges, or purchases in our assessment of anadromous fish restoration. Interior also encourages coordination among the Commission, PacifiCorp, and USBR to address the cumulative effects on federally listed fish species. EPA suggests that we evaluate whether there are opportunities to enhance the benefits of increased flows for the lower Klamath River by requiring the coordination of flows between the Klamath Hydroelectric Project and the Trinity River facilities.

Response: Although the Commission only has jurisdiction over a licensee, we will consider means to ensure coordination of future actions with appropriate entities in the environmental measures that we recommend in our EIS.

Comment: PacifiCorp comments that our Request for Information in SD1 is incomplete because it asks parties for information about the adverse effects of the proposed action but not the benefits. PacifiCorp requests that we request a full spectrum of positive and negative information on the proposed action and action alternatives.

Response: We have reviewed section 3.0 of SD1 and find no indication that we requested only information pertaining to adverse effects. Our language does not discourage any party from submitting a full spectrum of information that is relevant to this proceeding.

Comment: KRITFWC and Yurok Tribe request that the project alternatives of "Federal Takeover" and "Nonpower License" should not be eliminated but held for further consideration as options to dam removal alternatives. Likewise, PacifiCorp suggests that these options cannot yet be permanently foreclosed depending on the agency conditions ultimately placed on the license. Conservation Groups suggest that we do not eliminate Federal Takeover from further consideration, indicating that there has not been sufficient time for federal agencies to evaluate this opportunity or express an interest in operating all or part of the project. Given the importance of the project to the operation of the Klamath Irrigation Project, Conservation Groups think USBR may want to consider this alternative.

Response: For us to consider federal government takeover or issuance of a nonpower license as an alternative that requires detailed study, a governmental agency would need to express a defined interest in taking over and operating or assuming regulatory authority and supervision over the lands and facilities covered by a nonpower license for the Klamath Hydroelectric Project. No such governmental agency interest has been expressed. If such interest is shown, along with details of the proposed shift in jurisdiction, ownership, and operation, we may consider this alternative in more detail in our EIS.

Comment: American Whitewater requests that we provide additional details about the change in jurisdiction over the Keno development from the Commission to the state of Oregon if it is removed from the project (as indicated in section 4.1.4 of SD1), including the general operational intentions of Oregon should such a transfer occur. ODFW notes that the state of Oregon has no interest in acquiring and managing Keno dam if PacifiCorp chooses to remove this facility from the project.

Response: In section 4.1.4 of SD1, we state: "The proposed project would also not include the Keno development, but the Keno dam would continue to be operated as it is

currently, only under the jurisdiction of the state of Oregon." PacifiCorp currently operates the Keno development in accordance with a contract with USBR, and it indicates in its license application that it would operate the dam in a similar manner in the future. As previously noted, our analysis of the Keno development will focus on assessing whether it serves project purposes. If the Commission determines that it does not serve project purposes, Keno development would no longer be under the jurisdiction of the Commission. Jurisdiction over this development would revert to the agency that is responsible for dams and waterways within the state of Oregon, which does not mean that the state of Oregon would assume ownership, management, or operational responsibilities.

Comment: ODFW suggests that we should clarify how environmental measures would be identified for analysis and how we would develop our recommended environmental measures. EPA, SRRC & KFA, and KSAGA request that our EIS clarify how we incorporated cumulative effects in our assessment of project alternatives and recommended environmental measures.

Response: We summarized how we would develop the Staff Alternative in section 4.2 of SD1. As further clarification, once we conclude that we have sufficient information to begin our environmental analysis, the Commission will issue an REA notice that solicits terms, conditions, recommendations, and comments from all interested parties. Once this input is received, we will review PacifiCorp's proposed environmental measures and additional recommendations provided by others. In some instances, we may conclude that environmental measures not proposed or recommended by any other party would be appropriate. Our EIS will include our analysis of environmental issues, including cumulatively affected resources, and measures that address those issues and our recommendations regarding appropriate conditions that should be included in a new license, if a new license is issued.

Comment: Interior and NOAA Fisheries state that we should remove the statement on page 19 of SD1 that indicates that PacifiCorp has been, and continues to be, involved in a collaborative process for study plan design and, ultimately, the development of protection, mitigation, and enhancement measures. They assert the proposed environmental measures listed in section 4.1.5 of SD1 were not developed collaboratively, and that a collaborative group is not currently working on the design of additional environmental measures and does not necessarily agree with the proposed measures. Conservation Groups agree that PacifiCorp has engaged in a collaborative approach in this relicensing, but it remains to be seen whether this process will ultimately result in development of environmental measures that are acceptable to stakeholders. PacifiCorp reiterates its intent to continue to meet with stakeholders and ultimately reach agreement on appropriate new license measures.

Response: The record for this proceeding indicates that PacifiCorp has been involved in a collaborative process with the goal of developing environmental measures with input from stakeholders. We recognize, however, that the measures proposed in PacifiCorp's license application may not have been approved by stakeholders. We see no reason to remove the statement in SD1 pertaining to PacifiCorp's involvement in a collaborative process.

Comment: Interior, NOAA Fisheries, KSAGA, and SRRC & KFA point out that several of the proposed measures listed in section 4.1.5 of SD1 are actually a continuation of existing conditions or modifications of structures that are not operating effectively, such as the J.C. Boyle fish ladder, and therefore should be considered under the No-action Alternative, rather than the proposed project.

Response: Several of the measures proposed by PacifiCorp represent a continuation of measures implemented under existing conditions. Our revised EIS outline will allow environmental measures associated with the existing license to be clearly evident. However, unless such conditions are also specified in a new license, they would not be required to be implemented. Our developmental analysis will account for continuation of existing conditions by not assigning a cost to such measures, since costs would be reflected in the operation and maintenance costs of the No-Action Alternative.

Comment: PacifiCorp clarifies that its proposed environmental measure is to release an additional 100 cfs (compared to the proposed 100-cfs minimum flow release from J.C. Boyle dam) downstream of the J.C. Boyle powerhouse during non-peaking operations. This flow could be released at either the dam or the powerhouse.

Response: We have adjusted the text of SD2 based on PacifiCorp's comment.

Comment: PacifiCorp indicates that our listing of proposed recreational measures in SD1 indicates that PacifiCorp would develop a draft recreation resource management plan. PacifiCorp indicates that it provided a draft plan in its license application and plans to submit a revised plan to the Commission in the fall of 2004 (which has subsequently been filed). PacifiCorp states that it plans to submit a final plan within a year of license issuance.

Response: We deleted the word "draft" from the description of PacifiCorp's proposed recreational measure in SD2.

Comment: NOAA Fisheries states that all issue statements in SD2 should make clear that our EIS will contain analysis of the effects of existing operations, proposed operations, and alternative operations. Many entities comment that all development retirement alternatives should be addressed for each resource category included in our EIS.

Response: We added text to the introductory paragraph of the resource issue listing in SD2 that confirms that we will assess the effects of the existing project, the proposed project, and various recommendations for alternative environmental measures and project configurations. If reasonable development retirement alternatives are identified, we will include the appropriate analysis in each resource section and have added text to SD2 to make this more clear.

Comment: PacifiCorp indicates that, for the issue bullets in each of the resource subsections of section 5.2 of SD1, we list a mixture of resources that could potentially be affected by the proposed action and also possible enhancement measures. PacifiCorp suggests that we should seek separate scoping input on both topics.

Response: The purpose of scoping, as indicated in section 2 of SD1, is to identify issues associated with the proposed action (relicensing the project) and, as indicated in section 3 of SD1, obtain relevant information that will assist us with our analysis. In some cases, environmental measures have been proposed or recommended to address certain issues and in other cases, there are no proposed measures yet. Our issue bullets reflect this. We will request specific environmental measures from interested parties when we issue our REA notice.

Comment: Interior notes that our proposed EIS outline in section 7.0 of SD1 includes "Purpose of Action and Need for Power" but the purpose and need for the action (i.e., relicensing) is not described anywhere in SD1. PacifiCorp states that SD2 should include a clear statement that the proposed federal action is the Commission's decision whether to issue a license and if so, with what conditions, and that the purpose of the action is to respond to PacifiCorp's license application. SRRC & KFA and KSAGA request that the Purpose of Action and Need for Power section of our EIS include a thorough description of the project-specific issues that will be addressed in the EIS.

Response: The transmittal letter and section 1 (*Introduction*) of SD1 both indicate that the purpose of this proceeding is to evaluate PacifiCorp's proposal to relicense the Klamath Hydroelectric Project. The second paragraph of the transmittal letter for SD1 states that: "The Commission intends to prepare an Environmental Impact Statement (EIS) for the Klamath Project, which will be used by the Commission to determine whether, and under what conditions, to issue a new hydropower license for the project." We consider this statement to be sufficiently clear. We do not consider it appropriate to include a thorough description of project-specific issues that will be addressed in the EIS in the Purpose of Action and Need for Power section. Each resource section will have a description of the issues that are addressed, which will be guided by the issues that we identify in SD2.

Comment: Interior and NOAA Fisheries note that on page 23 of SD1, we indicated that we would examine costs and contributions to airborne pollution related to generation of replacement power. They point out that Exhibit H of PacifiCorp's license application reports that over the next 10 years they expect to add 4,100 MW of new capacity to their system. They indicate that it is not clear that replacement power would be necessary under these circumstances. Interior states that if we determine that additional capacity is required, we should identify the type of additional capacity that would be constructed and in what amount, and examine only the contributions to airborne and other pollution associated with that incremental capacity. CEC recommends that replacement energy scenarios be developed in agreement with the loading order for the California Energy Action Plan. The planning for securing alternative energy sources, should the project be decommissioned, also needs to be factored into our analysis.

Response: We will assess whether there is a need for the power produced by the project locally or regionally in our EIS. If there is a need for project power, and the power is no longer available for whatever reason, we would expect the lost generation to be replaced. However, we cannot predict or dictate the replacement generation source should any hydroelectric development be retired or a new license denied.

Comment: Twenty-five entities suggest that we consider alternative energy sources, including wind, biomass, and solar, and energy conservation to compensate for the removal of the dams, rather than focusing on fossil fuel replacement energy. PacifiCorp encourages us to include consideration of the fact that the existing project uses a renewable fuel source and has no adverse air emissions.

Response: We will assess the availability of other potential replacement energy sources to compensate for lost project power if a new license is not issued or some developments are retired. We will describe the most likely alternative source of energy in our EIS and the basis for that conclusion.

Comment: CEC and Conservation Groups request that our need for power analysis in the EIS include the need at several levels, including: (1) the area in which the Klamath Hydroelectric Project is located; (2) California; (3) Oregon; (4) PacifiCorp's Western Division and Control Area (i.e., service territory in Washington, Oregon, and California); (5) PacifiCorp's Service Territory, including parts of Utah, Oregon, Wyoming, Washington, Idaho, and California; and (6) the Western Electricity Coordinating Council Region. For each of these geographic areas, they request that we assess the following information: current capacity and demand, including peak demands; projected demands at the date of licenses renewal and 10 and 30 years from the date of license renewal (including a statement of our assumptions on economic growth and changes in energy demand); projected changes in generation capacity; and power delivery issues associated with current bulk transmission capacity and projected changes in transmission capacity.

Response: Our discussion in the Need for Power section of the EIS will be intended to describe the general need for power locally and regionally. The need for power can be met by using a variety of different generating facilities that use a variety of different fuel sources. Our need for power discussion will not be intended to define the need for any specific generating facility or for facilities that provide power using any particular fuel source. We will consider the comments of Conservation Groups and CEC as we develop our need for power discussion within this framework.

Comment: Interior indicates that the section of our proposed EIS outline listing the proposed action and various alternatives should be revised to include a heading for an Agency Alternative. SRRC & KFA and KSAGA also suggest that they may be filing a project alternative at a later time, and we should analyze it as a complete alternative in the EIS.

Response: If we receive a complete project alternative from the agencies or stakeholders, we will consider adding an appropriate subsection heading to our listing of project alternatives. We expect to receive alternative environmental measures in response to the REA notice, which will be analyzed in appropriate resource sections of the EIS regardless of whether they are included as part of a complete project alternative.

Comment: PacifiCorp requests that we clarify in SD2 that we will adhere to the goal of developing a unified set of agency recommendations in order to avoid inconsistency and facilitate development of an integrated agency alternative and that the Commission staff will work as closely as possible with the agencies in the attempt to achieve this goal.

Response: Although we prefer agencies and stakeholders to coordinate their recommendations pertaining to any project, we cannot compel them to do so. Based on the scoping comments, it is clear that many agencies and stakeholders are coordinating their responses to our requests for input.

Comment: NEC, Mid Klamath Watershed Council, and city of Arcata recommend that we consider "environmental justice" and how the environmental impacts of the mid-Klamath dams are allocated. American Whitewater, KSAGA, and SRRC & KFA state that we should address in our socioeconomic or cultural analysis environmental justice on downstream and upstream Native American and other communities that have borne negative impacts from loss of anadromous fish.

Response: We will address environmental justice in the socioeconomic section of our EIS and added a bullet to SD2 to clarify our intent.

Comment: NOAA Fisheries states that in the event that the Commission issues an annual license for operation of the project when the existing license expires, the annual license should include terms and conditions developed with NOAA Fisheries and other

resource agencies to address ongoing impacts on anadromous fish related to minimum instream flows, peaking rates, and water quality issues. NOAA Fisheries expects immediate correction of existing fish passage problems at J.C. Boyle and Keno developments.

Response: The Commission considers issuance of annual licenses to be a non-discretionary and ministerial act to enable a project to legally operate under the terms and conditions of the existing license until action is taken pertaining to a new license. If the fish passage facilities at Keno and J.C. Boyle are operating in violation of the terms and conditions of the existing license, the Commission can require PacifiCorp to correct those violations outside of this relicensing proceeding. We are aware that PacifiCorp is addressing issues associated with the approach channel to the base of the J.C. Boyle fish ladder.

Cumulative Effects

Comment: Numerous entities request that we expand the resources that we plan to evaluate for cumulative effects identified in section 5.1 of SD1. Additional resources identified by one or more parties include: (1) geomorphology; (2) sediment transport; (3) "the full suite of water quality parameters"; (4) nutrients; (5) pH; (6) algae; (7) primary production; (8) cyanobacteria; (9) resident fish; (10) macroinvertebrates and other aquatic species; (11) fish diseases; (12) riparian communities; (13) wildlife; (14) terrestrial; (15) recreational values; (16) Wild and Scenic River attributes; (17) socioeconomic values; (18) tribal trust assets; and (19) cultural resources.

Response: We added geomorphology to our list of cumulatively affected resources, which would include sediment transport, substrate composition, and channel shape. The results of this cumulative effects analysis would be used to assess related effects on aquatic and riparian habitat along project-influenced reaches. We have also decided to broaden our cumulative effects analysis from water temperature and dissolved oxygen (DO) to water quality. We will assess which specific water quality analytes are influenced by the project and other past, present, and future actions in our EIS, but it is clear that nutrients directly or indirectly (e.g., through algae and other primary production sources) cumulatively influence water quality in project-affected waters. Our water quality analysis would also assess project-related conditions that may be favorable for the growth of cyanobacteria and outbreaks of fish diseases. In addition, we have added federally listed suckers to our list of cumulatively affected resources because suckers diverted from the USBR A-canal on Upper Klamath Lake and irrigation returns to Keno reservoir and passed upstream or downstream of Link River and Keno dams can be influenced by the Klamath Hydroelectric Project. We have added redband trout to our list of potentially cumulatively affected resources because habitat suitability for this species in and upstream of project-influenced waters is influenced by other past, present, and future actions. Finally, we have added socioeconomic values to our list of potentially

cumulatively affected resources because numerous actions that influence the abundance of anadromous fish stocks, including relicensing of the Klamath Hydroelectric Project, influence the incomes of people who depend on that resource for both commercial (including tribal) and recreational purposes. Another action that may potentially overlap with relicensing is a change in the rate that local irrigators and others pay for electricity to run their pumps and other electrical equipment, which could influence the economic viability of those entities, who currently receive low cost electricity. We conclude that, by addressing these additional cumulatively affected resources, conclusions can also be drawn on the other resource values that we have been requested to include in our cumulative effects analysis.

Comment: Conservation Groups request that SD2 provide a list of what past, present, and reasonably foreseeable future actions we will consider in our cumulative effects analysis. They indicate that there are numerous regulatory and planning efforts underway in the Klamath River Basin that will have a bearing on this relicensing proceeding. SRRC & KFA and KSAGA request that we include all information related to past conditions in our cumulative effects analysis and how we conducted pre-filing consultation with resource agencies to obtain information regarding such past effects.

Response: We will identify in our EIS the past, present, and reasonably foreseeable future actions that we considered in our cumulative effects analysis. We are aware of the numerous other regulatory and planning efforts that are ongoing in the Klamath River Basin. The nature of reasonably foreseeable outcomes of these ongoing activities is likely to be somewhat uncertain because of the complexity of the issues that pertain to the basin. However, we will attempt to incorporate relevant information that is available to us pertaining to these actions into our cumulative effects analysis. We also intend to include in our EIS relevant past and present information regarding cumulatively affected resources. We received a substantial amount of information in response to our request for relevant information pertaining to the project from interested parties that was contained in section 3.0 of SD1.

Comment: Humboldt County Board of Supervisors suggests that the cumulative effects analysis also cover the secondary cumulative effects caused by the project associated with lost opportunities to harvest anadromous fish both in the river and in the Pacific Ocean, adversely affecting commercial anglers, sport anglers, and Indian tribes living along the river.

Response: We recognize that changes in anadromous fish populations that rely on the Klamath River Basin influence commercial and sport anglers, in addition to the tribes, and we will acknowledge this in our EIS.

Comment: California Coastal Commission (CCC) requests that we evaluate how the dams are cumulatively affecting the movement of sediment to the coastal littoral zone

and, if the dams are to remain, the feasibility and impacts of removing trapped sediment behind the dams to reduce coastal shoreline erosion and rebuild coastal beaches.

Response: As previously indicated, we added geomorphology to our list of cumulatively affected resources, and we will address movement of sediment downstream of the project in our EIS. We will also assess appropriate environmental measures that address project-related effects in our EIS.

Comment: Humboldt County Board of Supervisors comments that Klamath sediment has been detected as far south as Redwood Creek (which is about 17 miles south of the mouth of the Klamath River) and that the sediment size distribution affects the marine invertebrates in the beach environment. They comment that this factor should be taken into consideration beyond the Klamath reach. Interior states that our EIS should consider past, present, and future effects of project operations on coastal resources at Redwood National and State Parks.

Response: We would expect sediment that originates from the Klamath River to contribute to beach and other coastal habitats beyond the mouth of the Klamath River, as it would for any similar-sized river. However, the proportion of project-related sediment relative to sediment contributions from downstream of Iron Gate dam (located 190 miles upstream of the mouth) is likely to be relatively small. We consider a reasonable geographic scope for our geomorphic cumulative effects analysis to be the main stem of the Klamath River to its mouth and have modified SD2 to reflect this.

Comment: The Klamath and Karuk tribes suggest that we consider the cumulative effects of the past loss of expansive emergent marshes in what was once the northern lobe of Lower Klamath Lake, through which the Klamath River once flowed between Upper Klamath Lake and Keno. They state that Keno reservoir is now almost completely diked with very little emergent marsh, which likely had profound implications on water quality dynamics in project-influenced reaches. Interior requests that we expand the geographic scope of our cumulative effects assessment for water quantity to include Lower Klamath Lake because a major portion of the water that supplies the Lower Klamath National Wildlife Refuge and irrigators originates from Keno reservoir, and any changes to water level management of Keno reservoir could adversely influence these water uses. The Klamath Tribes suggest that we consider the cumulative effects of the past alteration of the hydrograph caused from the loss of enormous wetlands, massive irrigation project development, and regulation of Upper Klamath Lake.

Response: We agree that past, present, and likely future actions that may influence water quality of project waters should include the area within the Lower Klamath Lake Wildlife Refuge, which includes Lower Klamath Lake. Water diverted from Keno reservoir flows into this area, and agricultural returns from this area flow into Keno reservoir. We have modified the geographic scope of our cumulative effects analysis of water quality in SD2

to include this area. We included Upper Klamath Lake in our original geographic scope for water quantity in SD1.

Comment: The Karuk Tribe asks that we expand the area of potential effects to include the Tule Lake region, through which the Klamath River once flowed, because the altered hydrology from the operation of the Klamath Irrigation Project and the Klamath Hydroelectric Project influences resources that are important to the tribe.

Response: After reviewing possible water routing associated with the Klamath Irrigation Project, we added the Lost River Diversion Channel, the Lost River from the confluence of the diversion channel to Tule Lake, and Tule Lake to the geographic scope for water quantity. Water can either flow into or out of Keno reservoir through the Lost River Diversion Channel. Therefore, water level management at Keno reservoir can influence the quantity of water that can be diverted into the Lost River and available for irrigation diversions from either the Lost River or Tule Lake.

Comment: SWRCB, Interior, KRITFWC, Yurok Tribe, Hoopa Valley Tribe, and Institute for Fisheries Resources et al. believe the geographic scope for our cumulative effects analysis of anadromous fish specified in section 5.1.1 of SD1 should be expanded to include offshore and nearshore ocean areas along the California and Oregon coast to fully evaluate project effects. KRITFWC, the Yurok Tribe, and the Hoopa Valley Tribe also feel that the Trinity River should be included in the geographic scope because habitat conditions in the lower Klamath River have a profound influence on the ability of anadromous fish of Trinity River origin to reach the Trinity River to spawn, and reach the ocean to mature. SRRC & KFA and KSAGA make a similar case for including Salmon River considerations in our EIS.

Response: We expanded our geographic scope for our cumulative effects analysis of anadromous fish in SD2 to include all habitat in mainstem tributaries upstream of the mouth of the Klamath River that were historically or are currently used by anadromous fishes. We will also consider applicable fisheries management plans for anadromous fisheries because fisheries management regulations and associated commercial, tribal, and recreational harvest can affect the numbers of adult salmonids returning to the Klamath River Basin to spawn. Additionally, Klamath project structures and operation can affect adult spawning success and subsequent downstream migration of juvenile salmonids.

Comment: Conservation Groups request that our description of the geographic scope for our cumulative effects analysis of anadromous fish in SD2 clearly state that it will include all habitat that was historically accessible to anadromous fish within the project between Iron Gate dam and Link River dam.

Response: We modified SD2 as suggested by Conservation Groups.

Comment: The Quartz Valley Indian Community, Resighini Rancheria, and others indicate our temporal scope for analysis of cumulatively affected resources (30 to 50 years into the future) is too narrow because ocean conditions that determine the favorability for anadromous fish survival alternate at roughly 25-year intervals.

Response: We typically use 30 to 50 years as our temporal scope for analysis of cumulative effects because that corresponds to the expected term of a new license. Beyond that, if a new license is applied for again, the new licensing proceeding could address anadromous fish based on the status of restoration efforts at that time.

Comment: ODFW requests that we assess the effects of maintenance, roads, recreation, etc. on terrestrial resources in our cumulative effects analysis.

Response: Effects of project-related maintenance, use of project-related roads, and project-induced recreation on terrestrial resources are project-specific, and we will address them as such in our EIS.

Comment: ODFW requests that we include an assessment of project-related effects on noxious weed establishment, distribution, and abundance in our cumulative effects analysis.

Response: Project-related effects on noxious weeds are project-specific, and we will address them as such in our EIS.

Comment: The Quartz Valley Indian Community, Resighini Rancheria, KSAGA, SRRC & KFA, and others request that our analysis of the cumulative effects on water temperature take into account the influence of global warming.

Response: We will consider information regarding the influence of global warming in our cumulative effects analysis of water temperature, as appropriate.

Comment: The U.S. Department of Agriculture, Forest Service (Forest Service) requests that our assessment of the cumulative effects on water quantity should include the magnitude, timing, and seasonality of flows.

Response: We will consider these factors in our EIS.

Comment: The Forest Service recommends that our cumulative effects analysis for anadromous fish consider population modeling of depressed stocks, such as summer steelhead, coho, and spring Chinook salmon, for 30 to 50 years into the future to simulate conditions during the term of a new license and to gain some idea of stock viability given expected conditions. American Whitewater requests that our cumulative effects analysis

of anadromous fish include the effects of Iron Gate Hatchery and non-native fish assemblages.

Response: We will rely on anadromous fish modeling provided or to be provided by PacifiCorp for our cumulative effects analysis of anadromous fish populations. Our understanding is that the KLAM-RAS and EDT models are designed to investigate key system drivers and to develop and compare enhancement strategies, but are not intended to be used as absolute prediction tools. We will use the model results to compare the effects of alternative project configurations and restoration strategies on all anadromous species for which we have information, and will include consideration of foreseeable changes in ocean survival and instream habitat conditions including water quality. Where information on the current population status of a fish stock is limited, we will focus our analysis on effects on habitat availability and migration survival. We also will evaluate the effects of Iron Gate Hatchery and non-native fish assemblages on anadromous fish, although some of this analysis may be in our project-specific analysis rather than our cumulative effects analysis.

Comment: PacifiCorp suggests that we add an additional subsection to SD2 that includes a detailed description of the information relevant to setting the scope of our cumulative effects analysis. They state this subsection should request information regarding the positive and negative effects of other significant development activities within the basin and request information about the way in which such effects do or do not have a cumulative effect on the proposed relicensing of the project. PacifiCorp also suggests that we seek information on whether alternatives to the proposed action would result in greater, lesser, or the same cumulative effects.

Response: In section 3.0 of SD1 we requested information regarding all relevant activities in the basin that could influence our analysis. We will present information in our EIS that describes the setting for our cumulative and site specific analyses in section 3.1 (*General Description of the Klamath River Basin*) and the individual resource sections of the EIS. There is no need to include an additional subsection in SD2.

Geology and Soils

Comment: The Forest Service and Conservation Groups ask that our statement in section 5.2 of SD1 regarding geology and soils be modified to include gravel dispersal downstream of all project dams, including Iron Gate dam. Interior and ODFW suggest that SD2 should be modified to clarify that the term "project waters" in the second bullet under water resources (which pertains to shoreline erosion and sedimentation) refers to "project-affected reaches."

Response: Based on input during scoping, we will include a separate section that addresses geology and soils in SD2 and our EIS. We clarify in SD2 that we will address

gravel dispersal and shoreline erosion and sedimentation at all project-affected waters, including downstream of all project dams.

Comment: Redwood Region Audubon Society and others state that our analysis of dam decommissioning should be approached in an environmentally sensitive manner, with careful thought given to the disposition of sediments accumulated behind the structures.

Response: If reasonable development retirement alternatives are identified, we will assess the disposition of sediment in appropriate project reservoirs as part of our analysis. We include this issue in the Geology and Soils section of SD2.

Comment: ODFW, NOAA Fisheries, and Interior note that the erosion and sedimentation issue should include the effects of trapping bedload materials by dams, including gravel; reduced stream channel complexity; erosion of fine grained substrate; armoring of riverine habitat downstream of project dams (and associated loss of aquatic and riparian habitat due to armored channel conditions); and reduced rates of sediment deposition.

Response: We added this clarifying information to this issue bullet in the Geology and Soils section of SD2.

Comment: Interior and NOAA Fisheries state that our analysis should include a verification of the sediment budget developed by PacifiCorp.

Response: We will include a verification of PacifiCorp's sediment budget in our analysis.

Comment: ODEQ recommends that we examine the current and future effects of road maintenance and sidecast material along the J.C. Boyle canal, coarsening in the river below J.C. Boyle dam, and earthquake and mass wasting potential effects on project developments and structures.

Response: We will assess the influence of sidecast material and road maintenance along the J.C. Boyle canal on habitat and recreational opportunities at the J.C. Boyle bypassed reach and modified SD2 accordingly. The primary project-related effect pertaining to coarsening of the substrate in the channel downstream of J.C. Boyle pertains to aquatic and riparian habitat (availability of spawning gravel and fine-grained sediments in nearshore and riparian areas). We modified SD2 to reflect these habitat related issues under the geology and soils section. Potential effects on project structures related to earthquakes and mass wasting events are addressed by the Commission's Division of Dam Safety and Inspections and will not be addressed in this relicensing proceeding.

Comment: Interior, NOAA Fisheries, KSAGA, and SRRC & KFA note that the synchronous bypass valves proposed by PacifiCorp at the J.C. Boyle development are designed to prevent further resource damage (erosion) caused from uncontrolled spills at the emergency spillway at the end of the intake canal. Consequently, they indicate that this measure should be considered a necessary provision of the terms of the current license, rather than a proposed enhancement for the new license. ODEQ recommends that we examine erosion and stabilization at the J.C. Boyle canal "emergency" spillway. American Whitewater notes that PacifiCorp only proposes to minimize spills to the J.C. Boyle canal spillway, with no provisions for hardening or modifying this major source of erosion.

Response: We will address the J.C. Boyle emergency spillway channel stability issue in this relicensing proceeding. In response to scoping input, we added the issue of the J.C. Boyle emergency spillway channel stability to the geology and soils section of SD2.

Water Resources

Comment: The Hoopa Valley Tribe urges us to consider having PacifiCorp create additional water storage facilities to assist with and supplement USBR's "water bank" project. Henry Mroczkowski, by letter dated June 18, 2004, suggests that we evaluate pumped storage for the purpose of augmenting instream flows for critical fish passage.

Response: Developing additional water storage facilities could enable increased flows to be released to the lower Klamath River during times of the year that are critical for anadromous fish passage or survival. However, the USBR's "water Bank" project is more properly addressed by USBR and other entities that consumptively withdraw water from the Klamath River for agricultural purposes. A pumped storage facility is one potential approach to developing additional water storage, but construction of such a facility by a non-federal entity would require a party to submit a license application for an original hydroelectric project license or amend an existing license or license application. No party has expressed an interest in developing such a plan, and we cannot compel any party to do so.

Comment: American Whitewater considers it essential that our EIS include an integrated analysis of flow-related resource interconnectedness that balances protection and enhancement of whitewater boating opportunities with water quality, fishery, and other resource needs in a way that maximizes benefits to society.

Response: We will consider all project-related resource issues that pertain to flow by using a balanced approach that considers developmental and environmental tradeoffs that result in the best comprehensive use of the Klamath River.

Comment: The Hoopa Valley Tribe, Interior, NOAA Fisheries, SWRCB, California Department of Fish and Game (CDFG), KWUA, Conservation Groups, and ODFW comment that PacifiCorp may have the potential to provide a significant amount of controlled flow at critical times, such as they did during the 2002 fish kill and our EIS should assess this potential. PacifiCorp's level of control over the flow regime should not be dismissed or excluded from the NEPA scope of analysis, as section 4.1.2 of SD1 seems to suggest. Interior adds that our assessment should include water stored not only in project reservoirs but Upper Klamath Lake.

Response: We modified our description of existing project operations to indicate that PacifiCorp asserts that releases from Iron Gate dam are primarily stipulated by USBR in accordance with applicable BiOps that pertain to the Klamath Irrigation Project. We will assess the degree of control that PacifiCorp has over flows released from Link River, Keno, and Iron Gate dams in our EIS. We encourage Interior to provide specific information regarding how water stored in Upper Klamath Lake could be used for controlled flow releases by PacifiCorp without conflicting with Klamath Irrigation Project purposes or the provisions of USBR's water bank program and how these releases would be effectuated, since Link River Dam and Upper Klamath Lake are USBR facilities.

Comment: ODEQ requests that the analysis of peaking operations should include effects on water quality and other designated beneficial uses. They state that pre-project ranges in stage change and hydrograph should be clearly identified.

Response: We will assess the effects of the project, including proposed and alternative project configurations and environmental measures, on water quality and other designated beneficial uses, and have modified SD2 to make this clear. Our baseline for environmental analysis is the project as licensed.

Comment: Shasta River Coordinated Resources Management and Planning Group indicates that irrigators in the Shasta Valley have a reserved water right to divert 220,000 acre-feet of water (roughly 100 to 200 cfs for 6 months during the summer growing season) from the Klamath River upstream of Iron Gate dam to the Shasta River. They state that if this water right is exercised for irrigation, municipal, and industrial purposes, equivalent amounts of water would be released to the Shasta River to enhance wild salmon spawning and rearing habitat. They state that this would reduce the current burden on water users in the Shasta Valley to balance consumptive uses with the habitat needs of wild salmon. Consequently, the Shasta River Coordinated Resources Management and Planning Group requests that we evaluate the potential loss of generation associated with the diversion of 100 to 200 cfs from California waters upstream of Iron Gate dam, the appropriateness of requiring PacifiCorp to provide the electric power needed to pump water to the Shasta River free of charge, and the water quality and biological effects of this diversion on the Klamath River.

Response: We would consider the potential diversion of 100 to 200 cfs from the Klamath River upstream of Iron Gate in our cumulative effects analysis if sufficient information is available regarding the location of the diversion point, the schedule for implementing such a plan, and the environmental effects of such a diversion. We encourage the Shasta River Coordinated Resource Management and Planning Group to file any details on this potential diversion for our consideration.

Comment: ODFW recommends that PacifiCorp convert the hydroelectric water rights from the East and West Side developments to instream water rights that would be maintained in perpetuity, in trust for the people of the state of Oregon, consistent with claims and water certificate 24508.

Response: The disposition of any water rights associated with the East and West Side developments is between the state of Oregon and PacifiCorp, and we do not plan to make any recommendations in this regard.

Comment: SRRC & KFA and KSAGA request that our EIS include a thorough discussion of how our recommended project fulfills the requirements of Oregon's statutes pertaining to reauthorization of water rights at an existing hydroelectric project.

Response: As indicated in the previous response, matters pertaining to water rights in Oregon are between the state of Oregon and PacifiCorp. If a new license is issued for this project and accepted by PacifiCorp, PacifiCorp would be responsible for complying with appropriate state and federal statutes.

Comment: Numerous agencies, tribes, and individuals suggest that we evaluate the effects of various flow regimes on additional parameters besides temperature and DO including nutrient load and cycling (e.g., ammonia, Kjeldahl nitrogen, total inorganic nitrogen, dissolved inorganic nitrogen, phosphorus, and ortho-phosphorus), chlorophyll-a,, pH, taste and odor compounds, and designated beneficial uses to fully understand the effects of project operations on water quality. They state the scope of analysis should include all project-affected reaches from Upper Klamath Lake to the Pacific Ocean.

Response: We modified SD2 to indicate that, in addition to water quality issues stated in SD1, we will assess the effects of the project and proposed and alternative project configurations and environmental measures on nutrient dynamics, ammonia toxicity, and taste and odor compounds in project-affected waters, including downstream of Iron Gate dam.

Comment: Interior and NOAA Fisheries indicate that our EIS should analyze the attenuation of peaking flows and temperatures downstream of each development in the absence of dams that re-regulate peaking flows. In addition, Interior and NOAA

Fisheries state that we should analyze reduced thermal gain that would occur through replacing project reservoirs with free-flowing reaches with increased topography and riparian shading. They comment that these analyses would facilitate our assessment of retirement of additional developments.

Response: We will consider Interior's and NOAA Fisheries suggestions as we prepare our EIS.

Comment: EPA comments that the proposed project should be consistent with EPA-approved water quality standards for the states of California and Oregon, the Hoopa Valley Tribe, and plans adopted by other tribes in the Klamath Basin. Pacific Coast Federation of Fishermen's Associations asks why we did not discuss state and federal water quality standards in our SD1. ODEQ comments that specific qualitative and quantitative effects of the proposed project on both a temporal and spatial basis relative to water quality standards and beneficial uses must be identified. SWRCB suggests that we provide a complete discussion of water quality impacts and alternatives using PacifiCorp's updated water quality model.

Response: In section 5.2.1 of SD1, we stated that we planned to assess the effects of project operations and proposed environmental measures on compliance with applicable state water quality standards in Klamath Project reservoirs and in the Klamath River downstream of the project. We expanded this description in SD2 to include designated beneficial uses.

Comment: ODEQ notes that we should evaluate segments of the Klamath River from RM 254 (Link River dam) to the California border that are not proposed to be included in the project boundary for project effects on water quality.

Response: We modified SD2 to indicate that will assess water quality in project-affected reaches.

Comment: The Northcoast Environmental Center (NEC), city of Arcata, Institute for Fisheries Resources et al., Mid Klamath Watershed Council, and several individuals suggest that we assess whether or not the Klamath dams fulfill obligations under the federal Clean Water Act, including whether or not the dams are a point source for pollution, including farming residue, ammonia, and dissolved nitrogen.

Response: It is up to the state agencies that issue water quality certifications for hydroelectric projects (SWRCB in California and ODEQ in Oregon) to ensure that relicensing the project is consistent with the Clean Water Act and to condition the project accordingly. We will make recommendations in our EIS that are intended to ensure that continued operation of the project is consistent with applicable water quality standards.

Comment: EPA and California North Coast Regional Water Quality Control Board (NCRWQCB) note that we need to ensure that project operations will be consistent with the total maximum daily loads (TMDLs), once they are finalized. Institute for Fisheries Resources et al. notes that EPA is developing a water quality model to predict water quality parameters from Upper Klamath Lake to the Pacific Ocean as part of ongoing TMDL plan development and suggests that we consult with EPA (as well as SWRCB, ODEQ, and tribes) concerning a combined and improved Klamath River water quality modeling effort. Pacific Coast Federation of Fishermen's Associations asks why we did not discuss TMDLs in our SD1. SWRCB suggests that we use the results of the enhanced water quality modeling developed by PacifiCorp for our EIS analysis.

Response: If TMDL reports are finalized for Oregon or California prior to issuance of our EIS, we will consider the project's consistency with any criteria and recommendations contained in the TMDL reports. We will consider modeling results developed as part of the TMDLs in our analysis if they are made part of the record. We expect that PacifiCorp will use the most current version of its water quality models when it develops the water quality information that we have asked for in our information requests.

Comment: The Forest Service asks that we evaluate PacifiCorp's assumption that the reservoirs may be acting as nutrient sinks and that we determine whether the cumulative buildup of nutrients in project reservoirs represents a risk to downstream water quality and aquatic resources. Interior, NOAA Fisheries, KSAGA, SRRC & KFA, and American Whitewater similarly recommend that we include an analysis of the capability of the project reservoirs to hold nutrients at temporal and spatial scales and the effects of associated project-related algae blooms on project waters and downstream. Interior indicates that we should identify which reservoirs have the greatest effect on downstream water quality under different project operating scenarios and water year types.

Response: As noted in a previous response, we will evaluate nutrient dynamics of project-affected waters in our EIS.

Comment: SWRCB, NCRWQCB, NOAA Fisheries, Interior, KRITFWC, Yurok Tribe, ODFW, ODEQ, KSAGA, and SRRC & KFA recommend that a thorough analysis of Keno dam be included in the EIS and that our analysis of the deletion of Keno development from the project address all current effects of the dam on water quality within the impoundment and downstream of the dam.

Response: We indicated in section 5.2.1 of SD1 that we would assess the effects on water resources of decommissioning the East and West Side developments and removing Keno development from the project. This would include water quality in Keno reservoir and downstream of Keno dam.

Comment: Interior, NCRWQCB, CDFG, Yurok Tribe, Karuk Tribe, KSAGA, SRRC & KFA, Mid Klamath Watershed Council, and Institute for Fisheries Resources et al. state that the project alters Klamath River water temperatures downstream of Iron Gate dam compared to pre-project conditions by releasing cooler water during spring and warmer water during late summer and fall. They request that we evaluate the effect of these thermal shifts on aquatic biota and nutrient cycling.

Response: Although our baseline for environmental analysis is the project as licensed, we will assess environmental measures that would address project-related adverse effects on aquatic biota and nutrient dynamics in our EIS.

Comment: The Klamath Tribes note that the potential effects of DO augmentation should be compared to conditions without Iron Gate and Copco 1 and 2 projects. They also comment that long-term reliability must be taken into consideration.

Response: We will assess the advantages and disadvantages of proposed measures to enhance DO conditions with existing and alternative project configurations in our EIS.

Comment: NCRWQCB notes that DO augmentation proposed by PacifiCorp only addresses the end result of nutrient enrichment and primary production and that we should analyze how low DO is linked to nutrient enrichment and primary production in the reservoirs and what this means to project operations and environmental measures.

Response: We will assess nutrient dynamics in project reservoirs in our EIS including reasonable alternatives to address project-related nutrient enrichment, as appropriate.

Comment: NOAA Fisheries states that PacifiCorp proposes to install an oxygenation/reaeration system "as needed." NOAA Fisheries comments that it is not clear in SD1 how this need would be determined and, therefore, it is uncertain whether such a system would be included as a condition of a new license. NOAA Fisheries further states that it is not clear whether the proposed system would be located in the reservoir or the outlet and we should conduct a rigorous analysis of low-level outlet releases at Iron Gate dam.

Response: We will address the specific nature of PacifiCorp's proposed system, and have requested additional information from PacifiCorp that we will include in our analysis. We will assess water quality data in our EIS and will make recommendations regarding the need for an oxygenation/reaeration system.

Comment: The Forest Service, Quartz Valley Indian Community, Resighini Rancheria, and Karuk Tribe ask that we extend the scope of our analysis of potential effects of project operation on algal blooms to the Klamath River downstream of the project, and

that we assess the effects of *Aphanizomenon* algal blooms on water quality (including nitrogen fixation) and fish populations within and downstream of the project.

Response: We modified SD2 to clarify that our assessment of algae blooms would include the effects of *Aphanizomenon* on project-affected water quality, including downstream of the project. We will base our analysis on information that is available to us.

Comment: The Quartz Valley Indian Community indicates that they collected the toxic algae *Microcystis aeruginosa* and high concentrations of the liver toxin microcystin along the shoreline of Copco reservoir on September 29, 2004. They request that we address this issue in our EIS.

Response: We modified SD2 to clarify that our assessment of algae blooms would include the effects of *Microcystis aeruginosa* on project-affected water quality. We will base our analysis on the information that is available to us.

Comment: The Karuk Tribe asks that we consider downstream ceremonial water uses in our analysis of water quality impacts, which include bathing and consumption of Klamath River water. They point out that these practices have resulted in participants developing infections and severe illnesses.

Response: We will assess project-related effects on water quality that could adversely influence downstream tribal ceremonial water uses, including whether the project influences the presence and downstream distribution of toxic algae, taste and odor compounds, or other sources of water quality degradation.

Comment: The Karuk Tribe, Resighini Rancheria, and Quartz Valley Indian Community request that we use a "with project dams" to a "without project dams" comparison to assess the influence of tributary inflow (dilution), the capacity of attached algae in free-flowing reaches to strip nutrients from enriched waters (assimilative capacity), and the capacity of organisms in free-flowing reaches to convert nitrate to atmospheric nitrogen (denitrification), thus improving the quality of enriched waters. American Whitewater also asks us to consider the level of water quality improvements that would occur in the absence of various project reservoirs due to riverine based attenuation and oxygenation.

Response: Although our baseline for environmental analysis is the project as licensed, we will assess nutrient dynamics under proposed and alternative project configurations. If reasonable development retirement alternatives are identified, we will assess nutrient dynamics in appropriate locations as part of our analysis. We added this issue to the Water Resources section of SD2.

Aquatic Resources

Comment: Ninety-five governmental and non-governmental organizations, tribes, and individuals commented that anadromous fish passage should be evaluated and recommended in any license for this project. Most entities specify that volitional upstream and downstream passage should be the long-term restoration objectives, although some entities (e.g., Interior and NOAA Fisheries) indicate that we should also analyze non-volitional alternatives, such as trap and haul, and combinations of the two.

Response: We will analyze approaches to restoring upstream and downstream anadromous fish passage in our EIS and make recommendations for achieving this objective, as appropriate.

Comment: CCC suggests that we review Chapter 3 of the Coastal Act (which describes California's Coastal Zone Management Program developed pursuant to the federal Coastal Zone Management Act) and thoroughly evaluate the effects that relicensing would have on the survival and growth of the populations of salmonid species that use or potentially use the Klamath River Basin. CCC indicates that it is reviewing the proposed relicensing of this project to determine if this action would require CCC review for coastal zone consistency certification. CCC states that the designated coastal zone includes the lower reaches of the Klamath River up to a point about 0.75 mile east of the Highway 101 bridge near the community of Klamath and the mouth of the Klamath River.

Response: We will evaluate the effects of relicensing on salmonids in the Klamath River Basin, including those downstream of Iron Gate dam.

Comment: The Hoopa Valley Tribe, Yurok Tribe, Klamath Tribes, KRITFWC, SWRCB, CDFG, Interior, NOAA Fisheries, Conservation Groups, and others disagree with the language used in the first bullet under the Aquatic Resources section 5.2.2 of SD1. They recommend that we modify the "feasibility of restoring runs" to focus on restoring access of anadromous fish to "historic habitat," not just "areas within and upstream of the project." They comment that the appropriate questions are "when" and "how" to restore anadromous fish, not "whether."

Response: We modified the text of the referenced bullet (now in section 4.2.3) to clarify our intent.

Comment: Interior recommends that our analysis of anadromous fish restoration focus on restoring access to historic habitat, not just fish passage, because project features and operations preclude access by anadromous and resident fish to thermal refugia, spawning riffles, and rearing margins due to inundation, scouring, and dewatering. Interior also suggests that we consider loss of spawning habitat from inundation by J.C. Boyle, Copco,

and Iron Gate reservoirs. NOAA Fisheries recommends that we assess how ongoing project operations that affect tributaries upstream of Iron Gate dam could influence production and viability of re-introduced anadromous salmonids. American Whitewater also requests that our analysis consider project-related blockage of salmonids to thermal refugia and all pertinent species and races of anadromous fish (e.g., spring and fall Chinook, coho, winter and summer steelhead, and Pacific lamprey). The Karuk Tribe points out that project operations influence anadromous fish access to important habitat in the lower reaches of the Klamath River.

Response: Although our baseline for comparative purposes is the project as licensed, we will assess barriers to important anadromous and resident fish habitat that currently exist in project-affected waters (both physical and water quality), and measures that would remove such barriers.

Comment: Institute for Fisheries Resources et al. asks us to assess and reconcile conflicts of relicensing the project with federal salmon recovery plans. They specifically cite the 1986 Klamath Act, which has the goal to restore the biological productivity of the Klamath River Basin by the year 2006 to provide for viable commercial and recreational ocean and in-river tribal and recreational fisheries. SRRC & KFA and KSAGA ask us to include direction provided in the 1996 Sustainable Fisheries Act in our EIS.

Response: We will consider direction provided in applicable salmon recovery plans and regulations in our EIS. Our EIS will identify any conflicts with comprehensive plans approved by the Commission. Applicable plans for the Klamath Hydroelectric Project, which include several salmon recovery plans, are listed in section 4.2.11 of SD2.

Comment: CDFG and others note that the discussion of fish passage in SD1 is limited to the effectiveness of current facilities in providing upstream passage for resident fish, which is much too narrow a scope for the issue of fish passage. CDFG states that our NEPA analysis should include a comprehensive evaluation of volitional upstream and downstream fish passage facilities at each project development and our scope should include all life stages of native fish species that used the Klamath watershed prior to construction of the project. The Klamath Tribes, Interior, NOAA Fisheries, and ODFW note that effective downstream passage for resident fish must also be considered in addition to potential upstream passage facilities.

Response: The first bullet in section 5.2.2 of SD1 includes upstream and downstream passage of anadromous fish as a primary element of restoration. We have modified this bullet in SD2 to make this clear. We also will assess the effectiveness of existing and proposed upstream and downstream passage for resident fishes, and have modified SD2 to clarify our intent. Our assessment will include an evaluation of the need for fish passage at each project development, including volitional and non-volitional alternatives.

Comment: Several tribes, agencies (i.e., Interior, NOAA Fisheries, CDFG, and SWRCB), NGOs, and individuals suggest that we include consideration of the project effects on upstream and downstream fish passage for additional species besides anadromous salmonids, including lamprey, eulachon, sturgeon, suckers, and redband trout.

Response: We modified the text of SD2 to make it clear that we will assess upstream and downstream passage for Pacific lamprey, redband trout, and suckers. We are not aware of any information that eulachon or sturgeon ever moved into the portion of the Klamath River now occupied by the project and therefore we will not assess upstream and downstream passage of these species at the project. However, to the extent that project operations influence water quality or quantity that could represent a barrier to upstream or downstream passage of all anadromous fish that use the lower Klamath River, including eulachon and sturgeon, we will account for such barriers in the water resources section for water quality and aquatic resources for downstream flow-related habitat issues in our EIS.

Comment: SWRCB and others recommend that our EIS consider a range of alternatives to the gulper for collection of out-migrating salmon smolts at the J.C. Boyle development, in particular from June to September. They state that alternatives considered for downstream passage of both anadromous and resident fish should include traditional fish screening technology, other fish passage systems, and spills. Interior and NOAA Fisheries also recommend that we assess methods to achieve higher rates of downstream anadromous fish passage, including trapping and moving fish downstream of the zone of high disease incidence on the Klamath River, to reduce outmigrant mortality.

Response: We will assess alternative approaches for enhancing downstream passage success, including those proposed by PacifiCorp, recommended by others, and, possibly, developed by us.

Comment: CDFG, Interior, and others comment that we should implement site-specific entrainment and mortality studies so that this portion of the NEPA analysis does not become delayed. Interior notes that a supportable estimate of entrainment mortality of the two federally listed suckers will be necessary for the U.S. Fish and Wildlife Service (FWS) to review prior to the completion of its BiOp.

Response: We conclude that we have sufficient information to assess entrainment potential and the need for fish protection measures at each project development.

Comment: ODFW comments that we should consider the effects of removing Keno dam from the project on fish passage.

Response: In section 5.2.2 of SD1, we indicated that we would assess the effects of aquatic resources of removing Keno development from the project. This would include the effects on fish passage.

Comment: NOAA Fisheries states that if Keno development is not included in a new license, fish protection measures would still need to be specified under the new license, as well as other operating parameters at Keno development.

Response: Our assessment of whether Keno development should remain part of the project will focus on our determination of whether this development serves project purposes and therefore whether or not it should continue to operate under the Commission's jurisdiction. If Keno development is removed from Commission jurisdiction, the dam would be subject to Oregon state laws.

Comment: The Hoopa Valley, Yurok and Karuk tribes, and KRITFWC state that we must give consideration to providing increased instream flows downstream of Iron Gate dam during salmon migrations that would be protective of both coho and Chinook salmon (not just coho salmon, which are addressed by the BiOp issued to USBR by NOAA Fisheries), consistent with the Endangered Species Act (ESA) and the Tribe's federally reserved fishing rights. NOAA Fisheries states that our EIS should set instream flow guidelines that address the needs of all important aquatic resources downstream of Iron Gate dam, not just those addressed in the BiOp.

Response: The third bullet in section 5.2.2 of SD1 addressed the issue of using water stored in project reservoirs to improve flows for anadromous fish in the lower Klamath River. We modified this bullet in SD2 to indicate that we will assess water stored in project reservoirs and released from project dams for downstream anadromous fish habitat enhancement. This covers the full range of flow-related project operational variables under the Commission's jurisdiction.

Comment: Interior and NOAA Fisheries indicate that the seventh bullet in section 5.2.2 of SD1 should be modified to show that we will evaluate instream flow and ramping rates at all project-affected reaches, including Jenny Creek (which is influenced by operation of the Fall Creek development) and downstream of Iron Gate dam, since the flow regime specified in the BiOp for the Klamath Irrigation Project is not likely to be sufficient for all fish resources. Institute for Fisheries Resources et al. and others make similar requests. NOAA Fisheries recommends that our minimum flow analysis include each resident and anadromous fish species and life stage during all four seasons. The Karuk Tribe also recommends that we analyze the effects of stranding from unnatural ramping rates downstream of Iron Gate dam on salmonids, juvenile lamprey, and aquatic insects.

Response: We modified the specified bullet in SD2 to indicate that we would assess minimum flows and ramping rates at all project-affected reaches. We will assess the

flow needs of representative life stages and species of aquatic organisms during appropriate seasons for which data have been collected. It is not practical to assess all life stages and species of organisms that occur or could occur in the Klamath River.

Comment: NOAA Fisheries states that the 2002 BiOp includes precise ramping rates necessary to minimize any fish stranding from rapid flow fluctuations at Iron Gate dam. NOAA Fisheries indicates that PacifiCorp has trouble precisely controlling releases from Iron Gate dam between 1,800 and 2,000 cfs because of design and engineering limitations inherent within the intake structures and delivery system. NOAA Fisheries requests that SD2 identify the need to investigate modifying dam operations or facilities to ensure that precise flows can be delivered downstream from Iron Gate dam over the full range of release scenarios.

Response: We will assess PacifiCorp's ability to achieve precise ramping rates and flow releases that would be protective of fish downstream of Iron Gate dam in our EIS. We will base our recommendations on our analysis but do not see the need to modify SD2 beyond the changes specified in the previous response.

Comment: NEC, Mid Klamath Watershed Council, city of Arcata, SRRC & KFA, KSAGA, CDFG, Interior, NOAA Fisheries, the Karuk Tribe, and others request that we analyze how project operations may influence the prevalence and transmission of fish diseases and parasites, including: *Ichthyophthirius multifilus* (often referred to as "ich"), *Flavobacterium columnare* (often referred to as "columnaris"), *Ceratomyxa shasta*, *Parvicapsula minibicornis*, lamprey parasites and, "other diseases and parasites." Interior and NOAA Fisheries recommend that we also assess whether project operations promote the abundance of alternate hosts for parasites and diseases. NOAA Fisheries recommends that our analysis include both resident and anadromous fish from the upper reaches of the project to the ocean and that we should evaluate project operational modifications that could be used to reduce the incidence of fish diseases and improve fish health, such as flushing flow releases. SRRC & KFA and KSAGA also suggest that we evaluate having PacifiCorp develop an adaptive water release management schedule with USBR to alleviate low flows downstream of Iron Gate dam in late spring and early summer that are believed to contribute to poor water quality, crowding, and resultant fish kills of juvenile Chinook salmon.

Response: We added a new issue bullet to SD2 pertaining to fish pathogens and parasites and their alternate hosts within and downstream of the project and measures to reduce the incidence and severity of fish kills.

Comment: American Whitewater states that our analysis of Iron Gate Hatchery should include all operational aspects, including release timing and size, production targets, marking, and failure to produce significant runs of steelhead, coho, and spring Chinook. ODEQ comments that we should identify the relative benefits and protection of the

existing fishery based on continued hatchery production. The existing fishery, which includes salmonids of both hatchery and wild origin, should be compared to two scenarios: (1) fish passage at succeeding developments upstream, and (2) effects of sequential removal of dams to provide increasing access to upstream habitat.

Response: We will assess the effects of proposed and alternative Iron Gate Hatchery operations on anadromous fisheries in the lower Klamath River in our EIS. In addition, we will evaluate the role of Iron Gate Hatchery in future anadromous fish restoration efforts upstream of Iron Gate dam. Information from resource agencies (e.g., CDFG, ODFW, and NOAA Fisheries) regarding how Iron Gate Hatchery would best fit into future anadromous fish population restoration objectives throughout the Klamath River Basin will assist us in our analysis. Currently, CDFG operates the Iron Gate Hatchery.

Comment: NOAA Fisheries indicates that summer Iron Gate Hatchery water needs result in the depletion or elimination of the cool water pool in the lower portions of Iron Gate reservoir. This cool water could be used for release during periods of high water temperatures in the lower Klamath River and reduce the potential for fish kills. NOAA Fisheries and Interior ask us to evaluate this potential reduction in the cool water pool, including alternative Iron Gate Hatchery water sources such as Fall and Bogus creeks. Interior and NOAA Fisheries also suggest that we assess alternative Iron Gate Hatchery water sources if Iron Gate dam is retired. In addition, NOAA Fisheries asks us to assess the potential expansion of summer rearing of juvenile salmonids at the Fall Creek facility, which would reduce the need for summer diversion of cool water from Iron Gate reservoir.

Response: We will assess alternative sources of Iron Gate Hatchery water and satellite production facilities in our EIS and have modified SD2 accordingly. As noted in the previous response, we will consider information from resource agencies on how Iron Gate Hatchery would best fit into future anadromous fish population restoration objectives throughout the Klamath River Basin.

Comment: SRRC & KFA and KSAGA indicate that on occasion, the thermocline in Iron Gate reservoir is below the 70 foot depth of withdrawal of Iron Gate Hatchery water, resulting in water that is too warm and polluted being drawn into the hatchery, diminishing the success of salmonid production. They recommend that our EIS consider Iron Gate Hatchery operations as adjustable and explored through adaptive management principles, rather than static.

Response: We will assess the Iron Gate Hatchery water supply in our EIS and modified SD2 accordingly. Any recommendations that we may make pertaining to the Iron Gate Hatchery will consider input from agencies, interested parties, and our staff. We will consider reasonable adaptive management principles, as appropriate.

Comment: NEC, Redwood Chapter and the California, Nevada, Hawaii Regional Office of the Sierra Club, Mid Klamath Watershed Council, city of Arcata, Interior, and six individuals recommend that we address whether or not Iron Gate Hatchery has ever met its intended purpose. NOAA Fisheries notes that Iron Gate Hatchery production goals are not always achieved because of poor adult returns and shortfalls in the CDFG portion of the operations budget.

Response: We will not evaluate the reasons for the past performance of Iron Gate Hatchery except for those factors under the control of PacifiCorp that may have had a bearing on past production issues and could have a bearing on the future effective operation of the hatchery.

Comment: NOAA Fisheries notes that the fish ladder at Iron Gate Hatchery is operated from September through March to collect Chinook, coho, and steelhead broodstock for spawning. Wild fish are often collected with salmonids of hatchery origin and not returned to the river, including federally listed coho salmon. NOAA Fisheries recommends that we assess the appropriateness of Iron Gate Hatchery production of coho salmon and steelhead as mitigation. NOAA Fisheries asks us to evaluate a shift from coho, steelhead, and Chinook smolt production at Iron Gate Hatchery to 100 percent yearling Chinook production to improve the return rate of adults and reduce competition between wild and hatchery fish that now occurs when smolts are released from the hatchery in May and June. SRRC & KFA and KSAGA recommend a similar assessment.

Response: We will evaluate the appropriateness of switching hatchery production to 100 percent yearling Chinook production in our EIS. Information from PacifiCorp and resource agencies will assist us in the formulation of any specific recommendations pertaining to shifts in hatchery operational strategies.

Comment: SRRC & KFA and KSAGA suggest that our EIS examine the potential use of Salmon River spring Chinook stocks for reintroduction purposes. They suggest that small hatcheries could accommodate hatching and rearing for re-introduction purposes.

Responses: Our primary role in the restoration of anadromous fish to the Klamath River Basin is more facilitation of implementation rather than development of implementation strategies, including appropriate stocks that could be used for spring Chinook salmon restoration. Stock selection is appropriately addressed by state and federal resource agencies.

Comment: The Forest Service, NOAA Fisheries, and Interior recommend that we assess how Iron Gate Hatchery may be used for restoration of Klamath fisheries stocks for the term of the next license and how this would be reflected in PacifiCorp's support for the operation of this facility. The Hoopa Valley Tribe, Yurok Tribe, KRITFWC, and CDFG suggest that PacifiCorp should have some responsibility for covering other costs

associated with the Iron Gate Hatchery such as enhancement programs and monitoring efforts to better determine the contribution of fish from Iron Gate Hatchery to the total number of salmon that return to the Klamath River.

Response: See our response to the previous comment. We will assess the role of Iron Gate Hatchery in future anadromous fish restoration efforts. By establishing the future role of the hatchery, we should be able to also assess the appropriate future funding structure of the hatchery and PacifiCorp's responsibility for meeting funding needs, and we have modified SD2 accordingly.

Comment: NOAA Fisheries and others recommend that we assess the effects of Iron Gate Hatchery operations on the basin's wild runs of salmonids, lamprey, sturgeon, and other fish species. SRRC & KFA and KSAGA indicate that hatchery released fish could have a suppressive effect on wild coho salmon from predation and competition.

Response: We will assess potential interaction of fish of hatchery origin on wild salmonid populations in our EIS. We are unaware of substantial interactions of hatchery fish with non-salmonid fish species, except that hatchery salmonids may serve as an alternative prey for Pacific lamprey, which prey on adult salmon.

Comment: Interior and NOAA Fisheries state that we should discuss the ecological relationship between anadromous and resident salmonids in our EIS.

Response: A potential effect of restoring anadromous fish to historic habitat upstream of Iron Gate dam would be the interaction of restored populations on native, resident salmonids. We will assess such interactions in our EIS and modified SD2 accordingly.

Comment: EPA, Interior, and others recommend that we address effects on all fish species native to the river (including resident and anadromous species; not just those listed as threatened or endangered) and each of their life stage requirements.

Response: We will not restrict our analysis to just federally listed fish species, and our SD1 indicated this. However, as a matter of practicality, we will assess the effects of the proposed project on representative fish species and life stages for which data are available to conduct such an analysis. We will not assess project effects on all resident and anadromous fish species that are native to the Klamath River.

Comment: ODEQ notes that our aquatic resource analysis should include the effects of the proposed project on macroinvertebrate populations and drift.

Response: We added clarifications to SD2 that reflect our intent to assess project-related effects on macroinvertebrates in project-affected reaches.

Comment: ODFW and Interior suggest that we include the effects of changes in the annual hydrograph on aquatic species within and below the project, including macroinvertebrates.

Response: See our response to the previous comment. Our assessment of flows in project-affected reaches will take into account differences in water year types.

Comment: Interior notes that the sixth bullet of section 5.2.2 of SD1 (the effects of flow fluctuations caused by load following at the peaking reach) should be modified to indicate that our analysis would include the effect of load following on resident and, potentially, anadromous species and habitat, by life stage. Interior and NOAA Fisheries also note that this analysis should quantify the effects of the existing and proposed ramping rates in this reach, including stranding of juvenile and fry salmonids, loss or alteration of spawning or rearing habitat, carrying capacity, growth, and macroinvertebrate production.

Response: We modified SD2 to reflect our intent to assess effects on macroinvertebrates and resident and, potentially, anadromous fishes in project-affected reaches, including ramping rates in the peaking reach.

Comment: ODFW and Interior comment that we should address the effect of chemical contamination and toxic accumulations on aquatic species within project waters.

Response: Our second bullet in section 5.2.2 of SD1 was intended to cover chemical contamination and accumulations in aquatic species in project-affected waters. We added text to SD2 to clarify this.

Comment: ODFW, Interior, and others note that we should include an analysis of the effect of habitat loss and fragmentation on native fish and the enhancement of habitat conditions for non-native fish in project reservoirs that compete with native species for food and habitat.

Response: Our baseline for environmental analysis is the project as licensed. By addressing upstream and downstream passage of anadromous and resident fish, we would also be addressing habitat fragmentation caused from project dams and reservoirs. Our assessment of potential development retirement with dam removal would address habitat gains that could be realized for some species of fish and losses for other species of fish.

Comment: Interior notes that FWS has been petitioned to list Pacific lamprey (*Entosphenous tridentate*), river lamprey (*Lampetra ayresi*), and western brook lamprey (*Lampetra richardsoni*) as threatened and endangered under the ESA. Consequently, Interior asks us to include an analysis of project effects on these three species.

Response: We modified SD2 to indicate that we will assess project effects on these three sensitive species of lamprey.

Terrestrial Resources

Comment: Interior, KSAGA, and SRRC & KFA request that we assess project-related effects, including peaking operations and use of project roads, on the following sensitive plant species: Pendulus bulrush; red root yampah; Howell's yampah; Bellinger's meadow foam; and pygmy monkey flower.

Response: We added these species of sensitive plants to the appropriate bullet in SD2.

Comment: SWRCB suggests that we assess riparian vegetation encroachment from the artificially low flows in the Copco 2 bypassed reach and alternatives for removing or managing this vegetation. Interior, KSAGA, and SRRC & KFA ask us to examine the effects of altered geomorphic, hydrologic, and ecologic processes on riparian and wetland habitat, in particular at the Copco 2 and J.C. Boyle bypassed reaches.

Response: The third bullet in section 5.2.3 of SD1 addressed the influence of all project-related flow regimes on riparian and wetland habitat associated with project-affected reaches, including the bypassed reaches. We added text to SD2 to clarify this intent. Our assessment of riparian and wetland habitat will incorporate geomorphic and hydrologic components, as appropriate.

Comment: Interior requests that we analyze the reduction of riparian habitat in the varial zone of the J.C. Boyle peaking reach from project operations, and whether peaking operations enhance conditions that are suitable for establishment of invasive reed canary grass monocultures that reduce the potential for establishment of native riparian species such as coyote willow. KSAGA and SRRC & KFA make a similar request.

Response: We will assess the influence of project-related flows in the peaking reach on riparian vegetation, including whether specific flows may foster conditions for less desirable vegetation. See our response to the previous comment.

Comment: The California Indian Basketweavers Association and Interior note that flow releases from project dams interfere with the renewal pattern of riparian willow shoots downstream of Iron Gate dam. They assert that the existing flow regime seems to promote colonization of willow shoots by insect larvae, which makes them unsuitable for use for weaving baskets. The Karuk Tribe points out that following naturally occurring spring freshet flows, the exposed willow roots are also gathered for basket weaving, and the altered hydrograph no longer is sufficient to expose willow roots. They request that we assess the effects of the proposed project on riparian basket weaving materials.

Response: We added geomorphology to SD2 as a resource to assess in a cumulative manner in our EIS, and this will include flow and sediment transport that influences riparian vegetation that is customarily used for weaving baskets. Our geomorphological analysis will include the area downstream of Iron Gate dam, which should enable us to reach conclusions about project-related influences on riparian vegetation. We modified SD2 to indicate that we will assess riparian vegetation in all project-affected reaches, including downstream of Iron Gate dam.

Comment: ODFW and Interior indicate that we should assess the effects of project-related fluctuation zones on riparian habitats and terrestrial species around the reservoirs and downstream of project dams.

Response: We modified SD2 to clarify that we will assess the effects of project-related reservoir-level fluctuations on riparian and wetland habitats around project reservoirs, as well as downstream of project dams. The fourth bullet in section 5.2.3 of SD1 already addressed wildlife habitat at project reservoirs and downstream of project dams.

Comment: Interior requests that we "…examine the loss of potential future riparian vegetation due to inundation of Project reservoirs and an associated landscape-scale shift in distribution of palustrine and riparian vegetation."

Response: Our analytical baseline is the project as licensed. However, if any additional developments should be retired without associated dams, there would be a substantial shift in vegetation adjacent to the river channel. We will assess this shift in vegetation in our development retirement analysis in the terrestrial resources analysis.

Comment: Interior notes that any operational change at Keno development could alter the water supply to the Lower Klamath Lake National Wildlife Refuge. Interior requests that we analyze the potential effects on wildlife habitat associated with any changes in Keno reservoir water level management, including habitat of the federally listed bald eagle.

Response: We added a bullet to SD2 that specifically addresses Interior's concern and clarifies our intent.

Comment: Interior states that we should analyze the effects on terrestrial resources of PacifiCorp's proposed change in the project boundary to exclude the East Side, West Side, and Keno developments as well as the effects of retiring additional project developments.

Response: We added a bullet to SD2 that addresses Interior's concern and clarifies our intent.

Comment: ODFW and Interior suggest that we assess the effects of roads in the project area on terrestrial resources, including effects related to collisions, increased public access, and wildlife harassment.

Response: We will assess the effects of project-related use of project roads on terrestrial resources in our EIS and have added a bullet that reflects this to SD2.

Comment: ODFW requests that we assess the potential effects of seasonal road closures and restricted access on terrestrial resources.

Response: We will consider such measures and their effects in our EIS.

Comment: ODFW requests that we assess current and future terrestrial habitat capability without the project in place.

Response: Our analytical baseline is the project as licensed. If reasonable development retirement alternatives are identified, we will assess any associated potential shifts in terrestrial habitat in our analysis.

Comment: ODFW and Interior suggest that our assessment of terrestrial resources include the effects of proposed recreational facilities on riparian habitat and vegetative cover for wildlife. Interior, KSAGA, and SRRC & KFA add that we should assess the effects of reduced habitat diversity in and around seeps and springs as a result of unregulated project-related recreation and off-highway vehicle use.

Response: We added a bullet to SD2 that reflects the indicated concerns and clarifies our intent.

Comment: ODFW; city of Arcata; Sierra Club California, Nevada, Hawaii Regional Office; Institute for Fisheries Resources et al.; Redwood Region Audubon Society; and Interior request that our analysis address the continued effects of the loss of anadromous fish and marine-derived nutrients on the wildlife food chain.

Response: Although our analytical baseline is the project as licensed, in our EIS we will analyze approaches to restoring anadromous fish to historic habitats within and upstream of the project and the associated effects on the wildlife food chain.

Comment: Interior, KSAGA, and SRRC & KFA request that we analyze the effects of project-related habitat fragmentation on the movement of birds, amphibians, reptiles, and mammals.

Response: Our baseline for environmental analysis is the project as licensed. We will assess controllable measures that could be used to minimize the effects of project-related

habitat fragmentation on wildlife, such as at the J.C. Boyle intake canal or the East Side and West Side development intake canals that are proposed for decommissioning, or along project transmission lines. We added a bullet to SD2 to clarify our intent.

Comment: ODFW and Interior suggest that we include an assessment of the effects of transmission lines on riparian, wetland, and upland habitats, and the spread of noxious weeds.

Response: The modified terrestrial bullets in SD2 cover project-related effects of all project facilities, including primary transmission lines. PacifiCorp proposes to implement a vegetation resource management plan that would include roadside and transmission line right-of-way management activities and noxious weed control.

Comment: ODFW, Interior, KSAGA, and SRRC & KFA comment that we should assess the potential for raptor collision and electrocution at all currently licensed transmission lines.

Response: We added a bullet to SD2 that clarifies that we will evaluate whether the transmission lines that are proposed or we recommend be included in a new license comply with current industry standards to minimize raptor collisions and electrocutions.

Threatened and Endangered Species

Comment: ODEQ comments that our analysis of project effects on coho salmon should include a comparison to a "without project" condition.

Response: If we identify reasonable development retirement alternatives, we would assess the effects of retiring those developments on federally listed species, including coho salmon and we added a bullet to the threatened and endangered species section of SD2 to clarify our intent. We will consider information regarding the historical use of spawning and rearing habitat by coho salmon in the Klamath River basin in our cumulative effects analysis of anadromous fish.

Comment: Pacific Coast Federation of Fishermen's Associations asked why we did not discuss the NOAA Fisheries BiOp on coho salmon in our SD1. Institute for Fisheries Resources et al. asks us to evaluate whether the mainstem of the Klamath River and its tributaries between Iron Gate and Keno developments are necessary for the recovery of coho salmon populations.

Response: We discussed the NOAA Fisheries BiOp for coho salmon in section 5.1 of SD1 (page 25). NOAA Fisheries has not completed the recovery plan for coho salmon, but the state of California published a recovery strategy for California Coho Salmon in 2004, which includes a description of recovery goals, delisting criteria, elements

necessary for recovery, and watershed-specific recommendations. In our EIS, we will evaluate the consistency of the proposed action with the recovery strategy, including specific recommendations for the Klamath Basin. Our assessment of approaches for anadromous fish restoration will include providing access to habitat that has been identified as historic coho salmon spawning and rearing habitat between Iron Gate and Keno developments.

Comment: Interior recommends that the action area for analysis of effects on Lost River and shortnose suckers extend from Iron Gate dam upstream to include all habitat that was historically accessible to these two species. It also recommends that we provide information to support and establish an environmental baseline for suckers in the action area. Interior also states that we should provide information on effects on listed suckers due to state, private, and non-federal activities that are reasonably certain to occur within the action area. Interior recommends that our EIS address project effects on the primary constituent elements of the proposed critical habitat for listed suckers.

Response: We have added the indicated federally listed suckers to our list of cumulatively affected resources in SD2 and defined the action area as extending from Upper Klamath Lake to Iron Gate reservoir, as well as Lower Klamath Lake, portions of the Lost River, and Tule Lake. We will present available information on the existing status of both suckers in the action area and the effects of the proposed action and action alternatives on proposed critical habitat for these species.

Comment: ODFW asks that the endangered fish species issue be divided into two separate topics: (1) the effects of project operations on the three federally listed fish species; and (2) the potential effects of restoring fish passage for all native federally listed migratory fish species.

Response: We will address both topics raised by ODFW in our analysis of federally listed fish species in a reasonable and logical manner. We will consider ODFW's comments when we prepare our EIS.

Comment: Interior states that we should analyze the effects on threatened and endangered species of PacifiCorp's proposed change in the project boundary to exclude the East Side, West Side, and Keno developments as well as the effects of retiring additional project developments.

Response: We added bullets to SD2 that reflect Interior's suggestions and clarify our intent.

Comment: ODFW and Interior suggest that we include an assessment of all transmission lines on threatened and endangered plants and wildlife.

Response: The third and fourth bullets in section 5.2.4 of SD1 apply to all project-related operations, including those associated with project primary transmission lines, on federally listed plants and wildlife.

Comment: ODFW recommends that we assess the potential for bald eagle collision and electrocution at all currently licensed transmission lines.

Response: We added a bullet to the terrestrial resources section of SD2 that indicates that we will evaluate whether the primary transmission lines that are proposed or recommended to be included in a new license comply with current industry standards to minimize raptor collisions and electrocutions. This evaluation will include bald eagles.

Comment: EPA comments that the EIS should summarize our consultation with NOAA Fisheries and FWS under Section 7 of the ESA and address how consultation will be integrated with ESA requirements for the Klamath Irrigation Project. EPA also asks that in the EIS we evaluate how implementation of the BiOps for the Klamath Irrigation Project, including the Conservation Implementation Plan, will affect project operations. Interior notes that Section 7 consultation regarding suckers and coho salmon will require an integrated and potentially adaptive management approach by the Commission and USBR in addressing the needs of these species at the Klamath Hydroelectric Project and the Klamath Irrigation Project. Interior suggests that we identify the need for this integrated approach in our SD2.

Response: Although the Commission only has jurisdiction over a licensee, we will seek means to ensure coordination of future actions that pertain to federally listed fish with appropriate entities in the environmental measures that we recommend in our EIS. In our EIS, we will consider potential adaptive management approaches to enable coordination with the outcome of USBR's Conservation Implementation Plan, when it is finalized. We will summarize our consultation with NOAA Fisheries and FWS in what is currently labeled section 5.6.4 of our proposed EIS outline in section 6 of SD2.

Comment: Interior indicates that SD2 should clarify that the two BiOps that have been issued by NOAA Fisheries and FWS cover the Klamath Irrigation Project and not the Klamath Hydroelectric Project. Consequently, PacifiCorp is not covered for incidental take of federally listed species under those BiOps.

Response: We indicated in section 5.1 of SD1 (page 25) that the BiOps and associated incidental take statement were issued to USBR for the Klamath Irrigation Project. We recognize that separate consultation pursuant to Section 7 of the ESA is required for this relicensing proceeding.

Comment: Because of the complexity of the Klamath Project and the number of species to be analyzed, Interior recommends that we prepare a separate Biological Assessment

(BA) for federally listed species, rather than using our draft EIS as our BA. Interior suggests that we assess the effects of project actions on each life history stage and associated habitat for each listed species. Interior suggests that this information be organized in terms of the action's effects on reproduction, numbers, and distribution of each species.

Response: We will consider Interior's suggested approach to preparing our BA for all federally listed species that may be influenced by the relicensing of this project.

Recreational Resources

Comment: Interior comments that we should analyze the effects of PacifiCorp's proposed change in the project boundary to exclude the East Side, West Side, and Keno developments on recreational resources. Interior asks that SD2 discuss proposals to make improvements to the pedestrian/bicycling trail along the West Side canal, trail connectors, and boat ramp in the city. Interior asks that these recreational facilities be considered either during relicensing or in a decommissioning proceeding. KWUA suggests that, even without generating capability, the East Side, West Side, and Keno developments should all remain part of the project because these facilities continue to affect the environmental and recreational interests of the Klamath River.

Response: If the Commission accepts PacifiCorp's proposal to decommission the East Side and West Side developments, following decommissioning these developments would no longer be under Commission jurisdiction. Our analysis of these two developments will focus on any needed measures to ensure that decommissioning occurs in an environmentally acceptable manner. Any recommendations that we may make would be relatively short term in nature and would not likely include improvements to recreational facilities near the developments because, following decommissioning, they would no longer serve project purposes. Our primary focus at Keno development will be on whether this facility serves project purposes. If the Commission determines that Keno development should be removed from the project, it also would no longer be jurisdictional following decommissioning. In that case, we would again focus on needed measures to ensure decommissioning occurs in an environmental acceptable manner. This would likely include consideration of recreational activities that are associated with Keno reservoir because operation of Keno dam controls the water level of the reservoir, which influences the nature of recreational activities (among other environmental factors).

Comment: Interior states that we should analyze the effects of retiring additional project developments on recreational resources. Interior requests that we identify and evaluate potentially viable commercial recreational market opportunities, such as longer rafting runs and guided fishing tours, which could be available in development retirement scenarios. Conservation Groups also request that we analyze potential whitewater and

angling opportunities that may be created if project reservoirs are drawn down and riverine stretches extended. American Whitewater suggests that we conduct a comprehensive analysis of lost whitewater boating opportunities at project reservoirs under various project alternatives.

Response: If reasonable development retirement alternatives are identified, then we would address associated changes in recreational opportunities, including shifts from flatwater boating and angling to riverine boating and angling opportunities. We added a bullet to SD2 to clarify that our analysis of potential development retirement with dam removal will include recreational resources.

Comment: A total of 46 NGOs, whitewater boating companies, and individuals request that we assess flows at the peaking reach downstream of J.C. Boyle powerhouse that would enhance whitewater boating opportunities from Memorial Day weekend through September. American Whitewater suggests that we conduct a comprehensive analysis of lost whitewater boating opportunities in the peaking reach under various project alternatives. Interior recommends that we take a collaborative approach to analyzing an optimal flow regime for boating activities in this reach, conferring with BLM, private boaters, and commercial outfitters. This would facilitate our analysis of any changes to whitewater boating values at the peaking reach that contributed to the designation of this reach as a Wild and Scenic River in 1994.

Response: The third bullet in section 5.2.5 of SD1 indicates that we plan to evaluate the effects of flow releases from the J.C. Boyle powerhouse on whitewater boating opportunities. Representatives of the whitewater boating community were active participants in the scoping process and provided much input regarding the importance of the peaking reach and their recommendations regarding how flows could be managed to optimize whitewater boating opportunities. We hope to receive additional recommendations in response to our REA notice. We will use such input as a basis for our analysis of changes in whitewater boating opportunities that could result from various project alternatives.

Comment: Interior recommends that we assess whether it would be appropriate to provide whitewater flow releases to the J.C. Boyle and Copco No. 2 bypassed reaches. American Whitewater requests that we conduct a comprehensive analysis of lost whitewater boating opportunities in the bypassed reaches under various project alternatives.

Response: The third bullet in section 5.2.5 of SD1 indicates that we plan to evaluate in our EIS the effects of flow releases from J.C. Boyle dam on whitewater boating opportunities. We expanded the corresponding wording in SD2 to include releases for whitewater boating from Copco No. 2 dam.

Comment: Interior, KSAGA, and SRRC & KFA request that we evaluate the potential hazard to whitewater boaters and other recreationists posed by sidecast material from the J.C. Boyle canal.

Response: We added a bullet to the geology and soils section of SD2 that clarifies we plan to evaluate the effects of sidecast material from the J.C. Boyle canal on recreational opportunities.

Comment: Interior requests that we consider in our analysis increased recreational demand at Topsy Campground, Spring Island boat launch, and the Stateline site, along with related operation, maintenance, and monitoring costs. American Whitewater recommends that we define future recreation demand in a scientifically based manner.

Response: The second bullet of section 5.2.5 in SD1 indicates that we plan to assess the ability of existing and proposed recreational facilities and opportunities to meet current and future recreational demand. This analysis will include whether there is a nexus between a recreational facility and project purposes, and we modified the bullet in SD2 to clarify our intent. Our analysis and recommendations will identify the entity that should be responsible for operation, maintenance, and monitoring costs of recreational facilities.

Comment: Interior, the Yurok Tribe, and KRITFWC suggest that we assess the potential effects of anadromous fish reintroduction on recreational fishing opportunities.

Response: We will analyze in our EIS approaches to restoring anadromous fish to historic habitats within and upstream of the project. We will consider in our EIS the potential impacts of such restoration on recreational fishing.

Comment: The Forest Service suggests that we clarify the sixth bullet in section 5.2.5 of SD1 by including the following noncommercial and commercial recreational activities downstream of Iron Gate dam: fishing, whitewater boating, waterplay/swimming, and water aesthetics.

Response: We have made the suggested modification to SD2. However, any long term modifications to the flow regime in the Klamath River downstream of Iron Gate dam would likely reflect USBR'S releases at Link River dam, including its efforts to comply with the NOAA Fisheries BiOp. We will assess the indicated recreational activities within this context.

Comment: The Forest Service requests that we expand our assessment of the potential effects of algal blooms on recreational uses to the Klamath River downstream of Iron Gate dam.

Response: We made the suggested modification to SD2 to clarify our planned approach.

Comment: ODFW suggests that we conduct an analysis of the balance of recreational opportunities, facilities, and access provided by PacifiCorp in Oregon vs. California. ODFW also suggests that we assess a balance of recreational opportunity between whitewater recreation vs. lost tribal, sport, and commercial fishery opportunities from the project.

Response: We will assess the appropriateness of project-related recreational opportunities, facilities, and access in the project area without regard to state boundaries. We will balance the tradeoffs associated with various project alternatives and environmental measures from both a financial and environmental perspective in the comprehensive development section of our EIS (section 5.2 of the preliminary EIS outline included in this SD2).

Land Use and Aesthetic Resources

Comment: Interior, SRRC & KFA, and KSAGA indicate that PacifiCorp's proposed adjustments to the project boundary would exclude roads that are necessary for project maintenance and access to recreational facilities that are maintained by BLM for recreational uses that are enhanced as a direct function of the project (e.g., Topsy Campground and access points along the J.C. Boyle bypassed and peaking reaches). They request that we analyze the effects of the proposed project boundary adjustments on roads and public access to project-related facilities.

Response: We added a bullet to SD2 specifying our intent to address the indicated concerns regarding project-related roads in our EIS.

Comment: ODFW suggests that we include a detailed map showing the exact location of areas proposed for exclusion from the current project boundary to ensure proper analysis.

Response: We will consider ODFW's suggestion as we prepare our EIS and include maps as appropriate.

Comment: The city of Arcata notes that California and possibly Oregon has a public trust doctrine and asks how we will ensure that any action we take on relicensing this project would not block the public's ability to use and enjoy the resources of the Klamath River or impair the restoration of these resources as they once naturally occurred.

Response: Although our baseline for analysis is the existing conditions, the FPA also requires us to ensure the public has reasonable access to project lands and waters, and we will consider such access in our EIS. We identify a number of issues in SD2 that address

the restoration of the Klamath River to the extent controllable in this relicensing proceeding.

Comment: The Forest Service recommends that our analysis take into account whether there has been or could be an unreasonable diminishment of the attributes that lead to the designation of portions of the Klamath River as a Wild and Scenic River on their designation dates (1981 for the lower Klamath River and 1994 for the peaking reach). American Whitewater, Institute for Fisheries Resources et al., Mid Klamath Watershed Council, and city of Arcata also request that our analysis include an assessment of Klamath Wild and Scenic River outstanding resource values.

Response: We added a bullet to SD2 that clarifies that we will assess the resource values that led to the designation of portions of the Klamath River to the Wild and Scenic River system. Although we will summarize our conclusions regarding various alternatives in the land use and aesthetics section of our EIS, we will address the analysis of specific values in appropriate resource sections of the EIS.

Comment: The Forest Service indicates that we should modify the first bullet of section 5.2.6 of SD1 to indicate that we will conduct an assessment of the compatibility of the proposed action and alternatives with BLM's Visual Resource Management standards and the Forest Service Visual Quality Objectives, which use similar methodologies for managing aesthetics. Interior also recommends that we evaluate the proposed project's consistency with BLM's Visual Resource Management standards.

Response: We modified the aesthetics bullet in the land use and aesthetics section of SD2 to clarify that we will assess the compatibility of the proposed and alternative actions with BLM's Visual Resource Management standards, as appropriate.

Comment: The Forest Service indicates that we should expand the second bullet in section 5.2.6 of SD1 to include both existing and potential aesthetics of the project.

Response: Existing conditions serve as our baseline for comparison of proposed and alternative actions. We modified the reference bullet in SD2 to clarify our intent.

Socioeconomic Resources

Comment: NOAA Fisheries states that, for many of the economic and physical variables involved in our socioeconomic analysis, the most reasonable approach would be to assume that current values are the best estimate of future values. However, NOAA Fisheries indicates that there are several key variables that are likely to change in the future regardless of the Commission's actions on this relicensing proceeding, including anadromous fish populations, human populations, and potential changes to the cost of energy for irrigators. NOAA Fisheries agrees that it may not be possible to accurately

predict such future changes, but it should be possible to place reasonable upper and lower bounds for such variables.

Response: When future conditions relevant to our socioeconomic analysis are uncertain, we will develop reasonable upper and lower bounds for such variables.

Comment: Interior, the Karuk Tribe, the Yurok Tribe, and KRITFWC state that our socioeconomic analysis should recognize the potential effects on irrigators from changes in operation of the Klamath Hydroelectric Project, especially changes in water level management at Keno development.

Response: Our analysis of Keno development will focus on whether it serves project purposes. If it does not, it will not be under the jurisdiction of the Commission, although we may recommend conditions that would be met prior to the Commission relinquishing jurisdiction. We will evaluate the current water level management regime at Keno reservoir and the importance of this regime for irrigators and others that use water withdrawn from this reservoir in the water resources section of the EIS.

Comment: KWUA and Interior comment that we should evaluate the environmental and economic consequences related to discontinuing the 1956 contract between PacifiCorp and USBR. Interior notes that increased power costs that would result from discontinuing the 1956 contract would represent a significant economic component to irrigators that we should thoroughly analyze and describe in our EIS, and we should identify increased power costs as an economic issue in SD2.

Response: While the rate that PacifiCorp charges its customers is not an appropriate issue for analysis in this proceeding, we have added socioeconomic values to our listing of potentially cumulatively affected resources in SD2 and will consider the effects of the expiration of the 1956 contract in our cumulative effects analysis of socioeconomic values.

Comment: NOAA Fisheries states that our socioeconomic analysis should examine the potential effects on Klamath Irrigation Project customers if higher minimum flows are implemented at Klamath Hydroelectric Project reaches. It states that such higher minimum flows could reduce the amount of water available for irrigators or influence the cost to PacifiCorp if some or all of the hydroelectric project's storage was used during the irrigation season to ensure maintenance of both minimum flows and irrigation deliveries.

Response: We have identified water quantity as a cumulatively affected resource, and part of our analysis of this issue would include the availability of water for various purposes, including irrigation, under different project alternatives. If a recommendation that pertains to the Klamath Hydroelectric Project influences the amount of water available for other purposes, we would identify such cumulative effects in the water

resources section of our EIS and potential costs to PacifiCorp in the developmental analysis section of our EIS.

Comment: Interior states that we should analyze the effects on socioeconomic resources of PacifiCorp's proposal to exclude the East Side, West Side, and Keno developments from the project. ODEQ recommends that we should include an analysis of socioeconomic conditions influenced by the proposed removal of the Keno development from the project. ODEQ suggests that the analysis should include water quality, irrigation, and addition of electrical generation capacity at Keno dam.

Response: We added a bullet to SD2 that clarifies our intent to assess the socioeconomic effects of PacifiCorp's proposed deletion of these three developments from the project.

Comment: NEC, the city of Arcata, Institute for Fisheries Resources et al., Redwood Region Audubon Society, Conservation Groups, Mid Klamath Watershed Council, and 11 individuals recommend that we evaluate the economic consequences of dam removal in terms of the number of jobs associated with structural removal and river restoration.

Response: If reasonable development retirement alternatives are identified, then we would assess the socioeconomic effects of these alternatives, including employment. We added a bullet to the socioeconomic section of SD2 to clarify our intent.

Comment: CDFG questions why the wording of the second issue identified in section 5.2.7 of SD1 (*Socioeconomic Resources*), which refers to "potential dam removal," differs from the wording found in other resource issue sections, which is "retiring additional developments." CDFG indicates that our NEPA analysis should consider not only the discrete action of removing a dam, but the entire suite of consequences that project retirement would encompass. Interior also points out our inconsistent terminology and notes that the phrase "potential dam removal" seems more clear.

Response: We modified the wording of the bullet in question to be consistent with the wording in other resource issue sections.

Comment: Freeman House, by letter dated June 21, 2004, suggests a thorough economic analysis comparing the value of the power produced by the dams and the value of pre-dam fisheries. The Karuk Tribe, Yurok Tribe, and KRITFWC also suggest that our socioeconomic analysis include the short- and long-term effects on local municipalities if project generation under a new license is reduced or eliminated.

Response: Although our analytical baseline is the project as licensed, in our comprehensive development section of the EIS (section 5.2 in our preliminary EIS outline) we will weigh the value of the power produced by the project under proposed and alternative project configurations against the environmental value of potentially

restored anadromous fish populations and the socioeconomic benefits to local communities.

Comment: The Karuk Tribe, Yurok Tribe, KRITFWC, Redwood Region Audubon Society, Sierra Club California, Nevada, Hawaii Regional Office, Institute for Fisheries Resources et al., Conservation Groups, and NCRWQCB suggest that we analyze the relative value of an anadromous fishery in historically occupied habitat versus the current warmwater reservoir and resident trout fisheries and compare the anadromous fishery versus the value of energy, mitigation costs, and societal benefits. American Whitewater states that we should define which communities will be evaluated in our socioeconomic analysis and that we should include communities that rely on the Klamath Management Zone ocean fishery or that rely on Klamath River salmon stocks.

Response: We have expanded the geographic scope of our cumulative effects analysis of anadromous fish to include all historic habitat in the Klamath River Basin**,** including major tributaries**,** and we will consider applicable management plans for anadromous fisheries. This expanded scope of analysis is reflected in SD2 and should facilitate identification of communities that we will evaluate in our socioeconomic analysis.

Comment: ODFW and Institute for Fisheries Resources et al. comment that the geographic scope of our analysis for socioeconomics must include communities from the entire basin along with coastal towns in Oregon and California from Coos Bay to Fort Bragg that have been affected by the loss of ocean commercial and sport fisheries. Pacific Coast Federation of Fishermen's Associations recommend that we expand our geographic scope to include coastal communities from Monterey, California, to Newport, Oregon, since ocean salmon fishing regulations within this geographic range are driven by the abundance of Klamath fall run Chinook salmon.

Response: We will address socioeconomic effects on communities that are influenced by the abundance of anadromous fish stocks that originate from the Klamath River Basin in our EIS, to the extent that information is available and relevant.

Comment: American Whitewater requests that our socioeconomic analysis address the benefits of improved whitewater and fisheries-based recreation on pertinent communities under alternative project scenarios. NOAA Fisheries states that our socioeconomic analysis should examine changes in recreation participation rates if reservoirs are eliminated and runs of anadromous fish are restored both upstream and downstream of Iron Gate dam.

Response: We will assess changes in whitewater boating and angling opportunities in the recreational resources section of our EIS. We will use this analysis as our basis for evaluating the socioeconomic effects of such changes.

Comment: Kari Norgaard, by letter dated June 16, 2004; Mid Klamath Watershed Council; KRITFWC; the Yurok Tribe; and the Karuk Tribe state that an economic cost-benefit analysis must be conducted to show the true costs of continued project operation on the middle and lower Klamath Basin, including the adverse health effects on tribal members that no longer have salmon as a primary dietary component. Dr. Norgaard also comments that we need to consider the populations of people who benefit from the dams versus the number of people who are negatively influenced by the dams. NOAA Fisheries recommends that we include in our socioeconomic analysis expected changes in tribal per capita income if coho, steelhead, and Chinook stocks increase significantly.

Response: We added a bullet to the socioeconomic section of SD2 to clarify that we will assess the effects of relicensing the project on minority and low-income populations. We will assess the socioeconomic effects on tribal members and other affected populations under various anadromous fish restoration scenarios.

Comment: The Forest Service states that both bullets in section 5.2.7 of SD1 (*Socioeconomic Resources*) should apply to all Native American groups downriver of the project, due to their cultural, social, and economic interdependence on anadromous fisheries that are directly affected by the project.

Response: Both bullets in section 5.2.7 of SD1 would apply to a wide number of communities influenced by the project, including Native Americans. We will assess the types of communities that would be influenced by project alternatives and identify them in our socioeconomic analysis.

Cultural Resources

Comment: The Shasta Nation states that the cultural site protection process needs to offer more site protection to eliminate destruction of cultural sites that are important to the Shasta Nation from development and housing.

Response: The Commission does not have the authority to take measures to prevent destruction of cultural sites from development and housing unless such development is a result of project operation or project-related actions. We will consider cultural resources of concern to Native Americans and appropriate measures to protect those resources in our EIS.

Comment: Interior, KSAGA, and SRRC & KFA request that we evaluate effects on cultural resources from project-related road access, erosion of cultural sites related to operations in the J.C. Boyle peaking reach, disturbance of cultural properties (looting, vandalism, collection) as a consequence of increased visitation and unregulated access, and exposure and subsequent inundation and erosion of cultural properties as a result of project operation.

Response: We will assess project-related effects on cultural resources. The first bullet in section 5.2.8 of SD1 includes the various specific effects cited by the commenters.

Comment: CCC and the Karuk Tribe recommend that we evaluate how the project alters river flows and whether project-related flows are causing erosion of the river channel, surrounding areas, and known or potential archeological resources within and downstream of the project.

Response: We have added geomorphology to our list of cumulatively affected resources, and our assessment of this resource will enable us to address potential project-related effects on cultural resources within and downstream of the project.

Comment: The Yurok Tribe Heritage Preservation Officer requests that we adjust the area of potential effects (APE) to include the entire Klamath River from the Klamath Basin to the mouth, conduct comprehensive cultural resource surveys within the expanded APE to identify and document properties that are potentially eligible for inclusion in the National Register of Historic Places, evaluate the cumulative effects of the project on potentially eligible properties, further study and define the traditional cultural riverscape in ways conducive to assessing effects, and assess the project effects on the traditional cultural riverscape. The Yurok Tribe Heritage Preservation Officer also asks us to develop measures that would ensure protection of potentially eligible sites within the APE, and that we use qualified tribal cultural resources professionals in conducting all of the above.

Response: As indicated in the second bullet of section 5.2.8 of SD1, we will evaluate the appropriateness of PacifiCorp's proposed APE. The outcome of our analysis will determine whether or not additional surveys and analysis are necessary and what measures are necessary to protect potentially eligible cultural resources within the appropriate APE.

Comment: The Hoopa Valley, Yurok, and Klamath tribes; KRITFWC; NOAA Fisheries; and Interior ask that a separate heading be added to SD2 addressing tribal trust issues. This section would include the effects of alternative project operations and configurations, proposed environmental measures, and the effects of retiring additional developments on those resources held in trust by the federal government for the benefit of the tribes (such as lands, minerals, hunting, and fishing rights). American Whitewater comments that our cultural analysis should extend beyond historic resources to include living cultures of affected tribes, including the effects of various project alternatives on federal tribal trust requirements to ensure treaty fishing rights. SRRC & KFA and KSAGA state that our EIS should include a discussion of our consideration of past and present effects of the project on tribes in the Klamath River Basin, our consultation with the tribes, and consistency of proposed actions with tribal treaties and rights.

Response: We will include a separate subsection in our EIS that pertains to tribal resource issues and added a bullet to the cultural resources section of SD2 to clarify our intent. In that subsection, we will identify the tribes' historical and present use of the Klamath River and its associated natural resources (e.g., water resources, aquatic resources, riparian vegetation) for both practical and spiritual purposes. We will address the effects of the existing and proposed project on those resources in the specific resource sections, as appropriate, and make our recommendations pertaining to measures that would protect and enhance those resources in section 5.2 of the EIS (*Comprehensive Development and Recommended Alternative*).

Comment: SWRCB, EPA, city of Arcata, Mid Klamath Watershed Council, NEC, KRITFWC, Yurok Tribe, and others question how we will address the Tribal Trust responsibility of the federal government and how the fishing rights of the entire downstream and coastal community will be protected. American Whitewater comments that effects on public trust doctrine should be included in our socioeconomic analysis. Pacific Coast Federation of Fishermen's Associations questions why our SD1 does not have a discussion of the Interior Solicitor's Opinion on the seniority of tribal water rights for fisheries.

Response: Our environmental analysis will address the effects of the project on resources of concern to the tribes. Regarding the seniority of tribal water rights for fisheries, water rights issues are appropriately addressed by the state agency that administers water rights, and we will not address tribal water rights in our EIS.

Comment: The Klamath Tribes request that the following sections be added to the proposed EIS outline presented in SD1: (1) The Treaty of 1864 with the Klamath Tribes, (2) the Presidential Order of 1994, and (3) the Policy Statement on Consultation with Indian Tribes in Commission Proceedings.

Response: Although we will discuss the Treaty of 1864 and the Presidential Order of 1994 in our EIS, we will not have separate subsections that pertain to these documents. We also will include in our EIS a discussion of the steps that we have taken consistent with the Commission's tribal consultation policy statement.

Comment: Interior comments that, in the first bullet in section 5.2.8, *Cultural Resources*, we should change our reference to the "Quartz Valley Tribes (Karuk and Shasta)" to "Quartz Valley Tribes Indian Community" and our reference to the "Hoopa Tribe" should be changed to "Hoopa Valley Tribe."

Response: We adjusted our reference to the Hoopa Valley Tribe in SD2 as requested by Interior. We have modified our reference in SD2 to "Quartz Valley Indian Community" based on the convention used in correspondence from the chairman of this tribal community.

Developmental Resources

Comment: CEC recommends that the effects of proposed protection, mitigation, and enhancement measures on project economics should incorporate pertinent CEC comments on proper valuation of the project.

Response: We will consider comments from all parties received during this proceeding, including CEC, regarding the value of project-related resources, as appropriate.

Comment: CSBS notes that power generation lost for any reason should be mitigated through increased generation from other sources. They suggest that we should request agencies that are involved in ESA activities and flood control management to make power production an essential element of their regulation of flows and lake levels.

Response: In our need for power analysis, we will address whether power generation that may be lost from this project would need to be replaced. The Commission does not have the authority to require any other entity to develop power generation capabilities to replace that which may be lost at this project.

Comment: Interior comments that our issue summary in section 5.2.9 of SD1, *Developmental Analysis*, seems to be focused on the private costs to PacifiCorp. Interior suggests revising it to include all economic benefits and costs, including nonpower benefits and costs (environmental, recreational, and agricultural).

Response: Interior is correct that our analysis of developmental resources will focus on the cost of various project alternatives and environmental measures to PacifiCorp. The Commission only has jurisdiction over the licensee and it is appropriate to account for the costs to the licensee of various alternatives that we or others may propose or recommend. As the potential licensee, such costs would be incurred by PacifiCorp and may influence whether or not a new license, if issued, is accepted. We will identify nonpower costs and benefits of the proposed project in section 3.3 of our EIS (*Proposed Action and Action Alternatives*), and weigh the costs and benefits of various alternatives in section 5.2 of our EIS (*Comprehensive Development and Recommended Alternative*).

Comment: SRRC & KFA and KSAGA indicate that the amount (696,000 megawatt-hours [MWh]) and value ($48.5 million) of annual generation associated with the proposed project is overstated in the application. They note that, according to information submitted to the Energy Information Administration, actual average generation over the past 13 years has been about 640,000 MWh, and, with the loss of generation at the East Side and West Side developments, future generation would be about 617,000 MWh. Using PacifiCorp's value for power, the annual value of project generation would be about $43 million. However, SRRC & KFA and KSAGA comment

that the value of energy used by PacifiCorp is too high, and that the actual annual value of project generation should be closer to $34.5 million.

Response: We will evaluate all information on the record for this proceeding when deciding what value we will place on the energy generated by this project and the various alternatives that we will analyze.

Comment: Conservation Groups request that our analysis of retirement of additional developments consider the costs of removing dams and powerhouses, sediment management, volitional fish passage, and foregone generation and compare them to the benefits of salmon restoration, additional recreational opportunities, and socioeconomic benefits.

Response: We will conduct this analysis of developmental and environmental costs and benefits, as appropriate, in section 5.2 of our EIS (*Comprehensive Development and Recommended Alternative*).

Comment: Interior recommends that the section of our proposed EIS outline entitled *Developmental Analysis* should be revised to include headings for the Retirement of Additional Developments Alternative and an Agency Alternative.

Response: If we identify reasonable development retirement alternatives or receive additional project alternatives from agencies or other entities, then we will include headings in our Developmental Analysis section as appropriate.

Comment: Conservation Groups request that our developmental analysis include an economic analysis of each action alternative to enable us to determine the best balance of beneficial uses of public resources.

Response: We will include an economic analysis of each complete action alternative in the developmental analysis section of our EIS. We also will include the estimated cost of each alternative environmental measure in the developmental analysis section.

Consistency with Comprehensive Plans

Comment: The Forest Service requests that we add USDA Forest Service, 1995, Land and Resource Management Plan: Klamath National Forest, Yreka, CA, and USDA Forest Service, 1995, Land and Resource Management Plan: Six Rivers National Forest, Eureka, CA, to the list of approved comprehensive plans that would be considered in our NEPA analysis.

Response: Both of these plans are included on the Commission's current Revised List of Comprehensive Plans (March 2005) and we have therefore added them to the list of approved comprehensive plans that we will consider during our NEPA analysis.

Comment: Conservation Groups request that the EIS analyze and display the consistency of each action alternative with the specific management requirements in each applicable comprehensive plan and for consistency with the Klamath River's designation under the Wild and Scenic Rivers Act.

Response: The FPA requires that we consider the extent to which a project is consistent with approved federal and state comprehensive plans. A goal in developing the Staff Alternative will be to ensure consistency with applicable management requirements of approved comprehensive plans, to the extent possible. We will address our conclusions regarding the consistency of our recommended alternative with applicable comprehensive plans in section 5.5 of our EIS (*Consistency with Comprehensive and Other Resource Plans*). We will address consistency of reaches of the Klamath River that have been designated pursuant to the Wild and Scenic Rivers Act in the land use and aesthetics section of our EIS.

Comment: Interior provided a 2004 addendum to the following approved comprehensive plan: Fish and Wildlife Service. 1991. Long Range Plan for the Klamath River Basin Conservation Area Fishery Restoration Program. Yreka, California. January 1991.

Response: Although this addendum to the 1991 plan is not yet on the comprehensive plan list, we will consider it in our aquatic resources analysis and address it in section 5.5 of our EIS as an "other resource plan."

Comment: SRRC & KFA and KSAGA request that our EIS incorporate direction and information from the "Long Range Plan for the Klamath River Basin Conservation Area Fishery Restoration Program," as well as what the project effects would be on the restoration actions specified in the following subbasin plans that have either been completed or nearly completed: Lower Klamath Subbasin (completed in May 2001); Salmon River Subbasin (completed in June 2002); Scott River Subbasin (completed in March 2004); Middle Klamath Subbasin (in the process of being finalized); and Shasta River Subbasin (in the process of being finalized). In addition, they request that our EIS analysis consider the following completed or ongoing comprehensive restoration plans: the California coho recovery strategy (2004); the California and Oregon TMDL analysis and planning process (in progress); the spring Chinook volunteer recovery strategy (in progress); the Klamath Basin fish kill monitoring plan (completed by the Klamath Basin Fish Health Assessment Team); and the Klamath Basin flow study.

Response: In section 5.2.10 of SD1, we listed the "Long Range Plan for the Klamath River Basin Conservation Area Fishery Restoration Program" (FWS, 1991) as an approved comprehensive plan that we will review for consistency with the recommended action. Although the Klamath subbasin fishery restoration plans are not yet on the comprehensive plan list, we will consider them in our aquatic resources analysis and address them in section 5.5 of our EIS as "other resource plans" if they have been filed with the Commission as part of the record for this proceeding. We encourage SRRC & KFA, KSAGA, or parties that have access to these plans to file them with the Commission as part of this proceeding. We will also similarly consider the California coho recovery strategy (CDFG, 2004; available on the Internet) and the CDFG and FWS reports on the 2002 Klamath River fish kill (filed under this proceeding and part of the record). However, if these fish kill reports are separate from the "Klamath Basin fish kill monitoring report," we would appreciate receiving a copy of the fish kill monitoring report so that we can consider it in our analysis. In addition, if reports associated with other ongoing work in the Klamath River Basin are finalized and submitted to the Commission, we will consider them, as appropriate.

Comment: ODEQ requests that the city of Klamath Falls Comprehensive Plan (1984) be included in the listing of approved comprehensive plans that we will consider in our analysis.

Response: This plan is not on the current list of comprehensive plans, has not been provided to the Commission, and is not accessible to us via the Internet. ODEQ should file this plan with the Commission if they intend for us to consider it.

Comment: ODFW recommends that, besides the comprehensive plans listed in section 5.2.10 of SD1, we should also consider the following comprehensive management plans in our NEPA analysis: Mule Deer (OAR 635-190-0001 through 0015); Klamath Basin Fish Management Plan (OARS); Elk (2003); Cougar (1993); Black Bear (1993); Migratory Game Bird (1993); and Bighorn Sheep (1992).

Response: We listed in SD1 the Commission approved comprehensive management plans for Cougar (1993) and Black Bear (1993). We also listed the 1992 version of the Elk Management Plan in SD1, but the March 2005 version of Commission-approved comprehensive plans includes the 2003 version, and we have modified SD2 accordingly. The Klamath River Basin, Oregon Fish Management Plan (ODFW, 1997) is included in the most recent version of Commission-approved comprehensive plans (March 2005) and we have modified SD2 accordingly. The 1986 version of the Bighorn Sheep Management Plan is the most recent version this plan on the approved list, and we suggest that ODFW submit the updated version to the Commission as a candidate for inclusion on the list, if it has not already done so. Similarly, the plans for mule deer and migratory game birds are not on the current list of approved comprehensive plans. We have downloaded the Mule Deer Management Plan from the Internet and will consider it

in our terrestrial resource analysis and address it in section 5.5 of our EIS as other resource plans. Although a summary of the Migratory Game Bird Plan is available on the Internet, the actual plan is not. We encourage ODFW to file this plan with the Commission for our consideration.

Comment: CDFG requests that we consider the following document as a comprehensive plan in our NEPA analysis: CDFG. September 2000. Upper Klamath River wild trout management plan, 2000-2004. 50 pp.

Response: Although this plan is not yet on the comprehensive plan list, we will consider it in our aquatic resources analysis and address it in section 5.5 of our EIS as an "other resource plan."

Comment: CCC recommends that the California Coastal Management Program be added to the list of plans and policies that the proposed licensing would be reviewed against as indicated in section 5.2.10 of SD1.

Response: Although the guidance pertaining to California's Coastal Zone Program is not yet on the comprehensive plan list, it is available via the Internet. If CCC makes a determination that PacifiCorp should file an application for consistency with the policies of the Coastal Zone Program, we will address this program in section 5.6 of our EIS (*Relationship of License Process to Laws and Policies*).

Comment: CEC suggests that we add two California energy plans, the Integrated Energy Policy Report and the Energy Action Plan, to the list of approved comprehensive plans.

Response: Although these plans are not yet on the comprehensive plan list, we will consider them in the need for power and developmental analysis sections of our EIS and address them in section 5.5 of our EIS as an "other resource plan."

Comment: American Whitewater comments that the following comprehensive plans are missing from our list in SD1: Trinity River Restoration Program; the National Resource Council's final report on the Klamath Basin; and CEC's report that discusses the Klamath Hydroelectric Project.

Response: Although these plans and reports are not on the comprehensive plan list, we will consider them in our water and aquatic resources, need for power, and developmental analyses, as appropriate, and address them in section 5.5 of our EIS as "other resource plans."

3.0 PROPOSED ACTION AND ALTERNATIVES

In accordance with NEPA guidelines, our environmental analysis will consider, at a minimum, the following alternatives: (1) the applicant's proposed action; (2) staff's alternative, consisting of the applicant's proposed action with Commission staff's modifications; (3) an alternative that includes retirement of additional developments; and (4) the no-action alternative.

3.1 APPLICANT'S PROPOSED ACTION

PacifiCorp proposes relicensing five developments: four existing generating developments (J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate) along the mainstem of the Upper Klamath River and one generating development (Fall Creek) on Fall Creek, a tributary to the Klamath River. The existing Spring Creek diversion is proposed for inclusion with the Fall Creek development. PacifiCorp also proposes to decommission its two currently licensed upstream-most powerhouses (East Side and West Side), and to remove Keno development (which has no generation facilities) from the licensed project. Decommissioning of East Side and West Side developments is proposed in lieu of constructing fish screens, estimated to cost $***17*** million, to protect federally listed aquatic species. Keno dam would be upstream of the proposed project, and PacifiCorp asserts that it serves no project purpose.

3.1.1 Description of Existing Project Facilities

The Klamath Hydroelectric Project is located on the upper Klamath River in Klamath County (south-central Oregon) and Siskiyou County (north-central California). The existing project consists of eight developments, seven of which are located on the Klamath River between river mile (RM) 190 and 254. One of the seven developments, Keno development, is a re-regulation dam and reservoir with no generation facilities. The eighth development is on Fall Creek, a Klamath River tributary at about RM 196. The eight developments are: East Side, West Side, Keno, J.C. Boyle, Copco No. 1, Copco No. 2, Fall Creek, and Iron Gate. Each development is described in more detail in the following section.

East Side and West Side Developments

Link River dam marks the upstream boundary of the current Klamath Hydroelectric Project at RM 254.3, but the dam and its reservoir (Upper Klamath Lake) are not part of the Klamath Hydroelectric Project. USBR owns the dam ***and it is located on USBR-managed land***. Under a contract set to expire in 2006, PacifiCorp operates and maintains the dam at USBR's direction. That contract provided PacifiCorp with some operational flexibility with respect to releases for generation from Link River dam, in exchange for operating the dam and providing low-cost power to USBR Klamath Irrigation Project irrigators. In recent years, however, ***PacifiCorp claims*** this operational flexibility has not been ***fully*** realized, as USBR has specified releases from Link River dam in an attempt to comply with ***BiOps*** relating to two species of sucker in Upper

Klamath Lake and coho salmon in the lower Klamath River, all of which are listed as either endangered or threatened under the ESA.

Link River dam diverts water to East Side and West Side developments, which are owned and operated by PacifiCorp. The dam has a pool-and-weir type fish ladder. USBR owns the ladder, and PacifiCorp currently operates it. The ***existing*** ladder ***does not meet current criteria for resident fish species, and a new ladder is being constructed by USBR that is designed to allow upstream passage of the ESA-listed sucker species. This new fish ladder will be located between the mechanical spill gates and the headworks of the West Side canal. In addition, a gravity bypass from fish screens that were recently constructed at USBR's A-canal passes midway through the length of the Link River dam and exits immediately downstream from the primary headgates.*** Water for the East Side and West Side powerhouses is diverted to canals and flowlines dedicated to each powerhouse.

East Side development facilities consist of: (1) 670 feet of mortar and stone canal; (2) an ***intake*** structure; (3) 1,729 feet of 12-foot-diameter, wood-stave flowline; (4) 1,362 feet of 12-foot-diameter, steel flowline; (5) a surge tank; and (6) a powerhouse. Maximum diversion capacity for the East Side powerhouse is 1,200 cubic feet per second (cfs).

The powerhouse is a reinforced-concrete structure housing a single vertical Francis turbine with rated discharge of 975 cfs, and a rated capacity of 3.2 MW. The generator has a rated capacity of 3.2 MW. There are three single-phase step-up transformers at the powerhouse. From the East Side powerhouse, a 69-kilovolt (kV) transmission line, approximately 0.36-mile long (PacifiCorp Line 56-8), crosses over the Klamath River and connects to PacifiCorp's Line 11.

West Side development facilities consist of: (1) a 5,575-foot-long concrete-lined and unlined canal; (2) a spillway and discharge structure; (3) an intake; (4) 140 feet of 7-foot-diameter steel flowline; and (5) a powerhouse. Maximum diversion capacity of the West Side canal is 250 cfs.

The West Side powerhouse is a reinforced concrete and wood structure housing a single, horizontal, pit-type Francis turbine with rated discharge of 250 cfs and a rated capacity of 0.8 MW. The generator has a rated capacity of 0.6 MW. There are three single-phase step-up transformers at the powerhouse. There is a small substation adjacent to the powerhouse that connects to the larger West Side substation.

Keno Development

Keno development is a ***regulating*** facility owned by PacifiCorp ***that controls the water level of the Klamath River and Lake Ewauna upstream of Keno dam***. The dam is ***partially*** located ***on USBR-managed land*** at approximately RM 233. The facility does not include power-generating equipment; ***although the subsequent addition of such facilities was anticipated at the time the license was amended to include this facility***. PacifiCorp currently operates Keno dam under ***an agreement*** with USBR, ***the execution***

of which was required by Article 55 of the existing license. Gravity flow from Keno reservoir provides water either directly or indirectly to about 41 percent of the lands irrigated by the Klamath Irrigation Project and the Lower Klamath Lake National Wildlife Refuge. In addition, there are a number of privately owned diversions from Keno reservoir for irrigation of non-federal lands, and important wildlife and recreational resources exist along the shores of Keno reservoir.

Keno dam is a combination of earth embankment and reinforced-concrete, non-overflow, and spillway sections. The dam crest elevation is at elevation 4,070 feet (USGS datum)[4] and is approximately 680 feet long and approximately 25 feet high. The ogee-type spillway section has a crest elevation of 4,070 feet and is 265 feet wide and has six 40-foot-wide spill gates. The normal maximum water surface is at elevation 4,086.5 feet. There is a 24-pool weir and orifice-type fish ladder. This fish ladder gains 19 feet in elevation over a length of 350 feet. Keno reservoir has a surface area of 2,475 acres at elevation 4,085 feet and a total storage capacity of 18,500 acre-feet.

J.C. Boyle Development

J.C. Boyle development consists of a reservoir, a combination embankment and concrete dam, a water conveyance system, and a powerhouse on the Klamath River, all between about RMs 228 and 220***. The powerhouse is located on BLM-managed land.***

J.C. Boyle dam impounds a narrow reservoir of 420 surface acres (J.C. Boyle reservoir). The normal maximum and minimum operating levels are between elevation 3,793 and 3,788 feet. The reservoir contains approximately 3,495 acre-feet of total storage capacity and 1,724 acre-feet of active storage capacity.

The embankment dam is a 68-foot-high earthfill structure with a length of 413.5 feet at elevation 3,800.0 feet. The concrete portion of the dam is 279 feet long and is composed of a spillway section, an intake structure, and a 115-foot-long gravity section that is 23 feet high. The spillway is a concrete gravity ogee overflow section with three 36-foot-wide by 12-foot-high radial gates. The spillway crest is at elevation 3,781.5 feet and normal pool is 0.5 foot below the top of the gates (at elevation 3,793.5 feet).

A 24-inch fish screen bypass pipe provides approximately 20 cfs of flow below the dam. The intake structure is a 40-foot-high reinforced concrete tower. A pool and weir fishway approximately 569 feet long provides upstream fish passage. The water conveyance between the dam and the powerhouse has a total length of 2.56 miles. From the intake structure, the water flows through a 638-foot long, 14-foot-diameter, steel flowline. The flowline is supported on steel frames where it spans the Klamath River and discharges into an open power canal. The canal is a 2-mile-long concrete flume. The power canal is provided with overflow structures at the upstream and downstream ends and terminates in a forebay. Water for power generation passes from the forebay through a 15.5-foot-diameter, concrete-lined, horseshoe-section tunnel, which is 1,660 feet long.

[4] All subsequent elevations are in USGS vertical datum.

The last section of the tunnel before the downstream portal is steel lined with the liner bifurcating into two 10.5-foot-diameter steel penstocks. Descending to the powerhouse, the penstocks reduce in two steps to 9 feet in diameter. Each penstock is 956 feet long.

The conventional outdoor-type reinforced concrete powerhouse is located approximately 4.3 river miles downstream of the dam. There are two vertical-Francis turbines; each having a rated discharge of 1,425 cfs and a rated output of 42 MW. Each of the two generators is rated at 40 MW. Two three-phase transformers step up the generator voltage for transmission interconnection.

The power from the powerhouse is transmitted 0.24 mile to the J.C. Boyle substation. There is also a second line that pre-dates the substation. The 0.24-mile 69-kV transmission line (PacifiCorp Line 98) connects the plant to a tap point on PacifiCorp's Line 18, but is not currently energized.

Copco No. 1 Development

Copco No. 1 development consists of a reservoir, dam, spillway, intake, and outlet works and powerhouse located on the Klamath River between approximately RMs 204 and 198 near the Oregon-California border.

Copco No. 1 reservoir has a surface area of approximately 1,000 acres and contains approximately ***46,900*** acre-feet of total storage capacity at elevation 2,607.5 feet and approximately 6,235 acre-feet of active storage capacity. The normal maximum and minimum operating levels are at elevation 2,607.5 and 2,601.0 feet, respectively.

Copco No. 1 dam is a concrete gravity arch structure with a 462-foot radius at the crest. The total height of the dam is 250 feet, and the crest length is approximately 410 feet. The ogee-type spillway, located on the crest of the dam, is divided into 13 bays controlled by 14-foot by 14-foot Taintor gates. The spillway crest is at elevation 2,593.5 feet. The normal operating reservoir water level is at elevation 2,606.0 feet. Two intake structures are located in the dam. The left intake provides water to two 10-foot-diameter (reducing to 8-foot-diameter) steel penstocks that feed Unit No. 1 in the powerhouse. The right intake provides water to a single, 14-foot-diameter (reducing to two 8-foot-diameter) steel penstock that feeds Unit No. 2.

The Copco No. 1 powerhouse is a reinforced-concrete substructure with a concrete and steel superstructure enclosed by metal siding located at the base of Copco No. 1 dam. The two turbines are double-runner, horizontal-Francis units, each with a rated discharge of 1,180 cfs, and rated at 14 MW. The generators are each rated at 10 MW. There are no turbine bypass valves. Unit 1 has three single-phase step-up transformers. Unit 2 also has three single-phase step-up transformers.

Copco No. 1 plant has two associated 69-kV transmission lines. PacifiCorp Line 15 connects the Copco No. 1 switchyard to Copco No. 2, approximately 1.23 miles to the west. PacifiCorp lines 26-1 and 26-2, each approximately 0.07 mile in length, connect Copco No. 1 powerhouse to the Copco No. 1 switchyard.

Copco No. 2 Development

Copco No. 2 development consists of a small impoundment, a diversion dam, a water conveyance system, and a powerhouse.

The reservoir is approximately 0.25-mile long and has a storage capacity of 73 acre-feet. At the normal water surface elevation of elevation 2,483 feet, there is very minimal active storage, and thus, the reservoir is held at elevation 2,483 feet. As a result, Copco No. 2 generation follows Copco No. 1 generation.

Copco No. 2 dam is a concrete gravity structure with an intake to the flowline on the left abutment and a 145-foot-long spillway section with five Taintor gates. The dam is 33 feet high and has an overall crest length of 335 feet. The crest elevation is at elevation 2,493 feet. The dam includes a 132-foot-long earthen embankment. A corrugated metal flume provides approximately 5 cfs of instream flow to the bypassed reach. The concrete gravity spillway section crest elevation is 2,473 feet. The flowline to the powerhouse consists of 2,440 feet of concrete-lined tunnel, 1,313 feet of wood-stave pipeline, an additional 1,110 feet of concrete-lined tunnel, a surge tank, and two steel penstocks. The diameter of the tunnel and wood stave pipeline sections is a constant 16 feet. The two penstocks, one 405.5 feet long and one 410.6 feet long, range from 16 feet in diameter at the inlet to 8 feet in diameter at the turbine spiral cases.

The powerhouse is a reinforced concrete structure that houses two vertical-Francis turbines. Each turbine has a rated discharge of 1,338 cfs and a rated capacity of 15 MW. The generators are rated at 13.5 MW.

There are three single-phase, 6,600/72,000-volt (V) transformers connected to three single-phase, 73,800/230,000-V step-up transformers for interconnection to the transmission system. A 69-kV transmission line (PacifiCorp Line 15) connects the Copco No. 2 powerhouse to the Copco No. 1 switchyard, approximately 1.23 miles to the west.

Fall Creek Development

Fall Creek development is located on Fall Creek, a tributary to the Iron Gate reservoir, approximately 0.4 mile south of the Oregon-California border. The facilities on Fall Creek consist of a 5-foot-high, concrete and timber flashboard spillway structure, an earth- and rock-filled diversion dam, 4,560 feet of earthen and rock-cut power canal, 2,834 feet of steel penstock, and a powerhouse. Additional existing diversion facilities located on Spring Creek are not currently part of the licensed project, but PacifiCorp proposes to include the Spring Creek facilities as part of the Fall Creek development. A description of the Spring Creek diversion facilities is presented as part of the proposed project in section ***3***.1.3.

The overall dam crest length is 130 feet with a crest elevation at 3,253.4 feet. The concrete spillway section is 32 feet wide. At a normal water surface elevation of 3,251 feet, there is no active storage in the diversion pond. A small hole in one of the spillway stop logs provides 0.5 cfs of instream flow in Fall Creek below the dam. The 4,560-foot-

long earth and rock power canal is 9 feet wide. The 42-inch-diameter penstock (reducing to 30-inch-diameter), approximately 2,834 feet long, drops over the hillside to the powerhouse.

Fall Creek powerhouse is a reinforced-concrete substructure with a steel superstructure enclosed by corrugated metal siding. It houses three horizontal shaft Pelton turbines. The Unit No. 1 turbine has a rated discharge capacity of 14 cfs and a rated output of 0.75 MW and the generator is rated at 0.5 MW. The Unit No. 2 turbine has a rated discharge capacity of 21 cfs and a rated output of 1.13 MW and the generator is rated at 0.45 MW. Unit No. 3 has a rated discharge capacity of 25 cfs and a rated output of 1.35 MW and the Unit 3 generator is rated at 1.25 MW. The combined rated hydraulic capacity of the three turbines is 60 cfs. There are three single-phase, step-up transformers at the powerhouse.

The Fall Creek powerhouse has two associated 69-kV transmission line segments. Line 3 connects the Fall Creek plant to Copco No. 1 switchyard, approximately 1.65 miles to the east. There is also a very short segment of Line 3 that connects the plant to a tap point on Line 18.

Iron Gate Development

Iron Gate development consists of a reservoir, an earth embankment dam, a non-gated side-channel spillway, intakes for the diversion tunnel and penstock, a steel penstock from the dam to the powerhouse, and the powerhouse. It is located on the Klamath River between RMs 196.8 and 190, approximately 20 miles northeast of Yreka, California. It is the farthest downstream hydroelectric facility of the Klamath Hydroelectric Project.

The reservoir formed upstream of the Iron Gate dam is approximately 944 surface acres and contains approximately 58,794 acre-feet of total storage capacity (at elevation 2,328.0 feet) and 3,790 acre-feet of active storage capacity. The normal maximum and minimum operating levels are between elevation 2,328.0 and elevation 2,324.0 feet, respectively.

Iron Gate dam is a zoned earthfill embankment with a concrete extension wall on the crest. The dam has a height of 194 feet to the top of the wall at elevation 2.348.0 feet, and is approximately 740 feet long. There are fish trapping and holding facilities located at the toe of the dam. High- (elevation 2,310.0 feet) and low-level (elevation 2,250 feet) intakes for the fish facility water are incorporated into the dam. The non-gated chute spillway is excavated in rock at the right dam abutment. The spillway crest, at elevation 2,328.0 feet, is 727 feet long. The diversion tunnel used during construction is limited to emergency use during high flow events. The intake structure for the powerhouse is a 45-foot-high, free-standing, reinforced-concrete tower, located in the reservoir. The intake structure provides flow to a 12-foot-diameter, welded-steel penstock.

The powerhouse is located at the base of the dam. The Iron Gate powerhouse consists of a single vertical Francis turbine. The turbine has a rated discharge capacity

1,735 cfs, with a rated output of 18.75 MW and the generator is rated at 18 MW. In the event of a turbine shutdown, a synchronized Howell-Bunger bypass valve located immediately upstream of the turbine diverts water around the turbine to maintain flows downstream of the dam. There is a single three-phase, step-up transformer at the powerhouse. Iron Gate powerhouse has one associated 69-kV transmission line. Line 62 runs along the north side of Iron Gate reservoir for approximately 6.55 miles, to the Copco No. 2 switchyard.

The Iron Gate fish hatchery is located downstream of Iron Gate dam, adjacent to the Bogus Creek tributary. The hatchery complex includes an office, incubator building, rearing ponds, fish ladder with trap, visitor information center, and employee residences. Up to 50 cfs is diverted from the Iron Gate reservoir to supply the 32 raceways and fish ladder. CDFG operates the hatchery.

3.1.2 Description of Existing Project Operations

Upper Klamath Lake elevations are controlled by the Link River dam under the direction of USBR. Iron Gate minimum flow releases are stipulated by article 52 of PacifiCorp's FERC license. However, since 1997, ***PacifiCorp indicates that*** these releases have increasingly been stipulated by USBR, as it attempts to comply with two ESA BiOps related to the operation of its Klamath Irrigation Project. At present, PacifiCorp ***asserts that it*** has effectively little or no control over the river's flow regime downstream of Iron Gate dam. Because of limited storage capacity, the project can manage only short-term (hourly, daily) water balancing operations at certain project reservoirs. Water flow through the project is directly related to USBR's control of Upper Klamath Lake elevations, downstream releases out of Iron Gate dam, flows into and out of the USBR project area, and the relatively small active storage capacities of the project reservoirs. When river flows are less than hydraulic capacity, J.C. Boyle, Copco No. 1, and Copco No. 2 generally operate as peaking generation facilities.

3.1.3 Description of Proposed Project Facilities

PacifiCorp proposes to modify the existing project by decommissioning East Side and West Side developments, removing Keno development from the licensed project, and adding or modifying facilities associated with J.C. Boyle, Copco No. 2, Fall Creek, and Iron Gate developments. PacifiCorp also proposes to include the diversion facilities on Spring Creek in the licensed project, as part of Fall Creek development. These changes would require corresponding adjustments to the existing project boundary. Details regarding the facilities that would be removed from or made part of the proposed project are discussed in more detail in the following section.

East Side and West Side Developments

All seven gates that supply water to the East Side diversion at Link River dam would be rendered inoperable by removing the individual gate lifting devices. Concrete would be added to the backside of the gates, sealing the intakes. An access ramp would

be constructed from the dam site to allow access for filling the existing forebay. The woodstave-portion of the flowline would be dismantled and removed from the site. The steel penstock, surge tank, and support structures would be removed. The powerhouse would have all wooden materials removed. Any components containing chemical or hazardous materials would be removed from the site, including transformers, bushings, tanks, lead bearings, and asbestos based insulating products. All windows and doors would be sealed to prevent public access. The incoming water line and the battery bank would be removed. Following removal of the penstock, the penstock outlet would be sealed at the powerhouse assuring that access is prevented. The transmission line (No. 56-8) from the East Side powerhouse to a tap-point on transmission line 11 would also be removed.

Four of the six steel slide gates that control flow at the Link River dam intake at the West Side canal would be made inoperable through removal of the lifting devices. The gates would be secured in place with concrete, with backfill being placed immediately below the dam. The site would be restored and fill areas planted to prevent erosion. The canal leading to the West Side penstock would be filled and regraded to the natural contour. Both the spillway and the intake concrete would be removed. The penstock, including the support structures, would also be removed. The powerhouse would have all wooden materials removed. Any components that contain chemical or hazardous materials would be removed from the site including transformers, bushings, tanks, lead bearings, and asbestos-based insulating products. All windows and doors would be sealed to prevent public access. The incoming water line and the battery bank would be removed. Following the removal of the penstock, the penstock outlet would be sealed at the powerhouse, assuring that access is prevented. The small powerhouse-related substation and transmission lines leading to the larger nearby substation would be removed. The larger West Side substation would remain in place, since it is not associated with the West Side hydroelectric development.

Keno Development

In the future, Keno dam would remain in operation. However, it is not included in the proposed project because the development has no generation facilities, ***and PacifiCorp asserts that*** its operation does not substantially benefit generation at ***its*** downstream hydroelectric developments.

J.C. Boyle Development

A surface collection system (gulper) is proposed for the J.C. Boyle forebay to exclude fish from the power intake and to facilitate downstream fish passage. The system would include a full-depth guide net barrier extending from the fishway exit to the left bank. A pump system mounted on a floating barge would provide approximately 200 cfs of attraction flow and surface collection of downstream fish migrants. Collected fish would be conveyed past the dam via a 24-inch bypass pipe with a flow of approximately 20 cfs.

Modifications are also proposed for the J.C. Boyle fish ladder. The existing bar spacing on the fishway exit pool trashrack would be increased to facilitate the passage of adult fish. An additional weir would also be added to the fishway entrance pool to decrease the height of the existing step. PacifiCorp proposes two synchronous bypass valves at the J.C. Boyle powerhouse so that (1) downstream ramping rate requirements would be maintained after a unit trips off-line and (2) the use of the emergency wasteway just upstream from the power tunnel would be minimized. The modifications would include two 9.5-foot diameter stainless steel shutoff butterfly valves and two 4-foot diameter stainless steel fixed cone valves. Normally, the butterfly valves would be in the open position, but they would close automatically in the event of an operational failure of the respective fixed cone valve. A hooded discharge structure and energy dissipation structure would also be included to prevent large amounts of spray that could negatively effect switchyard equipment downstream of the powerhouse. The turbine bypass facility may need to be modified to meet new instream flow requirements downstream of the J.C. Boyle powerhouse. PacifiCorp ***may release a minimum flow of*** 100 cfs at the powerhouse. This would be accomplished with a small hydro turbine or modifications to the proposed synchronous bypass valves.

Copco No. 2 Development

PacifiCorp proposes that the existing instream flow bypass sluiceway located on the left side of the spillway be automated to provide a constant release of 10 cfs below the Copco No. 2 dam. An automated level sensor and gate operator would be added to control the instream flow releases.

Fall Creek Development

PacifiCorp proposes to include diversion facilities located on Spring Creek in the licensed project as part of Fall Creek development. ***The Spring Creek diversion is located on BLM-managed land in the Cascades-Siskiyou National Monument.*** The Spring Creek dam is a small earthen embankment approximately 7 feet high and 10 feet wide that spans the entire stream width (approximately 66 feet). Up to 16.5 cfs of water from Spring Creek would be diverted through an earthen canal that would be discharged to the Fall Creek drainage. A 42-inch diameter culvert would be used to bypass flows downstream and to maintain a constant water surface elevation in the reservoir.

Canal screens and fish ladders are proposed for both the Fall Creek and Spring Creek diversions. The canal screens would be diagonal-type screens meeting NOAA Fisheries SW Region criteria for salmonid fry, including a maximum approach velocity of 0.4 foot per second, a sweeping velocity of 2 times the approach velocity, maximum screen openings of 1.75 mm, and a minimum open area of 27 percent. The bypass pipes would be 12 inches in diameter with 2.5 cfs of flow each. The Fall Creek fish ladder would be a pool- and weir-type ladder consisting of six pools. The pools would be constructed from rock and include a 0.5-foot vertical jump for each pool. The existing flashboards would be notched at the exit pool to permit a fishway flow of 2.5 cfs. The Spring Creek fish ladder would be a timber or concrete pool-and-weir type ladder

consisting of eight pools. The pools would be 4 feet by 5 feet in plan with 0.5-foot vertical jumps. A fishway control structure consisting of a 24-inch diameter culvert and manually-operated slide gate would provide 2.5 cfs of fishway flow. PacifiCorp also proposes a Parshall flume for the Spring Creek canal to permit measurement of diverted flows.

Iron Gate Development

Minor modifications proposed for Iron Gate development include the purchase of a mass-marking trailer for use at the hatchery. The mass-marking trailer is a portable building containing automated fish-marking equipment. Modifications to Iron Gate dam may be required to facilitate the release of low-level reservoir water, pending the outcome of ongoing water quality investigations. These modifications may include retrofit of the existing low-level outlet and bulkhead gate. PacifiCorp also proposes to install an oxygenation or reaeration system at Iron Gate development. The specific type of system would be determined following agency consultation.

3.1.4 Description of Proposed Project Operations

The proposed project would not include East Side and West Side developments, so it is expected that USBR would solely and at its own discretion operate Link River dam and would be responsible for releasing water to meet any Link River dam instream flow requirements and also the Klamath River instream flow requirements, which are specified for and measured at Iron Gate dam. The proposed project also would not include Keno development, but the Keno dam would continue to be operated as it is currently, only under the jurisdiction of the state of Oregon.

Overall, the amount and timing of water available at the J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate developments would be similar to those under existing hydrologic conditions, since no new storage facilities above J.C. Boyle are proposed, nor are storage facilities being removed. East Side and West Side developments have no storage capacity.

3.1.5 Proposed Environmental Measures

PacifiCorp is using the Commission's traditional licensing process, but it has been, and continues to be, involved in a collaborative process for study plan design and, ultimately, the development of ***environmental*** measures. The following additional protection and enhancement measures have been proposed, but PacifiCorp indicates that it may modify its proposed measures based on continuing analysis and discussion with agencies, tribes, and stakeholders:

Water Resources

- Implement instream flow and ramping rate measures in project reaches to protect and/or enhance various flow-dependent resources, including water quality.

- Implement a low-level release of cooler hypolimnetic water from Iron Gate reservoir during summer to provide some cooling of the Klamath River downstream of the project.[5]
- Install an oxygenation or reaeration system at the Iron Gate development as needed to prevent adverse downstream effects caused by seasonally low levels of DO in hypolimnetic generation flows.
- Consult and coordinate with appropriate agencies on the annual scheduled outages for project maintenance events where flows in project reaches are required to be outside the normal operations.

Aquatic Resources

- Decommission the East Side and West Side facilities, to eliminate entrainment of ESA-listed suckers from Upper Klamath Lake.
- Release a minimum flow of 100 cfs from J.C. Boyle dam at all times to enhance usable fish habitat while maintaining high water quality in the J.C. Boyle bypassed reach.
- Release ***an additional*** minimum flow of 100 cfs at J.C. Boyle powerhouse or dam.
- Limit flow down-ramp rates to 150 cfs per hour in the J.C. Boyle bypassed reach, except for flow conditions beyond the project's control.
- Limit flow up-ramp rates to 9 inches (in water level) per hour in the J.C Boyle peaking reach (the reach of the Klamath River from the J.C. Boyle powerhouse to Copco reservoir). Flow down-ramp rates would not exceed 9 inches per hour for flows exceeding 1,000 cfs, and would not exceed 4 inches per hour for flows less than 1,000 cfs.
- Install synchronized bypass valves on each of the two J.C. Boyle powerhouse units to ensure ramping rates could be met if a unit trips off-line.
- Install a surface collection system (gulper) for the J.C. Boyle reservoir to exclude fish from the power intake and to facilitate downstream fish passage.
- Make minor improvements (i.e., increasing the existing bar spacing on the exit pool trashrack and adding an additional weir) to the J.C. Boyle fish ladder to facilitate the passage of adult fish.
- Eliminate the gravity-fed water diversions from Shovel Creek and its tributary, Negro Creek (located adjacent to the Klamath River in the California segment

[5] On page E3-207 of its license application, PacifiCorp describes this as a "potential" measure, which would be evaluated in consultation with SWRCB during the CWA Section 401 certification process.

of the J.C. Boyle peaking reach), to prevent trout fry from being entrained and lost in the various ditches on PacifiCorp's Copco Ranch (a non-hydro related property).

- Place approximately 100 to 200 cubic yards of spawning gravel in the upper end of the J.C. Boyle bypassed reach.
- Maintain a minimum flow of 10 cfs in the Copco No. 2 bypassed reach.
- Limit flow down-ramp rates to 125 cfs per hour (equivalent to less than 2 inches per hour in most of the expected flow ranges) in the Copco No. 2 bypassed reach, except for flow conditions beyond the project's control.
- Release a minimum flow of 5 cfs into the Fall Creek bypassed reach, and release a minimum flow of 15 cfs downstream of the bypass confluence.
- Install canal screens and fish ladders for both the Fall Creek and Spring Creek diversions.
- Maintain the instream flow schedule and ramp rates downstream of Iron Gate dam according to USBR's Klamath Project Operations Plans consistent with BiOps issued by FWS and NOAA Fisheries.
- Place approximately 1,800 to 3,500 cubic yards of spawning gravel downstream of Iron Gate dam between the dam and the Shasta River confluence.
- Maintain current obligation of funding for production and operation of Iron Gate fish hatchery.
- Purchase and construct mass-marking facilities for use at the fish hatchery.

Terrestrial Resources

- Implement a vegetation resource management plan to include the following PM&E measures: (1) roadside and powerline right-of-way management activities, (2) noxious weed control, (3) restoration of project-disturbed sites, (4) protection of threatened, endangered, and sensitive plant populations, and (5) riparian habitat restoration.
- Implement a wildlife resource management plan to include the following PM&E measures: (1) installation of wildlife crossing structures on the J.C. Boyle canal, (2) deer winter range management, (3) monitoring powerlines and retrofitting poles to decrease electrocution risk, (4) development of amphibian breeding habitat along Iron Gate reservoir, (5) support of aerial bald eagle surveys and protection of bald eagle and osprey habitat, (6) selective road closures, (7) installation of turtle basking structures, (8) installation of bat roosting structures, (9) surveys for threatened, endangered, and sensitive

wildlife species in areas to be affected by new recreation development, and (10) long-term monitoring of PM&E measures.

Recreational Resources

- Work with the BLM and others to resolve current effects of recreational use on sensitive resources and provide increased resource protection and visitor management controls throughout the proposed project area.
- Increase the supply of camping and day use facilities to help meet current and future demand, principally at Iron Gate reservoir, by adding approximately 85 new campsites and 30 day use picnic sites by 2040, or when needed on the basis of monitoring results.
- Provide increased management presence at developed and undeveloped recreation sites.
- Address ADA compliance at all existing and new recreational facilities, including providing ADA-accessible fishing access sites.
- Provide improved maintenance and repair or replace site-specific facilities at existing developed recreation sites, including boat launches, picnic sites, and campsites.
- Develop a recreational resource management plan including a multi-resource interpretation and education program, including new signs, kiosks, brochures, and/or services.
- Provide new and/or enhanced multi-use, non-motorized trail opportunities.
- Provide designated wildlife viewing areas, such as watchable wildlife stations.
- Maintain current undeveloped open space lands on PacifiCorp-owned property for activities such as wildlife viewing, sightseeing, nature appreciation, photography, and other recreational activities that rely on adequate natural open space.
- Work with the BLM and Oregon Parks and Recreation Department to implement portions of the Upper Klamath River Management Plan, when adopted, from Stateline Take-Out on the Klamath River to Fishing Access Site No. 1 on Copco reservoir.
- Provide whitewater boating and fishing opportunities in the Upper Klamath River/Hell's Corner reach, in consideration of other resources.

Land Use and Aesthetic Resources

- Reduce visibility and contrast of powerhouse facilities through vegetative screening or painting at J.C. Boyle and Iron Gate developments.

Cultural Resources

- Complete the project's historic properties management plan providing direction and guidelines for the management of historic properties within the new project boundary as proposed by PacifiCorp.
- Implement mitigation measures for protection of historic properties including monitoring, stabilization, site concealment, proactive site isolation, passive site isolation, removing incompatible uses, law enforcement, erosion control, and, if necessary, archaeological data recovery.

3.2 STAFF'S ALTERNATIVE

We will review and consider alternatives to the proposed actions, including environmental measures not proposed by PacifiCorp. Modifications could include recommendations by agencies, non-governmental organizations, Native American tribes, interested parties, and Commission staff. To the extent that modifications would reduce the power production of the proposed project, we will evaluate costs and contributions to airborne pollution ***and greenhouse gas emissions, considering a range of potential reasonable generating alternatives.***

3.3 RETIREMENT OF ADDITIONAL DEVELOPMENTS

We will assess retiring additional developments (besides the East Side and West Side developments) without project dams in place. ***Using the applicable factors in the Interagency Task Force NEPA Procedures in FERC Hydroelectric Licensing, we will determine whether a more thorough analysis of retiring additional developments is warranted. If reasonable development retirement alternatives are identified, then we would evaluate those alternatives in our EIS.***

3.4 NO-ACTION ALTERNATIVE

Under the no-action alternative, the project would continue to operate under the terms and conditions of the existing license and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives.

3.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

We propose eliminating the following alternatives from detailed study in the EIS.

3.5.1 Federal Government Takeover

We do not consider federal takeover to be a reasonable alternative. Federal takeover of the Klamath Project would require Congressional approval. While that fact alone would not preclude further consideration of this alternative, there is currently no evidence showing that a federal takeover should be recommended to Congress. No

federal agency has suggested that federal takeover would be appropriate and no federal agency has expressed an interest in operating the Klamath Hydroelectric Project.

3.5.2 Nonpower License

A nonpower license is a temporary license the Commission would terminate whenever it determines that another governmental agency is authorized and willing to assume regulatory authority and supervision over the lands and facilities covered by the nonpower license. At this time, no governmental agency has suggested a willingness or ability to take over the project. No party has sought a nonpower license and, ***at this time,*** we have no basis for concluding that the Klamath Hydroelectric Project should no longer be used to produce power. Thus, we do not consider a nonpower license a reasonable alternative.

4.0 SCOPE OF CUMULATIVE EFFECTS ANALYSIS AND ENVIRONMENTAL ISSUES

4.1 CUMULATIVE EFFECTS

According to the Council on Environmental Quality's regulations for implementing NEPA (50 CFR § 1508.7), an action may cause cumulative impacts on the environment if its impacts overlap in space and/or time with the impacts of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Based on information in the license application, agency comments, other filings related to the project, and preliminary staff analysis, we have preliminarily identified the following resources that have the potential to be cumulatively affected by the continued operation of the Klamath Project in combination with other activities in the Klamath River Basin: ***geomorphology,*** water quantity, water ***quality,*** anadromous fish***, ESA-listed suckers, redband trout, and socioeconomic values***.

The Klamath Project is located on Klamath River. ***Most of t***he project water ***comes*** from Upper Klamath Lake, part of USBR's Klamath Irrigation Project. ***The Klamath Irrigation Project, which has been in existence since 1905, uses water from the Klamath and Lost rivers to supply agricultural water users in southern Oregon and northern California. Much of the water diverted from Upper Klamath Lake and the Klamath River for irrigation purposes returns to the Klamath River, along with certain return flows from the Lost River, at Keno reservoir.***

Since about 1992, USBR has modified Link River dam operations to benefit the shortnose sucker and the Lost River sucker, two Klamath River Basin fish listed in 1988 as endangered under the ESA. To protect these fish, FWS required that water levels in Upper Klamath Lake be managed within specific elevation limits. In 1999, in response to

ESA listing of Southern Oregon/Northern California Coasts coho salmon Evolutionarily Significant Unit (ESU), NOAA Fisheries provided a BiOp and an associated Incidental Take Statement to USBR containing terms and conditions that require USBR to provide for specific instream flows at Iron Gate dam and PacifiCorp to operate the dam to release those specified instream flows and implement identified ramping rates. USBR now defines Klamath Irrigation Project operations through annual operations plans in consultation with the NOAA Fisheries and FWS. The plan specifies how Upper Klamath Lake elevation and discharge at Iron Gate dam are to be regulated based on hydrological conditions.

USBR has been engaged in a planning process since the mid-1990s to develop a long-term operating strategy for the Klamath Irrigation Project. It began preparation of its EIS in 1997, and its preparation is ongoing. Alternatives identified in the USBR EIS could affect the Klamath Hydroelectric Project. Pursuant to a requirement of the May 2002 NOAA Fisheries BiOp for Klamath Irrigation Project operations, USBR is currently developing the Klamath River CIP. The CIP is a basinwide multi-interest initiative to address issues associated with endangered fish in the Klamath River Basin, and will address protection, restoration, and enhancement of fisheries and other aquatic resources. This program could be relevant to our cumulative effects analysis for the Klamath Hydroelectric Project

4.1.1 Geographic Scope

The geographic scope ***of*** the analysis defines the physical limits or boundaries of the proposed action's effects on the resources. Because the proposed action would affect the resources differently, the geographic scope for each resource may vary.

For ***geomorphology,*** water quantity, ***and*** water ***quality***, we include Upper Klamath Lake, ***the area encompassed by the Lower Klamath Lake Wildlife Refuge (which includes Lower Klamath Lake), the Lost River Diversion Channel, the Lost River from the confluence of the Lost River Diversion Channel to Tule Lake, Tule Lake,*** the mainstem Klamath River to its confluence with the Pacific Ocean***, and the Shasta, Trinity, Scott, and Salmon rivers (the four major tributaries to the Klamath River downstream of Iron Gate dam)***. We chose this geographic scope because project developments, major irrigation diversions (which ***occur*** at Upper Klamath Lake, ***Keno reservoir, and the Shasta and Trinity Rivers***) ***and returns (which occur at Keno reservoir)***, and land use practices have cumulatively affected ***geomorphology,*** water quantity***, and water quality*** within ***and downstream of*** the project area, and these effects have been linked by some parties to aquatic habitat ***effects*** in the mainstem Klamath River.

For ESA-listed sucker species (the Lost River and shortnose suckers), our geographic scope of analysis will include Upper Klamath Lake, the area encompassed by the Lower Klamath Lake Wildlife Refuge, the Lost River Diversion Channel, the Lost River from the confluence of the Lost River Diversion Channel to Tule Lake, Tule

Lake, and the mainstem of the Klamath River to Iron Gate dam. This area includes the lake and reservoir habitat that is suitable for these species as well as riverine migratory corridors between the lakes and reservoirs.

For redband trout, we include all habitat that was historically accessible to redband trout upstream of Iron Gate dam. This would include spawning, rearing, and adult habitat that is currently directly influenced by project operations, fish passage facilities operated by PacifiCorp and USBR, and potentially accessible habitat upstream of Upper Klamath Lake.

For anadromous fish, we include the mainstem Klamath River ***and*** all habitat that was historically ***accessible upstream of the mouth of the river.*** We chose this geographic scope because project developments, irrigation diversions, and land use practices have cumulatively affected the condition of upstream historic habitats as well as the downstream mainstem river corridor that is currently used by anadromous fish***. Anadromous fish that use main stem tributaries downstream of Iron Gate dam for spawning and rearing habitat could be cumulatively affected by water quality and quantity in the main stem of the river (which could block upstream adult movement or downstream juvenile movement), as well as the timing of fish released from or returning to the Iron Gate Hatchery (which could create crowding conditions and conflict with key habitat space limitations, such as thermal refugia). We will also consider appropriate management plans for salmon fisheries including those relating to the Klamath Management Zone, which extends 200 miles offshore from Humbug Mountain, Oregon, to Horse Mountain (near Shelter Cove), California. We will consider these plans because harvest (including commercial, tribal, and recreational) and escapement for Klamath stocks can affect the numbers of adult salmonids returning to the Klamath River Basin to spawn. We acknowledge that management measures for Klamath River fall Chinook currently constrain fishing on other salmon stock, from central Oregon to central California. As mentioned above, Klamath project structures and operation can affect adult spawning and subsequent downstream migration of juvenile salmonids which, in turn, serve as the basis for future harvests.***

For socioeconomic values, we include the same geographic area defined for anadromous fish in the previous paragraph. We also include the geographic area encompassed by the Klamath Irrigation Project (KIP), which includes about 240,000 acres of irrigable lands in southern Oregon and northern California, adjacent National Wildlife Refuges, as well as some other non-KIP lands that consumptively use Upper Klamath River Basin water. We include the same geographic area defined for anadromous fish because numerous actions that can influence the abundance of anadromous fish stocks, including relicensing the Klamath Hydroelectric Project, influences the incomes of people who depend on that resource for both commercial (including tribal) and recreational purposes. We include the area encompassed by the Klamath Irrigation Project, as well as the additional water users, including the refuges, because they receive reduced electrical rates and other benefits pursuant to a 1956 contract between the licensee of the Klamath Hydroelectric Project and the U.S.

Bureau of Reclamation. This contract is scheduled to expire in 2006 and the loss of financial benefits associated with this contract would influence the economic viability of those entities currently receiving them. This overlapping action represents a potential cumulative socioeconomic effect that we will consider in our EIS.

4.1.2 Temporal Scope

The temporal scope of our cumulative analysis in the EIS will include past, present, and future actions and their possible cumulative effects on each resource. Based on the license term, the temporal scope will look 30 to 50 years into the future, concentrating on the effect on the resources from reasonably foreseeable future actions. The historical discussion will, by necessity, be limited to the amount of available information for each resource.

4.2 RESOURCE ISSUES

In this section, we list the environmental issues ***that we intend to*** address in the EIS. We identified the issues, which are listed by environmental resource area, through our review of the license application and the Commission's record for the Klamath Hydroelectric Project. ***We will also evaluate environmental measures that address the issues.*** This list is not intended to be exhaustive or final, but it is an initial listing of issues that have been raised and could be significant. ***Our EIS will analyze the effects of the existing project, the project as proposed by PacifiCorp, and additional alternative environmental measures and reasonable project configurations.***

4.2.1 Geology and Soils

- ***The effects of trapping bedload sediments within project reservoirs and of project operations (including actions that entail ground disturbances) on shoreline erosion, reduction of fine sediments in nearshore and riparian habitats, altered channel complexity, and armoring of riverine habitat within project-affected waters, including downstream of all project dams.***
- ***The effects of trapping gravel and fine sediment within the project reservoirs and of project operations on the availability of spawning and rearing habitat for resident and anadromous fish downstream of all project dams (including Iron Gate), and the potential benefits of gravel augmentation.***
- ***If reasonable development retirement alternatives are identified, the disposition of sediment trapped in those project reservoirs in the event of project development retirement with dam removal.***
- ***The effects of road maintenance and sidecast material along the J.C. Boyle canal on habitat and recreational opportunities at the J.C. Boyle bypassed reach.***

- ***Measures to address erosion issues at the J.C. Boyle canal emergency spillway channel and prevent future erosion from overflow events.***

4.2.*2* Water Resources

- The potential effects of proposed and alternative flow regimes on water temperature and DO concentrations in the reaches influenced by project operations.
- The potential effects of implementing proposed and alternative measures to improve water quality, including DO augmentation in Iron Gate reservoir, aeration of waters released from Iron Gate dam, and installation of low-level outlet***s*** at Iron Gate ***and Copco 1 reservoirs***.
- The effects of ***the project and proposed and recommended environmental measures*** on ***nutrient dynamics,*** algae blooms ***(including Aphanizomenon and Microcystis aeruginosa), ammonia toxicity, and taste and odor compounds*** in project-***affected*** waters***, including downstream of Iron Gate dam.***
- The effects of ***the project*** and proposed ***and recommended*** environmental measures on compliance with applicable state water quality standards ***and designated beneficial uses*** in Klamath Project reservoirs and ***in project-affected reaches including*** the Klamath River downstream of the project.
- The ***potential*** effects on water resources of decommissioning the East Side and West Side developments and of removing the Keno development from the project.
- ***If reasonable development retirement alternatives are identified, the potential*** effects of retiring those developments ***on compliance with applicable state water quality standards and designated beneficial uses.***

4.2.*3* Aquatic Resources

- ***The potential environmental and economic costs and benefits of alternative approaches for*** restoring runs of ***native*** anadromous fish ***species (including spring and fall run Chinook salmon, coho salmon, summer and winter steelhead, and Pacific lamprey)*** to ***historic habitats*** within and upstream of the project.
- ***The potential effects of anadromous fish interactions with resident redband trout following restoration.***
- The effects of water quality conditions ***(including temperature, DO, ammonia toxicity, and chemical contaminants)*** on aquatic resources in project reservoirs, affected reaches, and the lower Klamath River, and the potential benefits of measures to improve water quality.

- The potential effects of using water ***released from project dams and changing the depth of withdrawal from project reservoirs*** to improve ***water temperatures and*** flows for anadromous fish in the lower Klamath River.
- ***The effects of the project on the incidence of fish pathogens and parasites and, as applicable, their alternate hosts within and downstream of the project, and measures to reduce the incidence and severity of disease-related fish kills.***
- The effects of ***proposed and alternative*** Iron Gate Hatchery operations (***including the potential to use alternative water sources and satellite production facilities)*** on anadromous fisheries in the lower Klamath River ***(wild and hatchery stocks), the*** appropriateness of ***the*** current production targets ***and funding structure, and the role the hatchery should play in future anadromous fish restoration efforts upstream of Iron Gate dam.***
- The effects of flow fluctuations caused by load following (peaking) operations on aquatic resources ***(macroinvertebrates, resident and, potentially, anadromous fishes)*** in the J.C. Boyle peaking reach.
- The effects of flow diversion and proposed and recommended minimum flows ***and ramping rates*** on aquatic resources ***(macroinvertebrates, resident and, potentially, anadromous fishes)*** in ***all project-affected reaches, including*** J.C. Boyle, Copco 2, Fall Creek, and Spring Creek bypassed reaches***, Jenny Creek, and downstream of Iron Gate dam***.
- The effects of fish entrainment and entrainment-related mortality on fish populations in project reservoirs and reaches, and the potential benefits of installing protective measures.
- The effectiveness of existing ***and proposed*** upstream ***and downstream*** passage facilities ***for resident fish species (including redband trout and suckers),*** and the potential benefits of improving upstream ***and downstream*** passage for resident fish.
- The ***potential*** effects on aquatic resources of decommissioning East Side and West Side developments and of removing Keno development from the project.
- ***If reasonable development retirement alternatives are identified, the potential*** effects on aquatic resources of retiring those developments.
- ***The potential effects of project facilities and operations on fish given special status by appropriate resource agencies (e.g., Pacific lamprey, river lamprey, and western brook lamprey) and appropriate measures to minimize project-related effects.***

4.2.*4* Terrestrial Resources

- The potential effects of project operations on plants given special status by appropriate resource agencies (e.g., ***Pendulus bulrush, red root yampah, Howell's yampah, Bellinger's meadow foam, pygmy monkey flower,*** Peck's milkvetch, pumice grapefern, and Ashland thistle) and appropriate measures to minimize project***-related*** effects.
- Management of noxious weeds on project lands along access roads, ***primary transmission lines,*** around powerhouses, and at recreation facilities.
- The effects of ***existing,*** proposed, and recommended flow regimes ***at project-affected reaches (including downstream of Iron Gate dam) and water level fluctuations at project reservoirs*** on riparian vegetation and wetlands and appropriate measures to minimize ***project-related*** effects.
- The effects of ***existing,*** proposed***,*** and recommended flow releases ***and associated reservoir water level fluctuations*** on wildlife habitat associated with project-affected reservoir***s*** and stream reaches, and appropriate measures to minimize effects.
- ***The effects of any changes in water level management at Keno reservoir on riparian, wetland, and wildlife habitat at Keno reservoir and the Lower Klamath Lake National Wildlife Refuge, which receives water via gravity feed from Keno reservoir (we will assess this regardless of the Commission's determination regarding whether Keno development should be a part of the project).***
- ***The effects of the proposed decommissioning of the East Side and West Side developments on terrestrial resources.***
- PacifiCorp's responsibility for management of critical winter range to maintain high quality deer and elk habitat.
- ***The effects of project-related use of project roads on terrestrial resources.***
- ***The effects of project-related recreational facility development and use, as well as informal project-related recreational use (e.g., off-highway vehicle use, dispersed camping) on sensitive plant and wildlife habitats (e.g., areas around springs and seeps) and other terrestrial resources.***
- ***The effects of project-related facilities on wildlife movement and the need for measures to reduce the effects of habitat fragmentation.***
- ***The potential for raptor collisions and electrocution at project-related transmission lines, and the need for corrective action if structures do not comply with current industry standards to prevent such effects.***

- The potential effects of project operations on wildlife species occurring in the project vicinity given special status by appropriate resource agencies (e.g., the Swainson's hawk, the American peregrine falcon, the greater sandhill crane, the western yellow-billed cuckoo, the great gray owl, the willow flycatcher, the bank swallow, the Sierra Nevada red fox, the California wolverine, and the Siskiyou Mountains salamander).
- ***If reasonable development retirement alternatives are identified, the potential effects on terrestrial resources of retiring those developments.***

4.2.*5* Threatened and Endangered Species

- The effects of PacifiCorp's ***proposed operations and environmental measures, and alternatives to those operations and measures,*** on the threatened Southern Oregon/Northern California Coasts coho salmon ESU.
- The effects of PacifiCorp's ***proposed operations and environmental measures, and alternatives to those operations and measures,*** on the endangered Lost River sucker and the endangered shortnose sucker.
- The potential effects of ***PacifiCorp's proposed operations and environmental measures, and alternatives to those operations and measures,*** on the following federally listed plants: Gentner's fritillaria (endangered), Applegate's milkvetch (endangered), and slender orcutt grass (threatened).
- The effects of project-related human disturbance, including proposed and recommended bypassed reach flows, on the following federally listed wildlife: bald eagle (threatened), northern spotted owl (threatened), western snowy plover (threatened), California red legged frog (threatened), Canada lynx (threatened), and gray wolf (endangered).
- ***The potential effects of PacifiCorp's proposed change in the project boundary to exclude the East Side, West Side, and Keno developments on threatened and endangered species.***
- ***If reasonable development retirement alternatives are identified, the potential effects of retiring those developments on threatened and endangered species.***

4.2.*6* Recreational Resources

- The potential effects of the proposed action and alternatives on recreational access to project waters, existing recreational activities, and future recreational activities within the project area.
- The ability of existing and proposed recreational facilities and opportunities to meet current and future ***project-related*** recreational demand.

- The effects of flow releases and operations at the J.C. Boyle dam, ***J.C. Boyle*** powerhouse, ***and Copco No. 2 dam*** on whitewater boating and angling opportunities.
- The effects of current and proposed project facilities and operations on recreational opportunities along the bypassed reaches.
- The effects of current and proposed project facilities and operations on recreational opportunities at project reservoirs.
- The effects of project operations on recreational opportunities on the Klamath River downstream of Iron Gate dam, ***including fishing, whitewater boating, waterplay/swimming, and water aesthetics.***
- The effects of current and proposed project facilities and operations on Upper Klamath River designated Wild & Scenic River reach's outstanding recreational resource values.
- The potential effects of proposed closures of existing dispersed camping areas (both defined and undefined) and day-use areas on the campsite capacity of the area.
- The effects of algae blooms in project-***affected*** waters on recreational uses, ***including downstream of Iron Gate dam.***
- ***If reasonable development retirement alternatives are identified, the potential effects on recreation of retiring those developments.***

4.2.7 Land Use and Aesthetic Resources

- The compatibility of the proposed action and alternatives with the General Plan of Siskiyou County, California (1973), the Siskiyou County Zoning Ordinance (1994), and the Klamath County Comprehensive Plan (1981).
- ***Which roads in the project area serve project purposes, which roads should be included in the project boundary, and the entity that should be responsible for maintaining project-related roads.***
- ***The effects of current, proposed, and recommended project facilities and operations on the resource values of two Klamath River reaches designated as Wild and Scenic Rivers.***
- The potential effects of the ***existing project***, proposed action***,*** and alternatives, including recreational enhancements, on the aesthetic resources of the project area ***and compatibility with BLM's Visual Resource Management standards, as appropriate***.
- The effects of PacifiCorp's proposed change in the project boundary to exclude the East Side, West Side, and Keno ***developments on land use and aesthetics***.

- ***If reasonable development retirement alternatives are identified, the potential effects on land use and aesthetics of retiring those developments.***

4.2.*8* Socioeconomic Resources

- The effects of relicensing the project on the socioeconomic conditions of communities influenced by project operations.
- ***Whether relicensing the project would disproportionately influence any minority and low-income populations.***
- ***The potential effects of PacifiCorp's proposed change in the project boundary to exclude the East Side, West Side, and Keno developments on socioeconomic conditions of communities in the vicinity of these developments.***
- ***If reasonable development retirement alternatives are identified, the potential effects on socioeconomic conditions of retiring those developments.***

4.2.*9* Cultural Resources

- The effects of project operations and proposed ***and recommended*** environmental measures, including existing and proposed recreational facilities and use, on archeological and historic sites ***and resources*** of concern to members of interested ***t***ribes (the Klamath Tribes, Shasta Tribe and Shasta Nation, Quartz Valley ***Indian Community***, Yurok Tribe, Hoopa ***Valley*** Tribe, Karuk Tribe of California, and the Resighini Rancheria).
- Whether or not the APE as defined in the license application (i.e., the project boundary) is appropriate.
- ***The effects of existing, proposed, and recommended environmental measures on tribal trust resources.***

4.2.*10* Developmental Resources

- The effects of proposed ***and recommended environmental*** measures on project economics.
- ***If reasonable development retirement alternatives are identified, the potential effects of retiring those developments on project economics.***

4.2.*11* Consistency with Comprehensive Plans

- Whether or not, and under what conditions, relicensing the project would be consistent with relevant comprehensive plans on the Commission's comprehensive plan list. Commission staff has reviewed the list. Our

preliminary analysis is that the following comprehensive plans may be relevant to the Klamath Project:[6]

California

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California Department of Water Resources. 1983. The California water plan: projected use and available water supplies to 2010. Bulletin 160-83. Sacramento, CA. December 1983. 268 pp. and attachments.

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California State Water Resources Control Board. 1975. Water Quality Control plan report. Sacramento, CA. Nine volumes.

California - The Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, CA. March 1983. 39 pp. and appendices.

Fish and Wildlife Service. California Department of Fish and Game. California Waterfowl Association. Ducks Unlimited. 1990. Central Valley habitat joint venture implementation plan: a component of the North American waterfowl management plan. Department of the Interior, Portland, OR. February 1990. 102 pp.

[6] Many of these filed plans may have been revised or may be obsolete even though they are included on the Commission's most recent list of approved comprehensive plans (February 2004). In the EIS, the Commission staff will evaluate consistency with the current versions where they are known to exist. Entities are encouraged to file revised comprehensive plans or new plans with the Secretary of the Commission.

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Oregon

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Bureau of Land Management. 2003. Draft-Upper Klamath River management plan. Lakeview, OR. April 2003.

Bureau of Land Management. 1994. Klamath Falls resource area resource management plan and environmental impact statement. Department of the Interior, Klamath Falls, OR. September 1994. Three volumes and maps.

Bureau of Land Management. 1996. Klamath Falls resource area: Upper Klamath Basin and Wood River wetland resource management plan, including Record of Decision. Department of the Interior, Klamath Falls, OR. February 1996.

Bureau of Land Management. June 1995. Medford District resource management plan, including Record of Decision. Department of the Interior. Medford, OR. 248 pp. and maps.

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5.0 EIS PREPARATION SCHEDULE

The tentative schedule for preparing the Klamath Hydroelectric Project EIS is:

Major Milestone	Target Date
REA Notice Issued	***September*** 200***5***
Draft EIS Issued	***April*** 200***6***
Final EIS Issued	***October*** 200***6***

6.0 PROPOSED EIS OUTLINE

The preliminary outline for the Klamath Project EIS is as follows:

SUMMARY

1.0. PURPOSE OF ACTION AND NEED FOR POWER
- 1.1 Purpose of Action
- 1.2 Need for Power
- 1.3 Interventions
- 1.4 Scoping
- 1.5 Recommendations, Term, and Conditions

2.0 PROPOSED ACTION AND ALTERNATIVES
- 2.1 No-action Alternative
  - 2.1.1 ***Existing*** Project ***Facilities***
  - ***2.1.2 Existing Project*** Operations
  - ***2.1.3 Existing Environmental Measures***
- ***2.2 PacifiCorp's Proposal***
  - ***2.2.1 Proposed Project Facilities***
  - ***2.2.2 Proposed Project Operations***
  - ***2.2.3 Proposed Environmental Measures***
  - ***2.2.4 Proposed Project Boundary***
- ***2.3 Modifications to the Proposed Action***
  - ***2.3.1 Mandatory Conditions***
  - 2.***3***.2 Staff's Alternative

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