PACIFIC COAST FEDERATION of FISHERMEN'S ASSOCIATIONS

Please Respond to:

☐ **California Office**
P.O. Box 29370
San Francisco, CA 94129-0370
Tel: (415) 561-5080
Fax: (415) 561-5464

www.pcffa.org

[X] **Northwest Office**
P.O. Box 11170
Eugene, OR 97440-3370
Tel: (541) 689-2000
Fax: (541) 689-2500

U.S. Senate Energy & Natural Resources Committee

Hearing on

Water Resources Issues in the Klamath Basin

June 20, 2013
Washington, DC

SUPPLEMENTAL STATEMENT FOR THE RECORD
by the
Pacific Coast Federation of Fishermen's Associations (PCFFA)

WHY CONGRESS MUST ACT TO RESTORE THE KLAMATH

By Glen Spain, PCFFA NW Regional Director

==========

The water crisis in the Upper Klamath Basin has major regional impacts, including throughout much of the West Coast commercial ocean salmon fisheries. The depressed fall-run chinook salmon stocks of the Klamath are in the very center of the West Coast's "Lower 48" ocean salmon commercial fishery, and thus intermingle in the ocean with all other salmon stocks all the way from Monterey, CA to central Washington (see APPENDIX 1 attached). Yet in spite

of a helpful upward spike in escapement numbers for 2012, these Klamath-origin fall chinook stocks still remain very weak.

One of the most important and most urgent actions that can be done to restore the battered West Coast ocean commercial salmon fisheries in the "Lower 48" is to restore the valuable and once-great salmon runs of the Klamath River, once the third largest runs in the U.S. outside of Alaska.

On February 18, 2010, after nearly 100 years of increasingly bitter Klamath Basin "water wars," including many lawsuits, and after several disastrous Klamath-driven 2005, 2006 and 2007 partial or complete shutdowns of ocean commercial salmon fisheries over more than 700 miles of coastline, some 43 major stakeholder groups and government agencies (including two Governors, one a Republican and one a Democrat) came together to announce that they had finally reached a "Klamath Settlement" that gave real hope for stabilizing and restoring that key West Coast salmon-producing basin -- and ultimately restoring thousands of lost jobs.

Yet the "Klamath Basin Economic Restoration Act" (S. 1851 and H.R. 3398), a bill which would have fully implemented that key Settlement, was more or less ignored by the just ended 112th Congress, and the bill never even got a hearing.

Now, more than three years after the Settlement was signed, and for purely ideological reasons that fly in the face of all the facts, certain members the U.S. House of Representatives continue to delay House approval, trying to block it in Congress.

For the West Coast salmon-dependent communities of California, Oregon and southern Washington, continued Congressional inaction on solving the Klamath's salmon decline problems is simply not acceptable.

Failure to pass the necessary legislation to implement the landmark Klamath Settlement Agreements puts the entire mixed-stock ocean commercial fisheries of those three states – worth several hundred million dollars a year – at continued risk of future Klamath-driven coastwide closures.

Why the Klamath Matters to Commercial Fishermen

The Klamath Basin was historically the third-largest salmon producing river system in the U.S. outside of Alaska, with its large original salmon populations only surpassed by the Columbia and Sacramento-San Joaquin Rivers. Before European development, the Klamath produced an estimated average of 880,000 returning adults salmonids each year. Today, however, more than 90% of its salmon habitat has been destroyed or blocked by aging dams.

Lost salmon habitat means declining populations. In years like 2006, in which the fall-run chinook (the only healthy Klamath salmon run still left) could not even meet its 35,000 "minimum spawner floor," (the minimum ocean escapement that allows any harvest), these declines have meant widespread or total "weak stock management" ocean salmon season closures over most of the northern California and Oregon coastline, triggering severe restrictions even well into southern Washington.

That 2006 closure alone cost the West Coast fishing industry more than $100 million in economic losses, and required $60.4 million in Congressional disaster assistance. Only slightly less depressed seasons also occurred in 2005 and 2007 for the same reasons, also costing our industry many tens of millions of dollars that has never been compensated, and putting many coastal fishing jobs at risk.

And unless something is dramatically changed in the Klamath Basin, such as the Congressional approval and implementation of the Klamath Settlement Agreements, this perpetual boom-bust cycle of economic losses and Congressional disaster assistance will occur every few years, with no end in sight. Thousands of fishery jobs and dozens of coastal communities will remain at risk.

Removing Fish-Killing Dams

Today the heaviest impact on Klamath salmon production by far comes from a series of four small hydropower power dams originally all built since 1918 without fish passage (a lack which would be illegal today), along the Klamath River near the California-Oregon border. These dams are owned by PacifiCorp (aka Pacific Power), a privately owned but publicly regulated utility company providing power to about 560,000 Oregon and 40,000 California customers.

But these are not large dams, nor are they particularly valuable as power producers. The four dams combined have in fact generated less than 82 MW of electrical power on average (less than 2% of PacifiCorp's total power portfolio) over the last 50-year Federal Energy Regulatory Commission (FERC) license. By comparison, a single modern power plant could reliably generate more than 1,000 MW of power. Even off-the-shelf wind turbines can now generate up to 6 MW each. Just very modest energy conservation investments could also very cost-effectively make up the difference.

It would thus take relatively little additional investment to replace the mere 82 MW these four dams combined actually generate, with many such opportunities in PacifiCorp's massive six-state power grid. In fact, PacifiCorp is already committed to bringing at least 1,400 MW of brand new renewable (i.e., non-carbon) electrical power online by 2015 (See APPENDIX 2 attached for citations). This is *more than 17 times* the total power losses from Klamath dam removal. The Company actually expects to considerably exceed that goal.

Reservoirs behind the dams also create or greatly contribute to serious river water quality problems, including slowing down and warming the water above tolerance levels for cold-water salmon, concentrating nutrients, curtailing natural gravel recruitment, and encouraging the explosive growth of toxic blue-green algae as well as encouraging the growth of fish pathogens downriver such as *Ceratomyxa shasta* and *Parvicapsula minibicornis*. Toxic algae blooms and massive outbreaks of these fish pathogens are both now endemic to the Klamath Basin – all because of decreasing water quality traced largely to the dams.

However, that 50-year FERC license to operate these four dams expired in April 2006, and is only being extended annually while an ultimate decision on whether to relicense them is pending. But fixing these dams up to modern relicensing standards would likely cost more than

they are now worth, especially for such a small amount of power, and especially under the terms of the portion of the Settlement dealing with the dams, which is the "Klamath Hydropower Settlement Agreement (KHSA)."

Under the KHSA, therefore, PacifiCorp has agreed that these four economically obsolete hydropower dams would be completely taken down in 2020 -- and full salmon passage restored. This would restore access for salmon to more than 420 stream-miles that were previously blocked, nearly doubling the river's valuable salmon runs.

More Water For Klamath Salmon

The other major constraining factor for lower river salmon production is sheer lack of water for fish. In the upper basin, about 220,000 acres of farmland is now irrigated as part of the federal Bureau of Reclamation Klamath Irrigation Project. The Bureau's water right claim is currently for effectively unlimited amounts of water, so long as they can use it for irrigation. Prior to recent federal Endangered Species Act (ESA) constraints, the Klamath Irrigation Project typically diverted up to 435,000 acre-feet of water from Upper Klamath Lake for this purpose, with its higher diversions in the driest water years -- thus exacerbating the impacts of all droughts on lower river salmon.

At least another 110,000 acres of irrigated lands also exist that are hydrologically *above* the federal irrigation Project, along the Williamson and Sprague Rivers which feed Upper Klamath Lake. These lands either divert water directly from the flows to Upper Klamath Lake or irrigate from groundwater pumping, some of which could be reducing nearby stream flows by curtailing inflows from aquifer springs.

A big source of water conflicts in the upper Klamath basin revolves around ESA protections both for resident fish in Upper Klamath Lake and for ESA-listed Klamath coho salmon below the dams. Water over-allocation led to a major confrontation between the federal ESA and state-based water rights during the near-record drought of 2001. That year many Klamath Project farmers who were dependent upon federal Project water deliveries found themselves losing much of their anticipated water deliveries (and their crops), causing serious economic losses to these Project-dependent farmers and resulting in a sharp political backlash.

Yet in a politically-driven effort to restore full irrigation deliveries in the upper basin, in spite of continued drought, in 2002 the Bush Administration then severely cut back water to the lower basin just as the adult salmon runs were returning to spawn, causing the premature death of more than 70,000 adult spawners before they could lay their eggs -- said to be the largest adult fish kill in U.S. history.

These and similar back-to-back water, farming and fisheries crises in 2001, 2002, 2005, 2006, 2007 and 2010 resulted in rotating economic disasters throughout the Klamath basin, punctuated by nearly constant litigation and political gridlock. These back-to-back crises also required large amounts in federal disaster aid between the years 2001 and 2010 – *about $17 million in federal disaster aid per year average,* and in one year (2006) as much as $60.4 million. Similar rotating economic disasters – and consequent need for ever more federal disaster assistance –

would likely recur in the future unless the systemic problems in the Klamath basin are ultimately fixed. The "cost of doing nothing" in the Klamath is very high.

This past decade of disasters amply demonstrates the desperate need for change in the Klamath basin for both farmers and fishermen alike. The two parallel Klamath Settlement Agreements represent that much needed change.

The Klamath Settlement Agreements were the result of nearly 10 years of hard fought efforts by all the basin's major stakeholder groups, including PCFFA representing the interests of ocean salmon fisheries, to finally resolve these problems and to restore the Klamath's once-great salmon runs.

The Klamath Settlement is a bi-partisan, bottom-up, stakeholder-driven and both biological and economic restoration plan. It is also precisely the sort of long-term, locally-based restoration plan we were told by previous Congress's was needed.

This once-in-a-lifetime economic restoration opportunity should not be sabotaged by Congressional foot-dragging. The Klamath Basin will most certainly return to the chaos and conflicts of the past if these conflicts are not ultimately resolved through this Settlement. There is no other viable alternative even remotely on the table.

How Klamath Restoration Benefits Commercial Fishermen And Coastal and Farming Communities

For more than 90 years now, the four PacifiCorp-owned dams have blocked access to more than 420 stream-miles of once fully occupied salmonid habitat above the dams – habitat which fishery biologists estimate could still support as many as 111,000 additional salmonids.

In other words, the salmon runs of the Klamath would nearly double as a result of full implementation of both the habitat restoration and dam removal components of the Klamath Settlement, restoring hundreds of lost fishery-dependent jobs. Because the Settlement also provides more water certainty, many more jobs would also be restored to upper basin farming communities as well. Estimates under the recently completed NEPA analysis indicated that full implementation of the Klamath Settlement Agreements would mean about 4,600 additional jobs to the basin and region (see APPENDIX 3 attached). And most of those jobs in both the farming and fisheries sectors would be permanent. In these depressed rural economies this is no small economic benefit.

Once approved by Congress, the Klamath Settlement Agreements would, among other benefits to salmon fisheries: (1) permanently restore between 130,000 and 230,000 acre-feet of water back to the Klamath River to benefit salmon, the total amount each year depending on rainfall; (2) help "drought proof" the lower river and its salmon runs as much as humanly possible, including implementing the Settlement's first ever "Drought Plan" for the river; (3) restore access for salmon to more than 420 stream-miles of previously occupied habitat now blocked by the four obsolete Klamath dams; (4) greatly improve Klamath River water quality, gravel recruitment and other ecological functions necessary for maximizing salmon production;

(5) greatly diminish the incidence of various fish pathogens and diseases that are exacerbated by current poor in-river water quality conditions; (6) provide the Klamath and Tulelake National wildlife refuges a guaranteed annual water supply for the first time, and; (7) authorize a highly cost-effective and coordinated 50-year salmon habitat restoration program to help fully restore the basin's damaged salmon habitat over time.

A thorough scientific and economic NEPA analysis has already been done on the likely impacts of the Klamath Settlement, including dam removal, and those results are very encouraging. *None of the various "scare stories" about toxic sediments, impacts on flood control or irrigation impacts have been shown to have any merit.* More than 50 studies were completed for this NEPA analysis, and the analysis was subjected to highly unusual triple levels of independent peer review, assuring that all potential biases have been eliminated. No complaints of such bias have ever been upheld, nor found to have any merit.

*****

==========

Glen Spain is PCFFA's NW Regional Director and Lead Negotiator in the Klamath Settlement Process. He can be reached at the PCFFA NW Office at: PO Box 11170, Eugene, OR 97440-3370, (541)689-2000, Email: fish1ifr@aol.com. PCFFA's Home Page is at: www.pcffa.org.

==========

For more information on the Klamath Settlement see:

- NEPA Economic, Engineering, Scientific Studies and Impacts Analysis: www.klamathrestoration.gov. A "Summary of Key Conclusions" is at: http://klamathrestoration.gov/sites/klamathrestoration.gov/files/Final.Summary.Sept.21.pdf

- General information on the Klamath Settlement and its benefits: www.klamathrestoration.org

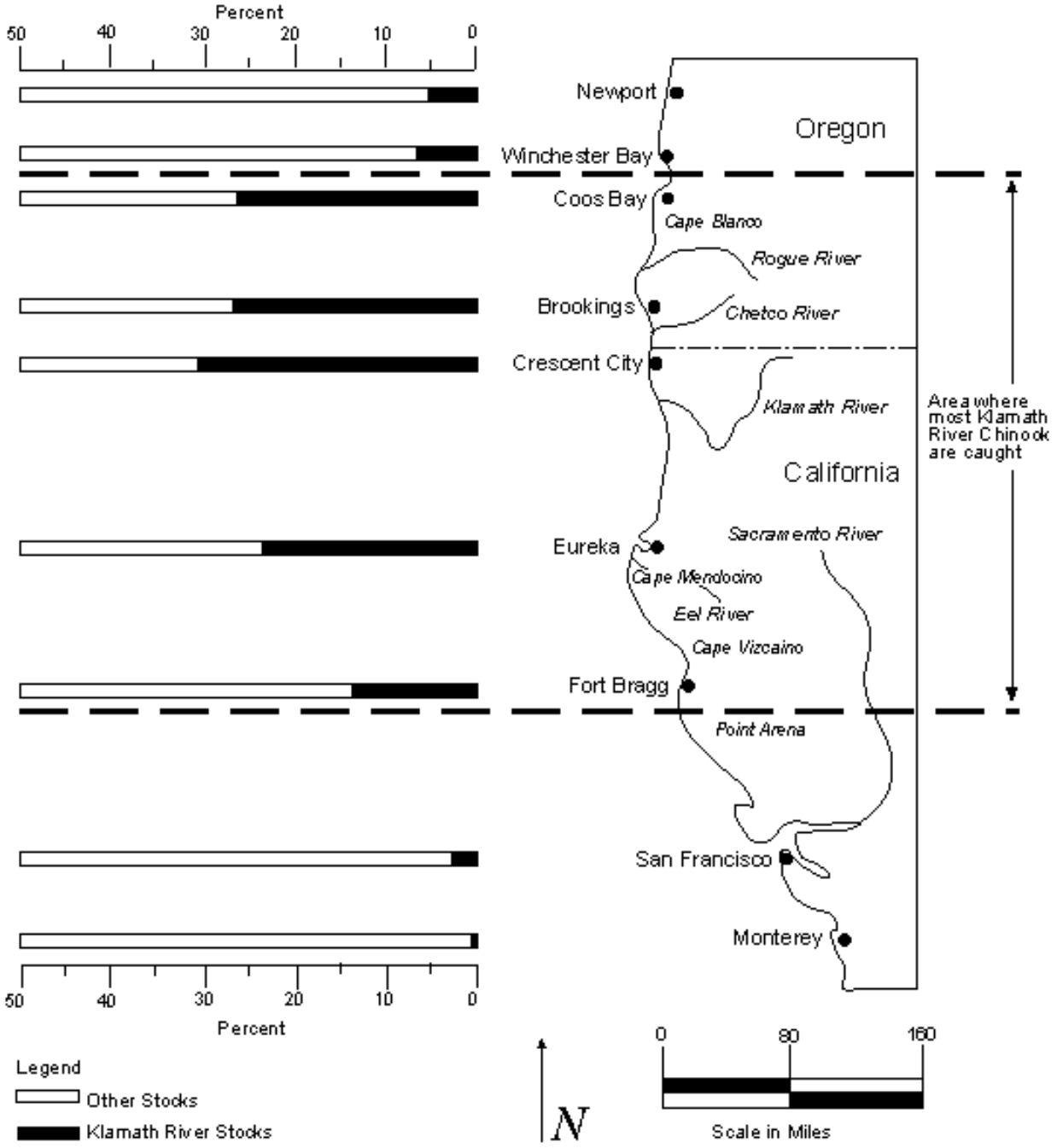
- See how the Klamath Settlement will benefit west coast commercial fisheries: www.pcffa.org and click on the "Klamath" links at the top.

- For details about the Klamath Settlement, see: "The Klamath Settlement: Hope for West Coast Salmon Fishermen," (July, 2010 FN at: www.pcffa.org/fn-jul10.htm). For how the Klamath is key to managing all West Coast ocean salmon fisheries in the Lower 48, see "Why the Klamath Matters to Fishermen" (August, 2001 FN at: www.pcffa.org/fn-aug01.htm).

****

APPENDIX 1

Contribution of Coded Wire Tagged Klamath Fall Chinook by Port in the 1979–1982 Ocean Fisheries



Source: US Dept. of Interior (1985), "Klamath River Basin Fisheries Resources Plan," prepared by CH2M Hill (February, 1985).

APPENDIX 2:

Why Klamath Dam Removal Makes Economic Sense

The 1956 Federal Energy Regulatory Agency (FERC) 50-year license to operate the Klamath Hydropower Project expired in 2006. PacifiCorp, the company that owns the Klamath dams (J.C. Boyles Dam in Oregon, and CopCo Dams 1 & 2 and Iron Gate Dam in California, in river-descending order), can limp along on *temporary* one-year FERC license extensions only while an active application for FERC relicensing is pending. That time is coming to a close and a decision on the fate of these dams must soon be made. No privately owned dam can legally operate without a valid FERC license.

Whatever choice PacifiCorp (also called "Pacific Power" in California) makes, the company's costs of that decision will ultimately be charged to its customer/ratepayers. *This is how electrical utilities work*. Their only source of revenues is generally the creation of electrical power they then sell to their customers, collecting enough revenues from their customers to fund their operations. This is all regulated by state Public Utilities Commissions (PUCs) in each state where they operate, as the watchdog agencies that assures that their state's customers get charged fair, reasonable – *and generally the lowest-cost* – power rates for the services they receive.

There are only two legal options for these Klamath Hydropower Project dams, both of which will cost PacifiCorp ratepayers money: (1) fix them up and relicense them to modern standards, which turns out will cost *at least* $460 million, and quite likely more than $500 million for all four dams, once all (currently unknown) water quality mitigation costs are added in, according to PacifiCorp testimony to the PUCs,[1] or; (2) decommission and remove these aging dams entirely – which it can now do under the Klamath Hydropower Settlement Agreement (KHSA) for a "capped" cost to its customers of only $200 million, with the rest paid by the State of California.[2]

The best current estimate for the total costs of decommissioning and full removal of the four dams, so that the Klamath River and its salmon can once move run freely through them, is about $292 million (2020 dollars), including various environmental mitigation measures.[3] This is far less than the original amount estimated of $450 million.

On May 5th, 2011, the California Public Utilities Commission (CPUC) formally confirmed that dam removal under the KHSA is indeed the most cost effective, least risk and

[1] See CPUC Docket No. A10-03-015, *Testimony of Cory Scott*, Exhibit PPL-300 (March 18, 2010), pg. 6; Opening Brief of PacifiCorp (Nov. 17, 2010), pg. 6. PacifiCorp's "conservatively estimates" relicensing costs of at least $400 million in capital improvements, plus $60 million in operations costs and maintenance over a 40-year relicensing term, not counting likely large (but still unknown) additional costs for any water quality mitigations that may be required to meet state 401 Certification requirements in Oregon and California.

[2] The rationale for this bi-state equitable cost-sharing scheme is that nearly 600,000 Oregonians are PacifiCorp customers already paying into a Klamath Dam Removal Trust Fund monthly, while only about 40,000 Californians are ratepayers – but most economic benefits for restored Klamath salmon fisheries will be in California.

[3] See *Detailed Plan for Dam Removal – Klamath River Dams* (Sept. 15, 2011), Table ES-1, pg. 7, at: http://klamathrestoration.gov/sites/klamathrestoration.gov/files/Klamath_DetailedPlan2011.pdf.

therefore best alternative for PacifiCorp's customers as compared to relicensing.[4] A prior September 16, 2010, ruling by the Oregon PUC came to the same conclusion.[5] Funds are now being collected in monthly rate surcharges of about $1.5 million/month from PacifiCorp ratepayers in both states to provide for the initial $200 million toward dam removal by 2020.

The reality is that all four dams combined do not generate all that much power. Although the whole Klamath Hydroelectric Project is technically rated for maximum power generation of about 169 megawatts (MW), these dams cannot run at maximum capacity 24/7, especially during summers when turbine flows are lowest. The entire Project combined actually generated only about 82 MW of power on average over the past 50 years, according to FERC records.[6] A single modern electrical power plant can continuously generate 1,000 MW or more.

And according to estimates by FERC, even after all the expensive retrofitting to meet modern standards for relicensing, these dams would then only generate about 61 MW of power on average -- *about 26% less than they do today*.[7] Relicensing thus means spending a great deal of money for what is actually very little power. In fact, although PacifiCorp disagrees with these numbers, FERC itself estimated in its 2007 Final Environmental Impact Report (FEIS) on relicensing that even if fully relicensed, the required retrofitting would be so expensive that these dams would then operate *at more than a $20 million/year net loss*.[8]

In short, keeping the Klamath dams relicensed means extremely expensive fixes for a lot less power, and a Project that would likely lose money for the rest of any new license – *losses that customers would ultimately also have to make up for in even higher power rates*. The "bottom line" is that it's just a lot cheaper for its customers for the company to remove the dams under the KHSA than to keep them.

As to replacement power, PacifiCorp is already legally committed to bringing more than 1,400 MW of brand new, cost-effective renewable power online by 2015.[9] This is *17 times more* power than the four Klamath dams generate all together. Adding an additional 82 MW of cost-effective replacement power to its grid after 2020, as it intends to do under the KHSA, would be an almost trivial task by comparison. There are many options for the replacement of this power from comparable carbon-free or renewable sources by 2020 from many places throughout PacifiCorp's six-state power grid.[10]

---

[4] California PUC Final Order at: http://docs.cpuc.ca.gov/published/proceedings/A1003015.htm.
[5] Oregon PUC Final Order at: http://apps.puc.state.or.us/orders/2010ords/10-364.pdf.
[6] The November, 2007 FERC Final EIS ("FERC FEIS") is available online at: http://elibrary.ferc.gov/idmws/File_list.asp?document_id=13555784 or found by a FERC docket search at www.ferc.gov, Docket No. P-2082-027 posted November 16, 2007, Document No. 20071116-4001. This number is taken from FERC FEIS, pg. 1-1, as 716,800 MWh, which divided by hours per year (24 hrs./day X 365.25 days/year) = 81.77 MW actual output, rounded to 82 MW – less than 2% of PacifiCorp's total power production.
[7] FERC FEIS, Sec. 4.4, pg. 4-4 of 533,879 MWh = 60.90 MW relicensed output, rounded to 61 MW.
[8] FERC FEIS (Nov. 2007), Table 4-3 on pg. 4-2.
[9] See for instance, *Final Order*, Measure 41, in CPUC Docket A05-07-010.
[10] A single modern wind turbine, for instance, can generate up to 6 MW of power and it would take fewer than 55 such wind turbines, even at a very conservative 25% efficiency, to *completely replace* the total amount of "green power" these four dams now generate – and only 41 such wind turbines to replace the 61 MW after any hypothetical relicensing. A single modern "wind farm" may contain hundreds of such wind turbines.

APPENDIX 3:

ADDITIONAL DOCUMENTS INCLUDED FROM OTHER SOURCES:

- Letter from the Pacific Fishery Management Council (PFMC) to the Federal Energy Regulatory Commission (FERC), dated April 24, 2006, recommending four-dam removal in the Klamath Basin in order to restore Klamath and West Coast ocean commercial fisheries.

- Declaration of Emergency by the State of Oregon due to the Klamath Fisheries Disaster (Executive Order No. 06-06 – April 24, 2006).

- Proclamation of Disaster by the State of California due to the Klamath Fisheries Disaster (June 6, 2006).

- Declaration of a Klamath Fisheries Failure/Disaster Declaration issued by U.S. Secretary of Commerce Gutierrez on August 10, 2006.

- Klamath Settlement EIS/EIR Process: Klamath Regional Economic Fact Sheet (September 21, 2011).

ORIGINAL

PACIFIC FISHERY MANAGEMENT COUNCIL

7700 NE Ambassador Place, Suite 200
Portland, Oregon 97220-1384

CHAIRMAN
Donald K. Hansen

EXECUTIVE DIRECTOR
Donald O. McIsaac

Telephone: 503-820-2280
Toll Free: 866-806-7204
Fax: 503-820-2299
www.pcouncil.org

April 24, 2006

Ms. Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First St., N.E., Room 1A
Washington, DC 20426

RE: Docket Number P-2082 (Pacific Fishery Management Council's Essential Fish Habitat [EFH] Recommendation for the Klamath Hydropower Project)

Dear Ms. Salas:

The Pacific Fishery Management Council (Council) hereby submits its EFH recommendations and formal comments on the relicensing of the PacifiCorp hydroelectric project on the Klamath River. The recommendations are the result of focused deliberation at the Council's March and April meetings, including extensive public testimony and expert advice from scientific and fishery-related advisory bodies. We understand that we may have missed a recent deadline for these comments, but due to the timing of the established public Council process, this is the earliest we are able to provide them. We ask that you give them your full consideration.

For the reasons below, the Council recommends that the Federal Energy Regulatory Commission (FERC) order the decommissioning and removal of Iron Gate, Copco 1, Copco 2, and J.C. Boyle dams on the Klamath River. We ask that you proceed with the development of a decommissioning plan, in consultation with resource agencies, tribes, and other interested parties, that provides full restoration of habitat in and below the project dams and reservoirs. FERC should also consider including mitigation funds to restore future anadromous habitat above the project.

This recommendation is consistent with National Marine Fisheries Service's (NMFS) recommendation pursuant to Section 10(a) of the Federal Power Act (FPA): "The Licensees shall develop and implement a plan to remove the lower four Project dams..., restore the riverine corridor, and bring upstream and downstream fish passage facilities at Keno Dam into compliance with NMFS guidelines and criteria within 10 years of license issuance, expiration, or surrender."[1,2]

---

[1] National Marine Fisheries Service (March 24, 2006). Letter and Attachments from Rodney McInnis to Magalie Salas re: *Comments, Recommended Terms and Conditions and Preliminary Prescriptions for the Klamath Hydroelectric Project, FERC Project 2082*. Page C-4.

[2] We understand that the Keno and Link Dams are not currently being relicensed, and are limiting our recommendations at this time to the four lower dams. However, in the long term, the Council calls upon FERC to improve conditions for anadromous fish in the Klamath River by addressing the operations of Keno and Link Dams.

Background

During the last several years, the Council has written frequently to FERC, the U.S. Bureau of Reclamation, and the U.S. Department of the Interior regarding impacts of Klamath River management on salmon habitat.[3] Although anadromous fish stocks fluctuate naturally, it is now clear that factors associated with hydropower generation, including lack of fish passage and water quality impacts, have had a consistent and increasingly detrimental impact on Klamath River salmon. The Council believes the operations of the full complex of dams in the Klamath River basin can be the limiting factor for anadromous salmonids abundance, and are likely the controlling anthropogenic factor during drought years. Therefore, we believe changes in the effects of these dams offer the greatest opportunity to increase population abundance.

The Council's concerns about dam operations have been heightened in recent years by the low abundance of naturally spawning fall Chinook salmon. As you may know, ocean salmon fisheries on the West Coast target a complex of stocks from various rivers that have consistently produced harvestable surpluses. Under the Council's salmon fishery management plan, fisheries in this ocean complex are managed to achieve the spawning objective of the weakest stock, which has frequently been Klamath River natural fall Chinook. In 2004 and 2005, abundance was so low that the spawning escapement fell below the 35,000 conservation objective in both years. Unfortunately, in 2006 it is expected that the Klamath natural fall Chinook stock abundance will fall even further, to a disastrously low level.

In 2005, fishing off most of Oregon and California was virtually halved to meet the Klamath River fall Chinook natural spawning objective. This year, ocean salmon fishing in this area will be cut back a further 75% to protect these fish. The inriver recreational fishery on adult fall Chinook will be closed in 2006. Inriver tribal fisheries will also be severely affected. The cutbacks and closures adopted by the Council to protect these Klamath River fish will have enormous economic and social impacts on West Coast fishing communities. The effects are so severe that the Governors of the States of Oregon and California have formally called for the Secretary of Commerce to declare a fishery disaster, as provided for under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) §312(a).

Basis for Council Recommendation

There is both a legal basis for the Council's recommendation and a strong rationale to justify it. Legal standing for the Council's recommendation is provided by the MSA. Under §305(b)(3)(B), the Council is obligated to comment on activities that are likely to substantially affect EFH for salmon.[4] In turn, the Federal government is obligated to consider the Council's recommendations and to reply

---

[3] December 15, 2005, to U.S. Bureau of Reclamation (BOR) on management of Klamath water flows; April 21, 2005 to U.S. Department of the Interior (DOI) on flow management and essential fish habitat (EFH) in the Klamath basin; April 23, 2004 to FERC on EFH concerns related to PacifiCorp Klamath River Hydroelectric Project FERC-2082; July 7, 2003 to BOR on EFH concerns related to the Klamath project; April 23, 2003 letter to the DOI related to water flows in the 2003 Klamath operations plan; April 22, 2003 to FERC on relicensing rules; December 4, 2002 to the DOI and Secretary of Commerce on the adverse impacts of reduced flows to Klamath salmonids; May 13, 2002 to FERC on EFH conservation responsibilities; April 22, 1999 to BOR on the Klamath project environmental impact statement. Letters available at http://www.pcouncil.org/habitat/habdocs.html.

[4] "[Each Council] shall comment on and make recommendations to the Secretary and any Federal or State agency concerning any such activity that, in the view of the Council, is likely to substantially affect the habitat, including essential fish habitat, of an anadromous fishery resource under its authority." MSA§305(b)(3)(B)

in writing within 30 days.[5] The rationale for the Council's recommendation includes the Council letters and background considerations referred to above and the information provided below.

We understand that the Klamath hydropower project is now operating under an annual license, and that any new long-term license may be in effect for up to 50 years. The Council does not make recommendations for interim annual licenses in this letter, though we believe that until a long-term license is granted, FERC should protect and fully mitigate damages to anadromous salmonids and their habitat with the dams in place. Some recommendations from others, such as those provided by NMFS and U.S. Fish and Wildlife Service pursuant to Section 10(j) of the Federal Power Act for interim modifications to hatchery management and ramping rates, may be appropriate. However, the Council will address recommendations for interim licenses in a separate letter following further public process and discussion.

The Council's recommendation for dam removal is made with the recognization that several factors beyond FERC's jurisdiction can harm Klamath River anadromous stocks.[6] Water withdrawal practices reduce water availability downstream, and timber harvest practices, road building, parasites, and other factors impact stocks. We further recognize that some recommend fish passage at the project dams instead of their removal.

The Long Range Plan for the Klamath River Basin Conservation Area Fishery Restoration Program clearly identifies the lack of passage through and beyond the project area as a significant limitation on the Klamath River anadromous fish resource[7]. Under the current license, the lower three project dams (Iron Gate, Copco 1 and Copco 2) are not equipped with fish passage facilities, and the facilities at J.C. Boyle Dam do not conform to accepted passage criteria. PacifiCorp's proposed license under FERC does not provide passage for anadromous fish.

Lack of fish passage at the Klamath Project facilities blocks access to more than 400 miles of migration, spawning, and rearing habitat for salmon, steelhead and Pacific lamprey, including access to channel areas inundated by the project, access to tributary habitat within the project area, and access to currently-blocked habitat in the upper watershed[8]. The habitat within and above the project area was historically an important producer of spring Chinook, fall Chinook and coho. Reintroducing anadromous fish above the current barrier of Iron Gate Dam is a key component of Klamath River Basin restoration. We understand significant resources are now being directed toward improving potential habitat in the Upper Klamath Basin above Upper Klamath Lake.

Even with fish passage at each of the projects, the following dam-related problems within and below the project area would remain unaddressed:

---

[5] "Within 30 days after receiving a recommendation under subparagraph (A), a Federal agency shall provide a detailed response in writing to any Council commenting under paragraph (3) and the Secretary regarding the matter. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on such habitat..." MSA§305(b)(4)(B)

[6] National Research Council (2004). *Endangered and Threatened Fishes in the Klamath River Basin – Causes of Decline and Strategies for Recovery*. Washington, D.C.: U.S. Department of Interior and U.S. Department of Commerce.

[7] Klamath River Basin Fisheries Task Force and William M. Kier Associates, 1991. *Long Range Plan for the Klamath River Basin Conservation Area Fishery Restoration Program.*

[8] We recognize that Keno dam, upstream of the project area, now blocks most upper watershed habitat for anadromous salmonids.

- Loss of spawning and rearing area in the Klamath River between Iron Gate and J.C. Boyle dams
- Effects of hydroelectric peaking operations, including reduced flows in bypassed reaches; effects of large flow fluctuations in peaking reaches; reduced abundance of macroinvertebrates; restricted fish movement; decreased water quality; and fish stranding
- Impacts of water impoundment, including changes to water temperature, dissolved oxygen, and nutrient loads; gravel depletion; altered flood flows; and enhanced conditions for toxic algae blooms and parasitic disease vectors
- Alteration of the natural hydrologic regime, including loss of thermal refugia and ecosystem function

In summary, the Council believes removal of the dams is a necessary step in recovering currently unsuitable habitat in the project reach, in providing access to suitable habitat upstream of the project, and in normalizing water conditions below Iron Gate Dam.

Costs and Benefits

The value of ocean fisheries is high when Klamath natural Chinook are abundant, but can be much lower when Klamath fish constrain the catch of other healthy stocks. The Council estimates that between 1970 and 2004, the average annual personal income impacts of the recreational and commercial ocean salmon fishery in the area where Klamath fish are found amounted to $92 million. The constraints on the fishery in 2006 caused by the need to protect Klamath River natural fall Chinook are expected to reduce the value of this fishery to less than $33 million. In contrast, the Klamath hydropower project produces 163 megawatts with an annual net economic value of $16.3 million.[9] NMFS notes that the "generating capacity provided through continued Project operations is nominal...relative to the watershed level of benefits to aquatic resources and regional and national priorities for restoring anadromous salmonids."[10] The California Energy Commission reviewed the effects of full or partial decommissioning and concluded that "because of the small capacity of Klamath hydro units... removal of these units will not have a significant reliability impact on a larger regional scale."[11]

Providing fish passage would be a major endeavor, with cost estimates ranging up to $200 million.[12] The cost of dam removal has been estimated at $35.8 million.[13] Based on these estimates, it is not clear that providing fish passage is a superior economic alternative to dam removal.

It may not be appropriate to directly compare the loss of $59 million in the ocean salmon fishery in one year, due to the low abundance of Klamath River Chinook, with the $16.3 million in power generated annually at the four project dams and the $35.8 million cost of dam removal. However, it may well be that the annual value of the portion of the fishery affected by Klamath River Chinook compares favorably to the annual value of the electrical power. It may also compare favorably with the cost of dam removal, given the number of years that fishery benefits will accrue after the dams

---

[9] California Energy Commission (2004). California Energy Commission Staff Comments on PacifCorp's Final License Application to the FERC for the Klamath Hydroelectric Project, FERC No. 82.
[10] National Marine Fisheries Service (March 24, 2006), op. cit.
[11] California Energy Commission, op. cit.
[12] PacifiCorp spokesman Dave Kvamme in "A Good Week for Klamath Salmon." *Sacramento Bee*, March 30, 2006, page A3.
[13] G&G Associates (2003). *Klamath River Dam Removal Investigation*. Seattle, Washington: G & G Associates.

are removed. Further, it must be noted that a comprehensive economic analysis of the benefits of dam removal needs to include the benefits of habitat improvement to all Klamath River fish populations, not merely one stock (naturally spawning fall Chinook) in one fishery (the ocean salmon fishery).

Conclusion

The Council believes the proposed relicensing of this project will have substantial adverse impacts on EFH in the Klamath River. The project causes harm to salmon habitat; to the health of fish stocks; to commercial, recreational, and tribal fisheries; and to fishing communities along the Oregon and California coasts and in the Klamath River basin. Consequently, the Council recommends that FERC order the immediate decommissioning and removal of the four lower Klamath River dam structures and full restoration of habitat affected by the dams and reservoirs.

Sincerely,

Donald O. McIsaac
Executive Director

JDG:rdd

c: Council Members
Habitat Committee
FERC Required Service List Distribution
Salmon Advisory Subpanel
Salmon Technical Team
Scientific and Statistical Committee
Dr. Donald McIsaac
Dr. John Coon
Council Staff Officers
Ms. Eileen Cooney
Ms. Jane Hannuksela
Ms. Mariam McCall
Mr. Judson Feder
Ms. Corinne Pinkerton
Mr. Phil Dietrich

Office of the Governor
State of Oregon

EXECUTIVE ORDER NO. 06-06

DETERMINATION OF A STATE OF EMERGENCY IN TILLAMOOK, LINCOLN, COOS AND CURRY COUNTIES AND COASTAL PORTIONS OF LANE AND DOUGLAS COUNTIES DUE TO KLAMATH RIVER BASIN CONDITIONS AND LIMITATIONS ON OCEAN COMMERCIAL AND SPORT SALMON FISHING

Pursuant to ORS 401.055, I find that unexpected changing ocean conditions, prior drought years and poor water quality and parasites within the Klamath River Basin have caused a dramatic decline in Klamath River Basin Chinook Salmon available for harvest by the ocean fishing industry, resulting in the virtual elimination of a viable commercial salmon fishing season, and severe restrictions on the sport salmon fishing season, along the Oregon coast south of Cape Falcon. These conditions have resulted in an imminent emergency.

The commercial salmon fishery has been closed for six weeks and is not expected to reopen this year in Oregon coastal waters south of Florence. North of Florence to Cape Falcon, the season is expected to reopen in June, but will be of an extremely limited scope. On Oregon's southern coast, the recreational fishery is expected to be open only from mid-May until July 4, whereas a typical season would last into early September. These fishing limits will have profound consequences on many communities, including significant increases in unemployment, human suffering, financial losses and other stark economic impacts along the Oregon coast.

The affected areas are Tillamook, Lincoln, Coos and Curry Counties and the coastal portions of Douglas and Lane Counties that are west of Range 8 West, Willamette Meridian. I therefore declare a **State of Emergency** in the abovementioned counties and portions of counties.

NOW THEREFORE, IT IS HEREBY ORDERED AND DIRECTED:

1. All state agencies shall work in a cooperative and coordinated manner in order to mitigate the impacts of this emergency, provide expedited service and resources to persons and business adversely affected by the emergency, and focus state efforts in a manner most likely to relieve the unemployment, human suffering, financial loss and other economic impacts of this emergency. In addition to the specific measures discussed in this Executive

Order, all state agencies are encouraged to think broadly and creatively about actions that agencies can take to address this emergency and shall communicate such ideas to the Office of the Governor. Response to the emergency shall be directed and coordinated by the Office of the Governor.

2. The Oregon Department of Fish and Wildlife, which operates under the direction of the State Fish and Wildlife Commission, is strongly encouraged to develop recreational and commercial fishing seasons, consistent with the federal framework, that help mitigate the effects of this emergency on coastal economies, and to consider establishment of additional commercial salmon fishing opportunities in state waters, as appropriate.

3. The Department of Community Colleges and Workforce Development shall pursue all available retraining opportunities for ocean fishing industry workers wishing to pursue alternative employment and shall coordinate the timely delivery of state workforce services and other human and community services to affected workers and families.

4. The Employment Department shall offer re-employment assistance programs to affected ocean fishing industry workers and shall work with the appropriate state and federal agencies to help affected individuals obtain unemployment insurance to the fullest extent available.

5. The Department of Housing and Community Services shall work with the Oregon Food Bank to provide additional food and nutritional support for affected Oregonians. Where possible, the Department is directed to work with housing partners to provide additional assistance for emergency shelter, rental housing, and permanent housing for affected households in need. The Department is further directed to work with local community based organizations to provide additional energy assistance and weatherization services to affected Oregonians as appropriate.

6. The Oregon Economic and Community Development Department shall investigate retraining opportunities for workers in the ocean fishing industry wishing to pursue alternative employment and provide technical assistance to public ports and businesses that experience adverse effects on their operations or revenues due to this emergency.

7. The Oregon Department of Agriculture shall work with Oregon Sea Grant, a marine research and education program based at Oregon State University, and their Extension programs, to encourage dialogue between Klamath Basin farmers and the coastal fishing industry regarding management of resources within the Klamath River Basin.

8. The Oregon Department of Revenue shall investigate and pursue options for affected Oregonians to obtain income tax credits and refunds and other financial assistance.

9. The Oregon Tourism Commission is directed to actively inform the public of continued recreational fishing opportunities and other tourism activities along the Oregon Coast and to highlight travel to Oregon's coast, as appropriate within their overall marketing strategies.

10. The Department of Human Services shall continue to provide mental health and treatment services, alcohol and drug treatment services, nutrition programs, domestic violence assistance, and medical assistance to Oregonians in coastal communities with particular attention to the increased needs in coastal communities caused by this emergency.

11. The Oregon Watershed Enhancement board shall provide financial resources to support fish habitat enhancement along critical salmon streams in Oregon, for the purpose of accelerating the rebuilding of fish populations and creating new and meaningful work opportunities for displaced workers.

12. The Office of Emergency Management shall pursue any and all available federal funding or resources to additionally assist in the mitigation of the effects of this emergency.

13. All other state agencies are directed to provide appropriate state resources and to seek any available private and federal dollars to provide emergency assistance to affected individuals, families, businesses and communities and to deliver such assistance in the most expeditious manner.

EXECUTIVE ORDER NO. 06-06
PAGE FOUR

14. All state agencies specifically referenced in this Executive Order shall report to me within 60 days of the date of this Executive Order about progress made under this Executive Order and every 60 days thereafter until conclusion of the emergency.

Done at Salem, Oregon this 24th day of April, 2006.

GOVERNOR

ATTEST:

SECRETARY OF STATE

A PROCLAMATION

BY THE GOVERNOR OF THE STATE OF CALIFORNIA

WHEREAS California's salmon runs are a vital component of our great State's resources that provide significant environmental, recreational, commercial, and economic benefits to the people; and

WHEREAS Klamath River Basin Chinook Salmon have been significantly impacted by poor ocean conditions, drought, water management, water quality, water flows, disease, and the elimination of access to historical spawning habitat; and

WHEREAS the Klamath Basin Chinook Salmon that commingle with other runs of salmon in ocean waters off of California and Oregon have been declining in abundance to a point where California's and Oregon's recreational, commercial, and tribal fisheries are being significantly constrained to conserve Klamath River Chinook Salmon; and

WHEREAS Klamath River Basin Chinook Salmon are predicted to have extremely low ocean abundance for 2006 in waters from Cape Falcon in Oregon to Point Sur in Monterey County, California, and in the Klamath River Basin; and

WHEREAS restoration of habitat and improved water quality and flows are critical to restoring an environment suitable to the long-term sustainability of the Klamath River Basin Chinook Salmon and other anadromous fish species; and

WHEREAS appropriate management of the Klamath River Basin Chinook Salmon population is critical to California's businesses, and local communities that provide goods and services in support of California's salmon fisheries; and

WHEREAS on April 5, 2006, I requested Secretary of Commerce Carlos Gutierrez to use his authority under the Magnusen-Stevens Fishery Conservation and Management Act to determine that there has been a commercial fishery failure due to a fishery resource disaster; and

WHEREAS on April 28, 2006, the National Marine Fisheries Service adopted an emergency rule to implement the recommendations of the Pacific Fisheries Management Council that resulted in severe restrictions on the commercial ocean salmon and Klamath Basin tribal and recreational fisheries and included restrictions on the recreational ocean salmon fishery; and

WHEREAS these restrictions will have significant impacts to California's commercial ocean salmon and in-river salmon fisheries and will result in severe economic losses throughout the State; and

WHEREAS the Department of Finance has determined that approximately $778,000 is continuously appropriated and available in the Small Business Expansion Fund (Fund 918) for disaster purposes under the Corporations Code section 14030 et seq.; and

WHEREAS the Small Business Expansion Fund's available monies can be leveraged to guarantee up to approximately $9.2 million in loans for disasters, including guaranteeing loans to prevent business insolvencies and loss of employment in an area affected by a state of emergency within the state; and

WHEREAS Governor Ted Kulongoski of Oregon and I signed The Klamath River Watershed Coordination Agreement along with the responsible federal agencies in order to address the impacts to the fisheries in the region and to develop a long-term management approach, common vision, and integrated planning associated with the Klamath Basin; and

WHEREAS the serious circumstances of the Klamath River Chinook Salmon run put at risk the livelihoods of families and businesses dependent upon them.

NOW, THEREFORE, I, ARNOLD SCHWARZENEGGER, Governor of the State of California, find that conditions of disaster or of extreme peril to the safety of persons and property exist within the California counties of Monterey, Santa Cruz, San Mateo, San Francisco, Marin, Sonoma, Mendocino, Humboldt, Del Norte, and Siskiyou due to the poor ocean conditions, drought, water management, water quality, water flows, disease, and the elimination of access to historical spawning habitat and resulting from the significant restrictions that have been imposed on the State's salmon fisheries. Because the magnitude of this disaster will likely exceed the capabilities of the services, personnel, and facilities of these counties, I find these counties to be in a state of emergency, and under the authority of the California Emergency Services Act, I hereby proclaim that a State of Emergency exists in these counties.

Pursuant to this Proclamation, I hereby direct the Director of the California Department of Fish and Game and the Secretary of the Resources Agency to: (1) report to me immediately upon final action of the Department of Commerce and the California Fish and Game Commission on any further actions necessary to ensure the protection of the resource and of the economic livelihood of the fishery participants, tribes, and local communities; and (2) continue discussions for long-term restoration and management of the Klamath Basin with the State of Oregon, federal agencies (including the Secretaries of Commerce, the Interior, and Agriculture), tribal governments, and representatives from conservation, fishing, and agricultural organizations.

I FURTHER DIRECT the Secretary of the Business, Housing and Transportation Agency, with the cooperation of the Department of Finance, to activate the Small Business Disaster Assistance Loan Guarantee Program to guarantee loans to prevent business insolvencies and loss of employment in the counties of Monterey, Santa Cruz, San Mateo, San Francisco, Marin, Sonoma, Mendocino, Humboldt, Del Norte, and Siskiyou as a result of this State of Emergency.

I FURTHER DIRECT that as soon as hereafter possible, this proclamation be filed in the Office of the Secretary of State and that widespread publicity and notice be given of this proclamation.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 6th Day of June 2006.

_____
ARNOLD SCHWARZENEGGER
Governor of California

ATTEST:

_____
BRUCE McPHERSON
Secretary of State

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

Declaration Concerning the Klamath River Fall Chinook Salmon Fishery

Klamath River fall Chinook (KRFC) is a key stock used by NOAA's National Marine Fisheries Service (NMFS) to manage the mixed stock ocean fishery off the Pacific Coast, in which salmon from different rivers of origin co-mingle in ocean waters and are harvested together. Fisheries disaster relief is covered by Section 312(a) of the Magnuson-Stevens Fishery Conservation and Management Act, which specifies that the Secretary, at the discretion of the Secretary or at the request of the Governor of an affected State or a fishing community, shall determine whether there is a Commercial Fishery Failure due to a Fishery Resource Disaster as a result of natural causes, man-made causes beyond the control of fisheries managers to mitigate, or undetermined causes. At the request of the Governors of Oregon and California in April 2006, I began an evaluation of the Klamath River fall Chinook. On July 6, 2006, I declared a Fishery Resource Disaster under section 308(b) of the Interjurisdictional Fisheries Act of 1986.

The conservation objective for KRFC established under the Pacific Coast Salmon Fishery Management Plan (Salmon FMP) requires a return of 33-34 percent of potential adult natural spawners, but no fewer than 35,000 naturally spawning adults, each year. In compliance with the Salmon FMP, a "conservation alert" is triggered when a stock is projected to fall below its conservation objective. Under such circumstances, the Pacific Fishery Management Council (Council) is required to recommend the closure of salmon fisheries within Council jurisdiction that impact the stock.

From 2001 through 2005, drought conditions in the upper Klamath Basin resulted in flow conditions in the mainstem Klamath River and tributaries representative of dry water years. As a result of the protracted drought and low flows in the mainstem Klamath River, in-river conditions allowed for the proliferation of endemic diseases, and both juvenile and adult Chinook salmon populations have experienced substantial mortality as a result of these epizootic events. The escapement of KRFC then fell below the 35,000 spawner escapement floor in 2004 and 2005.

A recent decline in ocean conditions, prolonged drought, and subsequent poor in-river conditions in 2002 and 2003, resulted in low numbers of age-3 and age-4 KRFC recruiting to the 2006 fishery. The 2006 preseason forecast of approximately 25,000 naturally spawning KRFC was close to the record low, and less than the minimum escapement of 35,000 required to allow fishing between Cape Falcon, Oregon, and Point Sur, California, (the Klamath impact area) under the Salmon FMP. A complete closure of the 2006 salmon fishery, in the Klamath impact area, was avoided through a collaborative effort by NMFS, Council, state, and tribal representatives to identify a limited fishery that would manage risks and address the conservation concerns for KRFC. NMFS issued a Temporary Rule for Emergency Action to implement very restrictive 2006 annual management measures for the west coast ocean salmon fisheries. These regulations close a majority of the commercial fisheries from Cape Falcon, Oregon, to Point Sur, California, from May 1 to August 31, 2006. As a result of the factors described above, the commercial salmon fishery and the shore-based support sector are enduring severe economic hardship this year in this significant part of the west coast (see Table 1 below). Accordingly, the scope of the Fishery Resource Disaster consideration includes this entire 700 mile stretch of coastline from Cape Falcon to Point Sur.

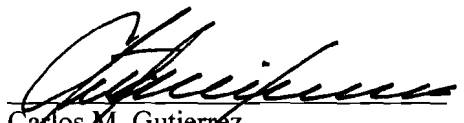
Table 1. Season Revenue (Ex-vessel) Compared to Historical Information from State Data

Management Area	2006	2001-2005 Average	High	Low
Oregon (South of Cape Falcon)	$1,240,000	$7,393,000	$10,090,000 (2004)	$5,116,000 (2001)
California	$1,696,000	$11,519,000	$18,383,000 (2004)	$5,225,000 (2001)
Total	*$2,936,000*	*$18,912,000*	*$28,473,000 (2004)*	*$10,341,000 (2001)*

The season restrictions reduced the fishing opportunity in the Klamath impact area by 71% from recent years. Due to weather and other factors, the actual number of fishing days by vessels has been even lower than expected. Based on information obtained from the States of Oregon and California, catch of salmon in this area will decrease by 88% this season from the recent years' average. Although the price per pound has been higher due to the limited supply, the resulting ex-vessel revenue this season will still drop by roughly 84% compared to the recent years' average.

In light of the foregoing facts, I find the economic losses in the commercial salmon fishery off Oregon and California caused by the low abundance of KRFC between Cape Falcon, Oregon, and Point Sur, California, in 2006 constitute a Commercial Fishery Failure due to a Fishery Resource Disaster. I find further this Fishery Resource Disaster is due primarily to natural causes, including drought, disease, and poor ocean conditions.

Therefore, I hereby declare that a Commercial Fishery Failure due to a Fishery Resource Disaster exists under section 312(a) of the Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended.



Carlos M. Gutierrez
August 10, 2006

Klamath Settlement

EIS/EIR PROCESS

Klamath Regional Economics Fact Sheet

Implementation of Alternative 2 Full Facilities Removal of Four Dams impacts spending associated with a wide variety of activities (dam removal, mitigation, facility operation and maintenance (O&M), KBRA programs, irrigated agriculture, commercial fishing, ocean sport fishing, in river sport fishing, whitewater recreation, and reservoir recreation). Local economies will be positively or negatively impacted as a result of increases or decreases in spending in local regions associated with these activities.

The employment impacts estimated to be associated with Alternative 2 include full time, part time, and temporary positions. The estimated jobs may be short term, 15 year or less, or long term, 16 or more years. Changes in spending are modeled in 10 regions consisting of two or more counties based on the location of the activity. A total of 15 (six in Oregon, nine in California) counties are represented in these 10 regions.

The duration of the jobs associated with the change in spending depends on the duration of the spending change. For instance, jobs associated with dam removal will occur in the year of dam removal (2020), jobs associated with KBRA funding will end in 2026 (when that funding ends), job losses for activities that will decline/disappear as a result of dam removal (O&M, reservoir and whitewater recreation) will commence in the year after dam removal (2021), fishery-related jobs are affected over the entire 2012-61 period (though at a much lower level prior to dam removal than after). Estimated jobs include full time, part time, and temporary positions. Full realization of employment changes may not occur to the extent that businesses deal with changes in spending by adjusting the workload of existing employees or increasing their use of capital relative to labor. It is not appropriate to add jobs across years, as the job estimates provided here represent *average* annual changes rather than annual changes that accumulate in each year of the study period.

Table 1 summarizes the change in average annual jobs for each activity, region, and timeframe (with color-coding used to differentiate the regions). Average annual jobs were estimated using IMPLAN, which estimates regional impacts based on the makeup of the economy at the time of the underlying IMPLAN data (2009). Thus the precision of estimated future employment impacts will be affected by future structural changes in the economy which cannot be reliably predicted. Figure 1 illustrates how the change in average annual jobs varies in each year of the 50 year study period relative to the No Action Alternative. Figure 1 is a simplistic characterization of changes in employment impacts over time, as it sums jobs across regions without considering the fact that job estimates are sensitive to how the affected region is defined. It is important to note that Table 1 and Figure 1 do not include changes in jobs attributable to increased harvest opportunities in tribal fisheries and the redband trout and in-river steelhead sport fisheries, which could not be quantified with available data.

Table 1. Incremental Change In Average annual Full Time, Part Time, or Temporary Jobs From No Action Alternative by Region, Activity, and Timeframe

Economic Region	KHSA Activities with KBRA in place	Average Annual Full Time, Part Time or Temporary Jobs Full Facilities Removal (Incremental Change from No Action Alternative)	Timeframe [1]
Klamath County OR; Siskiyou County CA	Dam Decommissioning	1,400	2020
Klamath County OR; Siskiyou County CA	O&M	-49	2021 – 2061
Klamath County OR; Siskiyou County CA	Mitigation	30	2018 – 2025
San Francisco Management Area (San Mateo, San Francisco, Marin and Sonoma Counties CA)	Commercial Fishing	218	2012 – 2061
Fort Bragg Management Area (Mendocino County CA)	Commercial Fishing	69	2012 – 2061
KMZ-CA (Humboldt and Del Norte Counties CA)	Commercial Fishing	19	2012 – 2061
KMZ-OR (Curry County OR)	Commercial Fishing	11	2012 – 2061
Central Oregon Management Area (Coos, Douglas and Lane Counties OR)	Commercial Fishing	136	2012 – 2061
Klamath County OR; Siskiyou County CA	Reservoir Recreation	-4	2021 – 2061
Klamath County OR; Del Norte, Humboldt, and Siskiyou Counties CA	In River Sport Fishing	3	2012 – 2061
KMZ-CA (Humboldt and Del Norte Counties CA)	Ocean Sport Fishing	5	2012 – 2061
KMZ-OR (Curry County OR)	Ocean Sport Fishing	1	2012 – 2061
Klamath and Jackson counties OR; Humboldt and Siskiyou counties CA	Whitewater Boating	-14	2021 – 2061
Economic Region	**Direct KBRA Activities**	**Average Annual Full Time, Part Time or Temporary Jobs Full Facilities Removal (Incremental Change from No Action Alternative)**	**Timeframe [1]**
Klamath County OR; Siskiyou and Modoc Counties CA	Irrigated Agriculture	modeled drought years	2027, 2043, 2045, 2051, 2059
Klamath County OR; Siskiyou County CA	Refuge Recreation	5	2012 – 2061
Klamath County OR; Siskiyou, Modoc, Humboldt, and Del Norte Counties CA	Fisheries Program	260	2012 – 2026
Klamath County OR; Siskiyou, Modoc, Humboldt, and Del Norte Counties CA	Water Program	16	2012 – 2026
Klamath County OR; Siskiyou, Modoc, Humboldt, and Del Norte Counties CA	Reg Assurances	10	2012 – 2026
Klamath County OR; Siskiyou, Modoc, Humboldt, and Del Norte Counties CA	Tribal Programs	25	2012 – 2026

[1] These employment impacts are anticipated to occur on the first day of the Timeframe identified and persist over the period. For example, Dam Decommissioning is estimated to have an employment impact of 1,400 jobs. These jobs would start on January 1, 2020 and persist until December 31, 2020. Similarly, the loss of 49 O&M jobs would be anticipated to start on January 1, 2021 and persist until 2061.

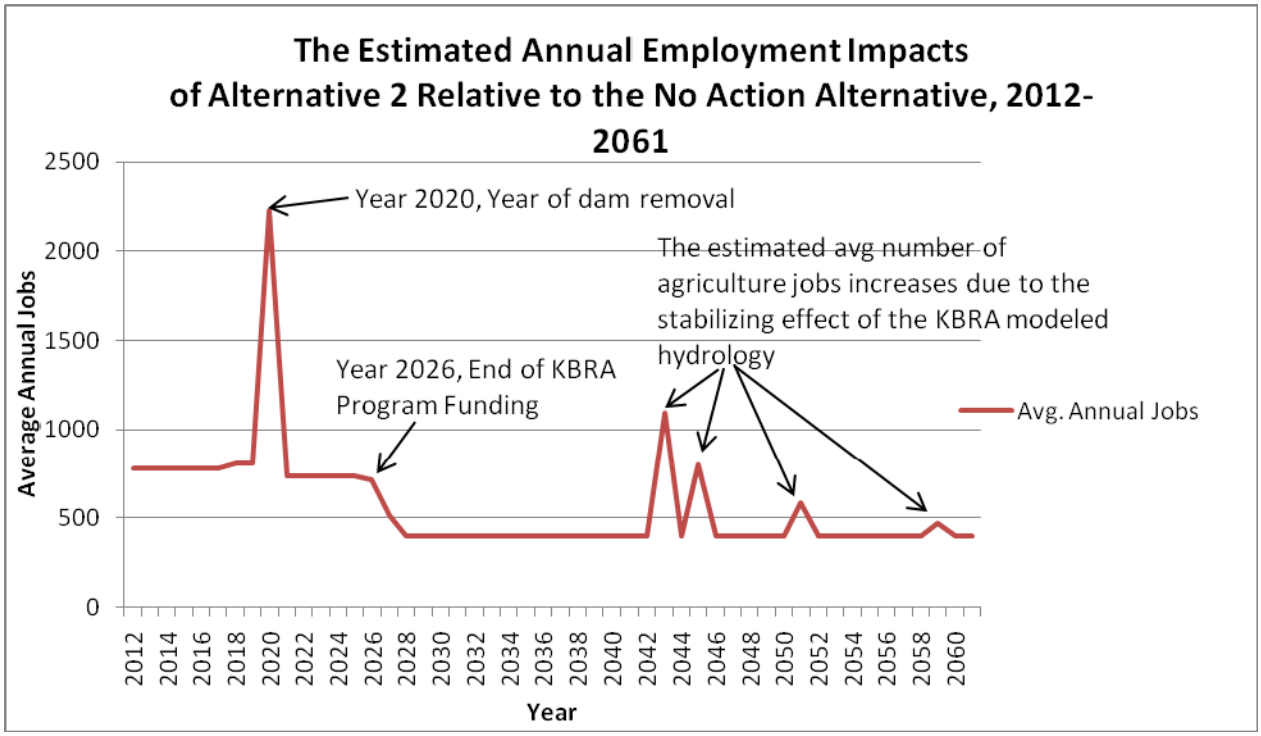


Figure 1. Estimated Annaula Employment Impacts of Alternative 2 Relative to the No Action Alternative, 2012-2061

Activities and Location of Average Annual Jobs Associated With Implementation of the Full Facilities Removal Alternative

Removal of facilities—Klamath County OR; Siskiyou County CA

- Short-term
  - Dam Removal — 1,400 full time, part time, or temporary jobs associated with dam removal in 2020 were estimated to occur in Klamath County OR and Siskiyou County CA. These jobs would be related to construction activities and include machine operators, material purchases such as fuel, inspectors, and construction management.
  - Mitigation — Approximately 220 full time, part time, or temporary jobs, or an average of 27 jobs annually between the years 2018-2025 in Klamath OR and Siskiyou CA counties were estimated to stem from total in region mitigation expenditures.
- Long-term
  - Operation and Maintenance — 49 average annual full time, part time, or temporary jobs related to O&M are lost in Klamath OR and Siskiyou CA counties because the hydroelectric facilities would not require O&M.

Commercial Fishing—Five Management Areas—Oregon and California Coast from Lane County Oregon through Santa Cruz County California

- Long-term
  - Jobs are generated as a result of improvements in Ocean Commercial fishing in 11 coastal counties in Oregon and California. Estimated employment impacts stem from salmon troll revenues spent in the management area where the landings occur. Full time, part time, or temporary job estimates stemming from improved fishing conditions are shown below.
    - 11 average annual jobs in the KMZ-OR Management Area
    - 19 average annual jobs in the KMZ-CA Management Area
    - 69 average annual jobs in the Fort Bragg Management Area
    - 136 average annual jobs in the Central Oregon Management Area
    - 218 average annual jobs in the San Francisco Management Area.

Water Related Recreation

- Long Term
    - Reservoir Recreation: Klamath County OR and Siskiyou County CA — A loss of four average annual full time, part time, or temporary jobs associated with reservoir recreation.
    - In River Sport Fishing: Klamath County OR; Del Norte, Humboldt, and Siskiyou Counties CA — Approximately three average annual full time, part time or temporary jobs are estimated to be created as a result of spending associated with In River recreational salmon fishing.
    - Ocean Sport Fishing: KMZ-CA Humboldt and Del Norte Counties CA and KMZ-OR Curry County OR— Improved ocean sport fishing are estimated to stimulate full time, part time or temporary jobs in the two management zones ranging from one to five average annual jobs.
    - Whitewater Boating: Klamath and Jackson Counties OR, Humboldt and Siskiyou Counties CA— A loss of 14 average annual full time, part time, or temporary jobs associated with whitewater boating.
    - Refuge Recreation: Klamath County OR; Siskiyou County CA— Improved conditions on the refuges are estimated to create an average of five annual full time, part time, or temporary jobs associated with refuge hunting activity.

Irrigated Agriculture—Klamath County OR; Siskiyou and Modoc Counties CA

- Short Term
    - KBRA improves conditions on Reclamation's Klamath Project during years of drought. Modeled hydrology indicates 5 drought years during the 50 year study period. Improved water supply during these drought years stimulate jobs compared to No Action. Employment stemming from increased gross farm income is estimated to range from 70 to 695 average annual full time, part time, or temporary jobs.

KBRA Implementation—Klamath County OR; Siskiyou, Modoc, Humboldt, and Del Norte Counties CA

- Short-term—Years 2012 through 2026
    - Fisheries Program expenditures are estimated to generate 3,902 full time, part time, or temporary jobs over the 15 year period, this translates to 260 average annual jobs.
    - Water Program expenditures are modeled to create 237 full time, part time, or temporary jobs over the 15 year period, which translates to 16 average annual jobs.
    - Regulatory Assurance related expenditures are estimated to stimulate 146 full time, part time, or temporary jobs over the 15 year period which translates to 10 average annual jobs.
    - Tribal Programs are estimated to generate 378 full time, part time or temporary jobs over the 15 year period which translates to 25 average annual jobs.