Testimony of Michael Rode
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To the U.S. House Natural Resources Committee,
Subcommittee on Fisheries, Wildlife and Oceans

Oversight Hearing entitled: *"A Perfect Storm: How Faulty Science, River Management, and Ocean Conditions Are Impacting West Coast Salmon Fisheries"*

Thursday, May 15, 2008

Chairwoman Bordallo and Subcommittee members, thank you for providing me the opportunity to testify before you today. My name is Michael Rode. I worked for the California Department of Fish and Game (CDFG) for twenty eight years as a fishery biologist and environmental scientist before retiring in December, 2005. During the last fifteen years of my employment with the CDFG, my job title was Klamath River Coordinator. In that capacity, I was the lead scientist for the CDFG review of U.S. Bureau of Reclamation (BOR) Klamath Project Environmental Impact Statements (EISs), annual Klamath Project Operations Plans (KPOPs) and Biological Assessments (BAs) as well as review of National Marine Fisheries Service (NMFS) Biological Opinions (BOs) on the effects of Klamath Project Operations on Southern Oregon/Northern California Coasts (SONCC) threatened coho salmon.

My intent today is to concentrate my testimony on the NMFS 2002 10-year Coho BO (emphasizing the period 2002-2005) that currently governs flows in the Klamath River below Iron Gate Dam (IGD) (River Mile 190) and to show that the 2002 BO has adversely affected not only Klamath River coho, but also Chinook salmon. Although my analysis of the 2002 BO occurred during DFG employment, my comments and conclusions today are entirely my own.

There are five main points I would like to make today:

(1) Although ocean conditions are an important factor in salmon survival, weak Klamath coho and Chinook salmon stocks have constrained west coast mixed stock ocean salmon fisheries for more than twenty years, even when other salmon stocks were robust and ocean conditions were favorable. This strongly indicates that unfavorable inriver environmental conditions have played a major role in suppressing Klamath coho and Chinook salmon numbers.
(2) The 2002 Coho BO does not avoid jeopardy to the continued existence of threatened SONCC coho salmon, nor prevent the destruction or adverse modification of critically designated SONCC coho salmon habitat, as required under the Endangered Species Act (ESA).
(3) The mandates of the Magnuson-Stevens Fishery Conservation and Management Act, as amended, have not been met by BOR or NMFS for coho or Chinook Essential Fish Habitat (EFH) in the Klamath River.
(4) The 2002 Coho BO is not based on the best scientific data available.

(5) Klamath River flow management below IGD is governed soley by the 2002 Coho BO, thus it constitutes single species management and does not consider the flow and habitat needs of other fish species in the Klamath River, including Chinook salmon

Background

IGD, constructed in 1962 as the last downstream facility of PacifiCorp's Klamath Hydroelectric Project (FERC Project No. 2082), acts as the upper limit of anadromous fish distribution in the mainstem Klamath River. The Federal Energy Regulatory Commission (FERC) established minimum flows at IGD as part of the 1956 Klamath Hydroelectric Project licensing process, but those flows were only partially based on limited fishery information and were generally insufficient for protection of downstream fishery resources. Furthermore, even though PacifiCorp operates the six mainstem Klamath River dams within the Hydroelectric Project, downstream water availability during periods of water shortage has been decided by the BOR's Klamath Project per agreement with PacifiCorp that gives BOR control of releases at Link River Dam (the outlet to Upper Klamath Lake). Thus, the FERC minimum flows, which, to begin with, were insufficient for protection of most life stages of coho and Chinook salmon, were frequently and regularly not met at IGD during the1962-1996 period, often during times of high vulnerability for coho and Chinook salmon early life history stages. During severe droughts such as occurred in 1992 and 1994, flows were frequently and suddenly drastically reduced below FERC minimums with little or no warning. Since 1996, PacifiCorp has operated its facilities in accordance with BOR's annual KPOP flow schedule. The general BOR management pattern during this period was to fully meet agricultural irrigation needs in the upper Klamath Basin under all conditions, frequently at the expense of maintaining and protecting downstream anadromous fish and their habitat.

On June 6, 1997, SONCC coho salmon were federally listed as a threatened species. In 1999, coho critical habitat was identified for the Klamath River and the first coho BO was completed by NMFS on July 12, 1999, providing ESA coverage for Klamath Project operations from April1, 1999 through March 31, 2000.

The Hardy Phase I Final Flow Study Report, which was contracted by the Department of Interior (DOI), was released on August 5, 1999. The report's main objective was to quickly "provide interim minimum monthly flow recommendations for the main stem Klamath River below Iron Gate Dam downstream to the Scott River" with the expectation that the flow recommendations would be used for ESA Section 7 consultations for year 2000 and subsequent operations of the BOR's Klamath Project. However, this report was summarily dismissed and criticized by upper Klamath Basin water users, the BOR and NMFS for not including site-specific data suitable for analysis and evaluation using habitat based modeling, even though such data were unavailable at that time. A more important reason that the Phase I flow recommendations were not implemented may have been that they were considered to be too high by BOR and NMFS staff and would, thus, impact irrigation deliveries . Out of these criticisms was born the

Hardy Phase II Flow Study, again contracted by DOI, and which was begun in 1999 and would result in the most comprehensive study ever conducted on the Klamath River to address anadromous salmonid habitat and flow requirements.

A second Coho BO was released on April 6, 2001 amidst a severe drought in the upper Klamath Basin. A determination was made by the U.S. Fish and Wildlife Service (USFWS) and NMFS that inflows to Upper Klamath Lake (UKL) would not be sufficient to provide for Klamath Project agricultural deliveries as well as meet UKL elevation requirements for two species of endangered suckers and IGD flow releases for threatened coho salmon. Thus were born the 2001 water wars and the Klamath Basin became the poster child for what supposedly was wrong with the ESA.

The 2002 Coho Biological Opinion

The 2002 Coho BO marked a radical departure from the two prior BOs. On May 31, 2002, for the first time, NMFS approved ESA coverage for Klamath Project operations for a 10-year period. The CDFG, and many others, stated in written comments that the period of coverage should be much shorter so that new scientific findings and other information could be incorporated into BO revisions on a regular basis. We were concerned that the BOR and NMFS would be reluctant to reinitiate ESA Section 7 consultation in mid-water year that would result in meaningful changes to the BO and, thus far, that has proven to be the case.

Flow releases at IGD were predicted by the 2002 Coho BO to be increased in three phases but not reach levels that would avoid jeopardy until 2010, eight years after issuance of the BO. Furthermore, the BOR was taking responsibility for only 57% of the flow targets required in each phase of the plan, based on their conclusion that the Klamath Project only irrigated 57% of the total irrigable acreage in the upper Klamath Basin, even though the BOR controlled 100% of the water released from the upper basin. Even so, BOR acknowledged that they could not even meet their 57% portion of the RPA flows until 2006 without building a 100,000-acre-feet water bank and taking other measures and actions (that were unspecified) to make up any difference that might occur. The other 43% of the RPA flows would be made up outside the boundaries of the Klamath Project by stepping up enforcement of water rights and water right laws, voluntary conservation measures and programs to increase flows in the tributaries, actions that were highly unlikely to occur by the year 2010. Even more untenable was the fact that NMFS recognized that this approach “may not avoid jeopardy over the 10-year period of proposed project operations and therefore would not constitute a viable RPA (p 55, 2002 Coho BO). Never-the-less, NMFS approved the RPA based on what appeared to be wishful thinking, that to date has not substantially materialized.

One of the major, but erroneous, conclusions that NMFS reached was that coho salmon adults spawn and juveniles rear only in tributaries and, thus, the mainstem Klamath River’s only function, as far as coho are concerned (and the BO is concerned), is to provide upstream adult migration and downstream smolt migration. The 2002 Coho BO RPA flows attempt to address only the adult and smolt migratory life history phases of

coho, even though monitoring and research data show some coho salmon do spawn (albeit limited due to the threatened status of coho) and significant numbers of coho fry rear in the mainstem. But more importantly, from a sustainable fisheries perspective, the RPA flows do not, and are not even intended to, protect or sustain Chinook salmon which use the mainstem Klamath River extensively for spawning, egg incubation, fry rearing and juvenile outmigration at times of the year that differ from coho salmon. The result of this regulatory (ESA) oversight is that we have poor single species management on the Klamath River for a complex of fish stocks that requires a more comprehensive and holistic approach for these fisheries to thrive into the future.

The scientific community and down-river fishery managers were stunned by this radical change in approach to protection of threatened coho salmon and its implications on other fish species, especially since ongoing research was strongly suggesting that Klamath River anadromous fish required more water than was being provided, not less.

Essential Fish Habitat

Essential Fish Habitat (EFH) was identified and described for Chinook and coho salmon in the Klamath River and its tributaries upstream to IGD by the Pacific Fisheries Management Council (PFMC) under Amendment 14 to the Pacific Coast Salmon Fishery Management Plan. Under provisions of the Magnuson-Stevens Fishery Conservation and Management Act, regulations require that Federal action agencies, in this case BOR, consult with NMFS and provide them with a written statement on the effects of their action on EFH. But, because BOR failed to do this, NMFS relied on the 2002 Coho BO in preparing its EFH conservation recommendations. Upon receipt of the recommendations, the action agency is then required to provide a detailed written response within thirty days describing how they intend to avoid, mitigate or offset the impacts of their activity on EFH. This course of events did not occur.

Instead, NMFS determined that the proposed action:

> *"will adversely affect spawning, rearing and migratory EFH functions of Pacific Salmon currently or previously managed under the Magnuson-Stevens Act. Primarily NMFS thinks that the proposed project would result in a continued decline in EFH conditions in the Klamath River over time, and thereby preclude rebuilding of the coho salmon population and reduce habitat required to support a sustainable Chinook fishery."*

However, NMFS concluded that implementation of the BO's RPA and the terms and conditions of the incidental take statement would constitute necessary conditions for conserving Klamath River Chinook and coho EFH. As we shall see, the RPA has not delivered the conservation of EFH as promised in the Coho BO.

A major issue is that NMFS has not felt obligated to give any real consideration to protection, much less enhancement, of unlisted species, even though their public trust and

tribal trust responsibilities would suggest that they should. For instance, the NMFS Southwest Region web site states the following:

> *"Flow releases at Iron Gate Dam are managed according to a biological opinion (B0) issued by NOAA Fisheries Service. The flow release operations under the BO are calculated to provide the necessary protections for the Endangered Species Act (ESA) listed coho salmon in the Klamath River and* ***are not designed specifically to protect Chinook salmon****, which are not listed under the ESA."* (emphasis mine)

.**Best Available Science**

Another major flaw of the 2002 Coho BO, and perhaps the most important one, is that NMFS did not use the best available science for formulating the RPA. The Hardy Phase II Flow study was started shortly after completion of the Phase I Report on August 5, 1999. The Final Phase II Report was reviewed by the public, interested agencies and all cooperators and then released on November 21, 2001, in time for potential use in developing the 2002 Coho BO. Although a number of ancillary findings of the Phase II Report were incorporated in the BO, its flow recommendations were not. The Phase II Report was reclassified as a draft report by DOI and shelved. The reason given was that the Upper Klamath Lake (UKL) inflow numbers (which were originally provided by BOR) used by the Phase II hydraulic modeling were not what BOR considered to be the most accurate or current version. However, BOR could not release the newer inflow numbers for Dr. Hardy's use, for an indeterminate period of time, because that data were being used as part of the upper Klamath Basin Oregon water rights adjudication. My understanding at the time was that if these UKL inflow data were used for any other purpose than the water rights adjudication, BOR claimed that they would be vulnerable to a law suite. In addition, the Draft Hardy Phase II Final Report was suddenly plagued by the inability to secure promised contractual funding from DOI and other bureaucratic machinations that delayed its final release for over four years and eight months. During this whole episode, BOR claimed the flow recommendations were unusable because they were still in draft form.

About the same time that the Draft Hardy Phase II Report was completed, the BOR started their own investigation to attempt to describe the natural outflows from Upper Klamath Lake and Keno prior to development of the upper Klamath Basin. Early drafts of their report, which were soundly criticized, erroneously suggested that natural flow accretions at these two points were significantly lower than formerly thought. A final report entitled *Natural Flow of the Upper Klamath River* was released in November, 2005. It was BOR's expectation that Dr. Hardy would use the impaired flows (flows after development) generated by this report as inputs for hydraulic modeling below IGD. Eventually, the unimpaired flows from the Natural Flows Report were used by Dr. Hardy instead and this may still be a point of contention.

The National Academy of Sciences National Research Council (NRC) Report: *Hydrology, Ecology, and Fishes of the Klamath River Basin* (NRC, 2007) concluded that:

> *"the Natural Flow Study did not adhere closely enough to standard scientific and engineering practice in the areas of calibration, testing, quality assurance, and quality control. These activities are prerequisites for confidence in the model products by users, including decision makers and other modelers."* (p 149)

.The Hardy Phase II Final Report was finally completed on July 31, 2006 and to my knowledge its flow recommendations have still not been utilized to manage Klamath River flows at Iron Gate Dam. The sense one had during this turbulent period was that there were strong political forces at work at DOI that did not want to see the Phase II Report completed because its flow recommendations were perceived as a threat to irrigated agriculture.

The Phase II Flow Study was more than a state-of-the-art habit/flow relationship modeling effort. It drew upon and considered most all of the significant research and monitoring that had been conducted on the Klamath River below Iron Gate Dam and much of what had been done in the upper Klamath Basin to date and in many cases incorporated that information into the Final Phase II Report. There were many Federal, State, Tribal and private cooperators who provided fish, habitat, water chemistry, hydrologic and other needed data and who included in future work plans research projects and monitoring that would produce needed new data that would make the Phase II Study a success.

Another important aspect of the study was that Dr. Hardy created a Klamath Technical Review Team to assist in study design, data review and report review. The Technical Review Team included participation by the U.S. Fish and Wildlife Service, BOR, NOAA Fisheries, U.S. Geological Survey, Bureau of Indian Affairs; Yurok, Karuk, and Hoopa Tribes; Oregon Department of Fish and Wildlife, CDFG, and representatives of the Klamath Water Users Association.

The Hardy Phase II Final Report was developed for the Department of Interior:

> *"to recommend instream flows on a monthly basis for specific reaches of the main stem Klamath River below Iron Gate Dam by different water year types. These recommendations specify flow regimes that will provide for the long-term protection, enhancement, and recovery of the aquatic resources within the main stem Klamath River in light of the Department of the Interior's trust responsibility to protect tribal rights and resources as well as other statutory responsibilities, such as the Endangered Species Act. The recommendations are made in consideration of all the anadromous species and life stages on a seasonal basis and* ***do not*** *focus on specific target species or life stages (i.e., coho)" (Hardy, et al, 2006).*

The Hardy Phase II Final Report is the definitive and most comprehensive work on Klamath River anadromous salmonid habitat and flow requirements. In a December 4, 2002 PFMC letter (from Radtke to Norton and Evans) it was stated that DOI had spent $890,000 and other cooperators had contributed more than $1 Million to the flow study

effort to date. No other similar flow studies have been conducted on the Klamath River and it is unlikely another similar effort could be justified.

Figure 1. in the Supplemental Information compares the Hardy Phase II recommended flows versus the 2002 Coho BO Phase III flows and the actual flows that occurred during water year 2007, a below average water year type.

The NRC Report had this to say about the Hardy Phase II Flow Study:

> *"The most important outcome of the IFS was that it indicated that increases in existing flows downstream from Iron Gate Dam probably would benefit fish populations through improved physical habitat associated with more water and through reduced water temperatures." (NRC, 2007, p 133)* and *"The committee concludes that the [Hardy Phase II] study enhances understanding of the Klamath River basin ecosystem and the flows required to sustain it. In their present form, if they are adopted, the recommended flows resulting from the study should be adopted on an interim basis pending the model improvements outlined below to overcome its limitations, and a more integrated assessment of the scientific needs of the basin as a whole. The recommended flow regimes offer improvements over existing monthly flows in that they include intra- and interannual variations and appear likely to enhance Chinook salmon growth and young-of-the-year production."* (NRC, 2007, p 152).

A CDFG (letter of May 24, 2002, Koch to Sabo) commented on the May 16, 2002 draft of the Coho BO and advised BOR to implement the Hardy Phase II flow recommendations in the RPA, beginning in 2002 and that these flows would help meet EFH mandates. However, this recommendation was not implemented.

Fish-Kills

In September, 2002, less than four months after the 2002 Coho BO was released, at least 33,000 and perhaps as many as 70,000 adult salmonids died in the lower reaches of the Klamath River. By far, most of these fish were adult Chinook salmon, although hundreds of coho and steelhead also succumbed. This event was unprecedented for the Klamath River and likely one of the largest salmon mortalities ever experienced on the west coast.

The primary cause of the fish-kill was a disease epizootic from the ubiquitous pathogens ich and columnaris, but several factors combined that stressed the fish and allowed the epizootic to flourish. Warm water temperatures (which are normal for this time of year) combined with an above-average run of Chinook salmon and near-record low flows resulted in high fish densities and created ideal conditions for pathogens to infect salmon.

The CDFG 2002 Fish Kill Report summarizes its conclusions as to what caused the fish kill and what can be done to avoid future kills by stating:

> "Flow is the only controllable factor and tool available in the Klamath Basin (Klamath and Trinity Rivers) to manage risks against future epizootics and major adult fish-kills. Increased flows when adult salmon are entering the Klamath River (particularly during low-flow years such as 2002) can improve water temperatures, increase water volume, increase water velocities, improve fish passage, provide migration cues, decrease fish densities and decrease pathogen transmission between fish.

That low flow was the primary causative factor leading to the September, 2002 fish-kill was supported by two other independent reports, one by the U.S. Fish and Wildlife Service, Arcata and the other by the Yurok Tribe.

Given the magnitude of the fish-kill and its close correlation to low flows, it would be expected that BOR would reinitiate consultation with NMFS on the Coho BO, but they did not.

As serious as the September, 2002 fish kill was, a more critical issue to the survival of Klamath River salmon is the repeated mortality of juvenile salmon during their spring and summer rearing and down stream migration phase. A number of juvenile fish kills, some numbering in the hundreds of thousands, have regularly occurred in recent years. Recent investigations have shown that two myxozoan parasites *Ceratomyxa Shasta* and *Parvicapsula minibicornis* have been a significant factor in mortality of juvenile Chinook salmon and can also cause disease in coho salmon. These parasites thrive in vegetated, silt-laden slow water environments and the primary remedy for their control is to increase the magnitude and variability of flow releases at IGD during these months. A 2005 report entitled:

> *FY 2004 Investigational Report: Health Monitoring of Juvenile Klamath River Chinook Salmon* by the USFWS, California-Nevada Fish Health Center concluded that *"Depending on the Juvenile Klamath River salmon population size and smolt to adult ratio, the effective number of adult salmon lost to C. Shasta as juveniles could rival the 33,000+ adult salmon lost in the 2002 Klamath River fish die-off."*

Since BOR and NMFS both knew about this threat to Chinook and coho salmon, why was ESA Sec. 7 consultation not reinitiated?

Figure 2 of the Supplemental Information compares grilse (2-yr. old) Chinook salmon returns versus outmigration flows that these fish experienced as juveniles (0+) two years previously. The graph shows a strong positive correlation between flow and the number of grilse returning two years hence; the greater the flow, the higher the returns. This correlation held well for years 2001–2004, but then fell apart in 2005, suggesting deteriorated ocean conditions may have had a greater influence that year.

A December 4, 2004 letter from the PFMC to DOI and Commerce (see Supplemental Information letter, Radke to Norton and Evans) summarized the concerns of the 2002

Coho BO and the fact that it was not protecting Klamath River fisheries. Another letter dated December 15, 2005 from the PFMC to BOR (Hansen to Keyes) indicated the same concerns still had not been resolved.

Federal Court Decisions

In the latest of a number of court decisions favoring increased protection for Klamath River coho salmon, the Ninth Circuit Court of Appeals, in March, 2007, reaffirmed a March, 2006 Federal District Court Order (Armstrong Decision) that found BOR and NMFS arbitrary and capricious and provided injuctive relief for the Plaintiffs by ordering BOR from making irrigation diversions at the Klamath Project unless flows in the Klamath River below Iron Gate Dam meet 100% of the flows called for in Phase III of the Klamath Irrigation Project Biological Opinion's Reasonable and Prudent Alternative (RPA) until a new biological opinion is completed pursuant to the Endangered Species Act ("ESA")§7(a)(2) and reviewed by the court. In the process the courts invalidated Phases I and II of the BO. In essence the courts struck down the entire premise of the 2002 Coho BO that RPA Jeopardy avoidance flows can be phased in slowly over many years without jeopardizing coho salmon. From this one, can conclude that for the first five years, the 2002 Coho BO did not meet the non-jeopardy standards of the ESA and did not protect and conserve critical coho habitat or coho and Chinook EFH (since EFH conservation was largely based on the 2002 Coho BO RPA).

2008 Klamath Project Operations and the 2008 Biological Assessment

The BOR released an Interim 2008 Klamath Project Operations Plan on April 3, 2008, indicating it would operate the Project consistent with the flow requirements of Phase III of the NMFS 2002 Coho BO and the water year type determined by the April 1, 2008 UKL inflow forecast by the Natural Resource Conservation Service. The Interim KPOP would stay in effect until NMFS finishes the new Coho BO that may provide new direction.

However, in contrast to the 2008 Interim KPOP, BOR is proposing something far less protective of coho salmon (and by implication, Chinook salmon). In an October 22, 2007 letter to NMFS that accompanied the Final BA on the proposed operations of the Klamath Project, from 2008 to 2018, BOR stated the following:

> *"The proposed action in the enclosed BA includes maintaining a minimum flow of 1300 cubic feet per second (cfs) in the Klamath River below Iron Gate Dam for the months of October through February, as contained in the Phase III* ***Dry Year flows*** *as described in Table 9 of the 2002 National Marine Fisheries Service (NMFS) Biological Opinion (BO). However, in an effort to provide maximum flexibility to meet coho salmon needs, we are evaluating the impacts of reducing the minimum flow discharge during these months at Iron Gate Dam from the proposed 1,300 cfs to 1,000 cfs during the months of October through February, and reducing late summer flows. This reduction in the minimum flow would provide the opportunity to shift available water to the March through June*

> *period, which corresponds with the out-migration of coho salmon smolt. We will be providing further information regarding this modification to the proposed action and its effects at a later date and will work with your office and the U.S. Fish and Wildlife Service, as well as other interested parties, to further refine and analyze this potential flow regime during the formal consultation process.* (emphasis mine).

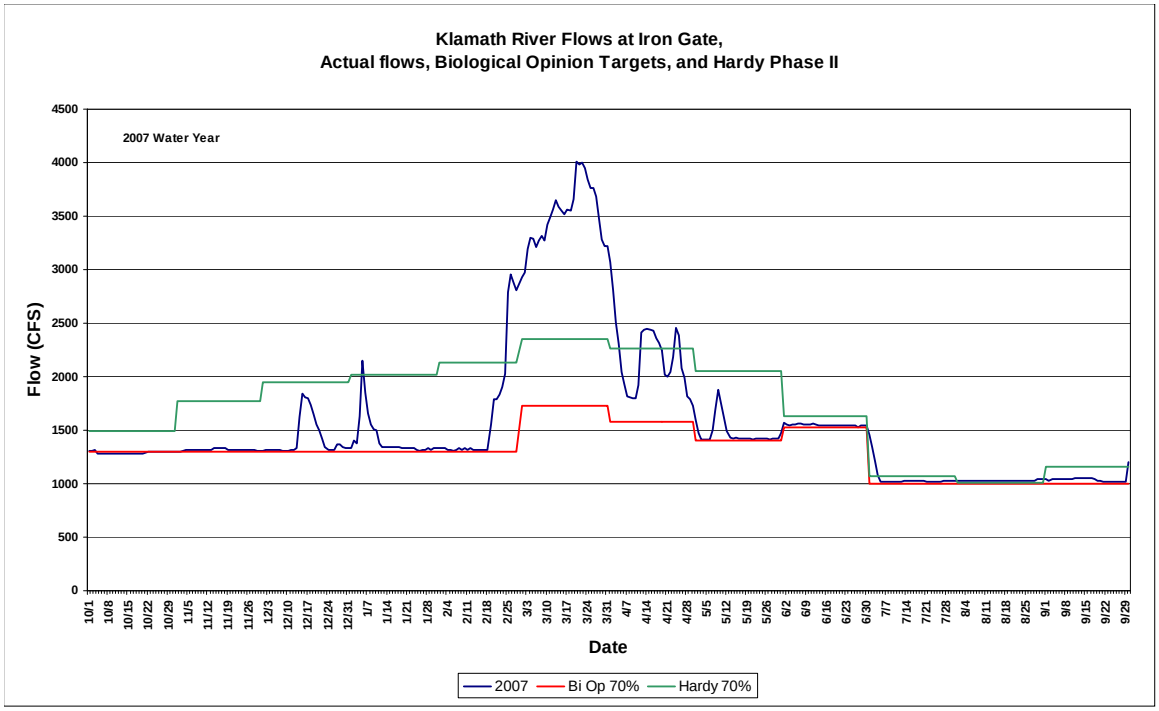
The BOR is proposing to operate the Klamath Project for the next ten years under Dry Year (90% Exceedance) drought conditions, regardless of water year type. Furthermore, BOR is proposing to reduce the October through February flows at IGD to 1000 CFS, below any measure of adequacy, and to reduce late summer flows an unspecified amount below 1000 CFS. This is an attempt to meet needed rearing and outmigration flows by shifting needed water from one life history phase of coho salmon to another, while maintaining full irrigation deliveries for all water year types. The absolute minimum flow needed for adult coho and Chinook salmon mainstem migration and spawning is 1300 CFS at IGD. The minimum flow release at IGD needed during late summer to accommodate adult salmon entry into the lower Klamath River and to ameliorate high water temperature conditions, such as resulted in the 2002 fish kill, is 1000 CFS. Both of these standards were part of the 2002 BO Phase III RPA. Therefore, the BOR proposal falls far short of the requirements of the Armstrong Decision and the recommendations of the Hardy Final Phase II Report. Unless NMFS rejects the BOR ten year KPOP Klamath River flow proposal and implements the Hardy Final Phase II Report flow recommendations, we can expect continued deterioration of the Klamath River anadromous salmonid fishery resource.

Recommendation

The NMFS should require in their next Coho BO that the Hardy Final Phase II flow recommendations be implemented on an interim basis until further studies can refine the model, as recommended by the 2007 NRC Report. These flows are a necessary starting point and foundation for basin-wide anadromous fish restoration that cannot otherwise be successful. Fund and implement the data improvements recommended by the 2007 NRC Report.

Thank you for taking my testimony. I will be glad to answer questions.

Figure 1.


Klamath River Flows at Iron Gate,
Actual flows, Biological Opinion Targets, and Hardy Phase II
2007 Water Year
Flow (CFS)
4500
4000
3500
3000
2500
2000
1500
1000
500
0
10/1
10/8
10/15
10/22
10/29
11/5
11/12
11/19
11/26
12/3
12/10
12/17
12/24
12/31
1/7
1/14
1/21
1/28
2/4
2/11
2/18
2/25
3/3
3/10
3/17
3/24
3/31
4/7
4/14
4/21
4/28
5/5
5/12
5/19
5/26
6/2
6/9
6/16
6/23
6/30
7/7
7/14
7/21
7/28
8/4
8/11
8/18
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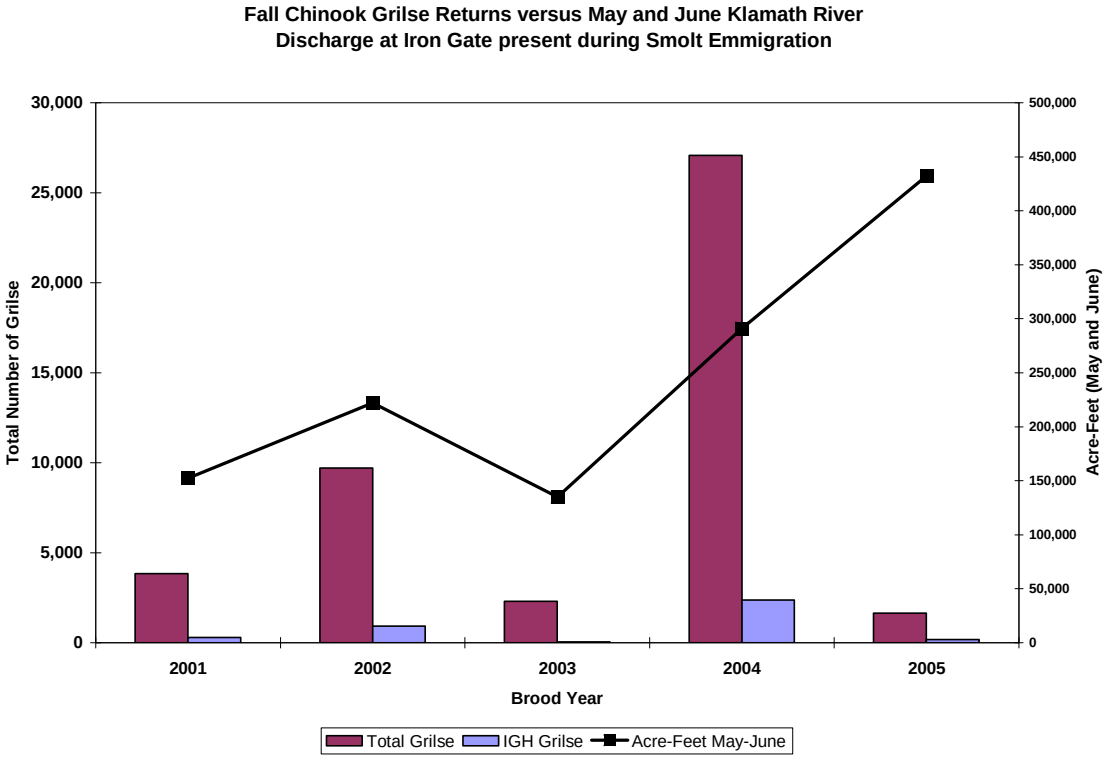
9/1
9/8
9/15
9/22
9/29
Date
2007
Bi Op 70%
Hardy 70%

Figure 2.


Fall Chinook Grilse Returns versus May and June Klamath River Discharge at Iron Gate present during Smolt Emmigration
Total Number of Grilse
30,000
25,000
20,000
15,000
10,000
5,000
0
Acre-Feet (May and June)
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
2001
2002
2003
2004
2005
Brood Year
Total Grilse
IGH Grilse
Acre-Feet May-June

Supplemental Information

. **PACIFIC FISHERY MANAGEMENT COUNCIL**
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December 4, 2002
Secretary Gale Norton
United States Department of the Interior
1849 C. Street N.W.
Washington, DC 20240
Secretary Donald Evans
United States Department of Commerce
14th and Constitution Avenue N.W.
Washington, D.C. 20230
Dear Secretary Norton and Secretary Evans:
The Pacific Fishery Management Council (Council) has grave concerns regarding the adverse
effects of reduced flows on the anadromous salmonid fish populations of the Klamath River. The May 31, 2002, National Marine Fisheries Service (NMFS) Final Biological Opinion (BO) on
the effects of the U.S. Bureau of Reclamation (Bureau) Klamath Project on Southern Oregon/Northern California Coasts (SONCC) coho salmon contains a “reasonable and prudent
alternative” (RPA) that prescribes flows are so low the Klamath River will be placed in a state of
perpetual drought. Such low flows will jeopardize the continued existence of coho salmon in the
Klamath Basin and will result in destruction or harm to its critical habitat. SONCC coho salmon
are listed as threatened under the federal Endangered Species Act (ESA), and the California Fish and Game Commission recently determined that coho salmon from San Francisco Bay to
the Oregon border are warranted for listing under the California Endangered Species Act. Furthermore, these extremely low flows will cause adverse impacts to the essential fish habitat
(EFH) of coho and chinook salmon, which are managed by the Council. Therefore, *the Council*
urges the Bureau and NMFS to immediately reinitiate Section 7 ESA consultation regarding Klamath Project effects on SONCC coho salmon and its critical habitat, and to reinitiate consultation on Klamath Project effects on coho and chinook salmon EFH.

Background

The Council was created by the Magnuson-Stevens Fishery Conservation and Management Act
in 1976 with the primary role of developing, monitoring, and revising management plans for fisheries conducted within federal waters off Washington, Oregon and California. Subsequent
congressional amendments added emphasis to the Council’s role in fish habitat protection.

Amendments in 1996 directed NMFS and the regional fishery management councils to develop

conservation recommendations for agency activities that may affect the EFH of the fish they manage. In 1999 the Council identified and described EFH for chinook and coho salmon under
Amendment 14 to the Pacific Coast Salmon Fishery Management Plan.
The operational plans of the Klamath Project have a direct influence on the EFH of coho and chinook salmon. Such habitat includes the water quantity and quality conditions necessary for
successful migration and holding, spawning, egg-to-fry survival, fry rearing, smolt migration, and
estuarine rearing of juvenile coho and chinook salmon.
The BO covers Klamath Project operations for ten years (April 1, 2002 - March 31, 2012). Thus,
the Project's negative impacts to anadromous fish will be both short-term and long-term in nature. The BO forms the basis for both the USBR 2002 Project Annual Operations Plan and a
Long-Term (ten-year) Project Operations Plan that propose to divert, store and deliver irrigation
water. Flow releases at Iron Gate Dam are not part of the action, but would result from the action. It is notable that *while full irrigation deliveries are planned for all water year types during*
the ten-year period, improvements to flows for fish will depend solely on small, incremental, and
uncertain developments of new water. The Council believes this approach to water management works against the numerous and expensive federal, state, and tribal efforts aimed
at restoring anadromous fish habitat in the Klamath Basin, including regulatory efforts to minimize fishery impacts on weak salmon stocks.

Constraining Nature of Klamath Stocks

Since the early 1980s, the depleted status of Klamath River Basin natural coho and fall chinook
stocks has constrained management of ocean fisheries from Northern Oregon to south of San
Francisco. In order to protect these stocks, on many occasions the Council has had to reduce
the harvest of all salmon in otherwise healthy mixed-stock fisheries where Klamath salmon occur. Despite complete closures to the harvest of Klamath Basin coho salmon in the Southern
Oregon and California ocean commercial fisheries since 1993 and the ocean recreational fishery since 1994, the continued decline of this species resulted in the listing of SONCC coho
salmon as threatened under the ESA in May, 1997.

Recent Fish Kill

An unprecedented and disastrous fish kill in the lower Klamath River in September, 2002, resulted in a conservatively estimated loss of more than 30,000 returning adult salmon, according to the U.S. Fish and Wildlife Service. Most of the mortalities were fall chinook salmon,
although hundreds of coho salmon and steelhead trout were also killed. In 2002, ocean and inriver fisheries have been managed to allow a fall chinook spawning escapement to the

Klamath basin of 57,000 adults, of which 35,000 were expected to spawn in natural areas and
the rest at Iron Gate and Trinity River hatcheries. The fish kill will likely make it impossible to meet the escapement goal this year, and the loss of the reproductive potential of these fish will
result in diminished returns three, four and five years into the future. In addition, given the variable run timing for Klamath Basin substocks, escapement to some subbasins may be severely impacted. The 2002 inriver fisheries have already been severely affected as evidenced
by the Yurok Tribe's early closure of their fall chinook salmon fishery.

1/ USGS Gage 11530500 Klamath R NR Klamath CA.
2/ BO, Table 5, p 33.
3/ USGS Gage 11516530 Klamath R BL Iron Gate Dam CA.

Although disease was the ultimate cause of death for most of the fish killed, low flows in the lower Klamath River acted as a barrier to upstream migration, resulting in large concentrations
of stressed fish that quickly became infected. Average flows in the lower Klamath River during
September, 2002 were the fifth lowest on record since 1951[1/]. A significant portion of the September flows were released at Iron Gate Dam, which is controlled by the Bureau according
to its annual Project operations plans. In 2001, 39.4% of the flow at the mouth of the Klamath River was due to Iron Gate Dam releases.

The 2002 Project Annual Operations Plan flow prescriptions at Iron Gate Dam are based on the
NMFS BO's RPA, which purportedly avoids jeopardy to SONCC coho salmon by providing flow
releases at Iron Gate Dam that approximate the *minimum monthly flows attained during the 1990-1999 period of Project operations* for each respective water year type (above average, average, dry and critically dry)[2/]. In 2001 (a critically dry water year type) the average flow at Iron
Gate Dam was 1,026 cubic feet per second (cfs)[3/]. In September 2002, (a dry water year type),
an average flow of 762 cfs was released at Iron Gate Dam before a pulsed flow was initiated on
September 28 (USGS unpublished records). The 2002 flows were 34.6 per cent less than in 2001. Even though the total fall chinook run was much greater in 2001 than projected for 2002,
and 2001 was a drier water year type, an adult fish kill did not occur. Thus, there is a strong correlation between the low flows prescribed by the BO and implemented by the 2002 Project
Operations Plan and the September 2002 fish kill.

In the latter stages of the fish kill, additional water (the pulsed flow) was provided by PacifiCorp
to the Klamath River for a two-week period from September 28 to October 10. The water came
from hydro generating facilities at Copco and Iron Gate reservoirs, and increased the flows at Iron Gate Dam by approximately 71% to 1300 cfs. This pulsed flow appeared to facilitate the dispersal and upstream migration of surviving salmon and steelhead trout. However, flows have
since been reduced by the Bureau to approximately 879 cfs, and are expected to stay at that

level through Spring 2003 unless precipitation and runoff in the basin improve significantly (Klamath Project 2002 Operations Plan, USGS Records).

The fish kill will likely delay recovery of Klamath basin coho and chinook salmon to levels that can sustain full fishing, and will result in continued economic and social hardship to Klamath Basin and coastal communities that depend on commercial and recreational fishing. The depleted status of these fisheries will also cause severe economic, social, and cultural impacts on the Yurok, Hoopa Valley, and Karuk Tribes of the lower basin.

Need for Flow Management Advisory Committee

The Council is very concerned that existing and proposed low flows between now and April 2003 will harm chinook and coho salmon spawning, egg incubation, fry emergence, and fry rearing in the Klamath River mainstem. Our concern is heightened by the fact these impacts will occur on populations that are already severely affected by the fish kill. To adequately address these concerns and to explore immediate solutions to the Klamath River flow shortage problem, the Council recommends the Bureau of Reclamation form a flow management advisory committee, consisting of tribal, state, and federal representatives having co-manager responsibilities for Klamath River fishery resources, as soon as possible. Convening such a group by mid-September in below average and dry years is a part of the BO RPA (BO, p 69), but the Bureau of Reclamation does not plan to implement this committee until 2010.

Need for Timely Completion of a Supplemental Environmental Impact Statement

Flows in the lower Klamath River are also influenced by accretions from the Trinity River, the Klamath River's largest tributary. Implementation of a recent Department of Interior Trinity River Record of Decision, which would have increased flows significantly, has been delayed by litigation. A court order has required the preparation of a Supplemental Environmental Impact Report (SEIS), the completion of which has been delayed by the Bureau of Reclamation. The Council urges the Bureau to complete the SEIS so that the higher Trinity River flows can be implemented in a timely fashion to benefit lower Klamath River flows.

Need for Reinitiation of Endangered Species Act Consultation

The Council believes by revealing how Klamath Project operations may have adversely affected threatened SONCC coho salmon and its critical habitat, the fish kill represents important new information not considered in the BO. Further, the fish kill may have resulted in incidental take that exceeds the amount or extent of take anticipated by the BO's Incidental Take Statement. Both of these concerns warrant reinitiation of consultation under 50 CFR '402.16 (BO, p. 74). The Council strongly recommends the Bureau of Reclamation and NMFS reinitiate consultation as soon as possible regarding the effects of Klamath Project operations on SONCC coho salmon and its critical habitat.

The Council is also deeply concerned the BO covers project operations for a ten-year period, between April 1, 2002 and March 31, 2012. The Bureau is presently developing an

Environmental Impact Statement (EIS) that would support preparation of a Long-Term Project
Operations Plan that would incorporate the 2002 BO as its basis for forming Project operations.
We believe that long-term commitments, once made, are difficult to change. Thus, it would be
prudent for the Bureau and NMFS to reinitiate Section 7, ESA consultation prior to finalizing the
EIS and Project Operations Plan. The Council would like to be kept fully informed and provided
the opportunity to comment if the Bureau decides to continue with development of these plans.

Need for Essential Fish Habitat Consultation

EFH conservation measures for coho and chinook salmon were included in the BO by NMFS,
based on information in the BO and from other sources. However, the Council strongly feels the
recommendations prepared by NMFS do not adequately protect either coho or chinook salmon
habitat. This is demonstrated by the recent fish kill and by the minimal proposed flows, which do
not reflect the best available science and information. In addition, the EFH regulations require
the Bureau of Reclamation, as the action agency operating the Klamath Project, to consult on
EFH, to provide NMFS with a written assessment of the effects of their action on EFH, and to
provide a detailed written response to NMFS within 30 days upon receipt of NMFS EFH
conservation measures, detailing how the Bureau intends to avoid, mitigate or offset the impacts
of their activity (50 CFR ' 600.920). To our knowledge, the Bureau has not done any of this.
The Council strongly urges the Bureau to initiate consultation on EFH, and to consider all life
history phases of coho and chinook salmon that may be affected by Project impacts on
mainstem Klamath River habitat.

Need for Finalization of Hardy Phase II Report

The Council notes the Department of Interior (DOI) commissioned Dr. Thomas Hardy of Utah
State University to conduct a flow study in the Klamath River, starting in June, 1998. The
purpose of this study was to develop monthly instream flow recommendations for the Klamath
River from Iron Gate Dam to the estuary for five water year types.
The recommended flows in the Hardy Phase II study were considered necessary to support
salmon and steelhead populations in the Klamath River. They were also necessary to meet the
DOI's trust responsibility to protect tribal rights and resources, and to meet other statutory
responsibilities such as the Endangered Species Act and the Magnuson-Stevens Act. A draft
Final Phase II Report was released for public comment on November 21, 2001, but has not been
finalized. NMFS used some of the information contained in this report to develop the BO, but
decided not to use the Phase II flow recommendations.
To date, the Hardy Phase II effort has cost DOI $890,000. In addition, cooperating agencies and

colleagues have contributed more than $1 million in services and studies to the effort. The Council believes the flow recommendations in this study represent the best available science regarding Klamath River anadromous salmonid flow needs. *We urge you incorporate this information in your ESA and EFH consultations*. We also encourage the Bureau of Reclamation
to finalize this report so that it can be reviewed and fully accepted by the scientific community and then used by Klamath River resource managers.

The attached tables show the flows that the Bureau plans to operate under for the next ten years
(from Table 5, BO p. 33) compared to the Hardy Phase II recommended flows at Iron Gate Dam
(Table 51). The Hardy 70% exceedence flows are for the same water year type as the Bureau's
dry water year flows (70% exceedence means that during 70% of the years in the period of record, annual inflows to upper Klamath Lake have exceeded the value indicated for a dry water
year type). The Hardy flow recommendations for a dry water year type are more than twice as
great as the flows which the Bureau provided at Iron Gate Dam in 2002 and plans to provide in
the future. Unimpaired monthly flows (not affected by the Klamath Project) are provided in Table
52. When compared to these flows, the Bureau's proposed flows for *all* water year types and *all*
months would put the Klamath River in a perpetual state of drought.

Summary of Council Recommendations

To summarize, the Council recommends the following:

1. Reinitiate ESA, Section 7 consultation as soon as possible (DOI and DOC).
2. Reinitiate coho and chinook salmon EFH consultation (DOI and DOC).
3. Establish a flow management advisory committee as soon as possible (DOI).
4. Complete the SEIS and implement the Trinity River ROD in a timely fashion (DOI).
5. Provide the Council opportunity to comment on the EIS for the Long-Term Operations Plan
(DOI).
6. Finalize the Hardy Phase II Report and incorporate its flow recommendations in future consultations and Klamath Project operations plans (DOI).

The crisis flow management exhibited on the Klamath River during drier water years is not conducive to the maintenance, much less restoration, of anadromous salmonid populations. In
addition, it contributes to economic uncertainty for communities that depend on sustainable fishery resources. The Council urges you to implement our recommendations in order to reverse this dire situation.

Sincerely,

Hans Radtke, Ph.D.
Chairman

JDG:dsh
Enclosures

c: U.S. Senator Dianne Feinstein
U.S. Senator Barbara Boxer
U.S. Senator Ron Wyden

U.S. Senator Gordon Smith
U.S. Rep. Mike Thompson
U.S. Rep. Greg Walden
California Governor Gray Davis
Oregon Governor John Kitzhaber
California Secretary for Resources Mary Nichols
CDFG Director Robert Hight
ODFW Director Lindsey Ball
U.S. Fish and Wildlife Service Director Steve Williams
Assistant Administrator for NMFS William Hogarth
C:\Documents and Settings\JJ.PCOUNCIL\Local Settings\Temp\Klamath letter v-8.wpd
From NMFS May 31, 2002 Biological Opinion
From Hardy Draft Final Phase II Flow Study Report
From Hardy Draft Final Phase II Flow Study Report

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December 15, 2005

Mr. John W. Keyes III, Commissioner
Bureau of Reclamation
1849 C Street NW
Washington, DC 20240-0001

Dear Mr. Keyes:

The Pacific Fishery Management Council (Council) appreciates the Bureau of Reclamation's (BOR) response dated July 7, 2005 (Ref. W-6332, PRJ-13.00), regarding management of water flows on the Klamath River. However, your response did not adequately address the issues posed by the Council. Fishing communities feel a strong sense of urgency regarding the resolution of water quality and quantity issues within the Klamath River system. Resolution of these issues is critical to the immediate needs of in-river and ocean fisheries, and to the health of the Klamath ecosystem. Management of both the quality and quantity of water in the Klamath River and its tributaries is critical for all phases of freshwater salmon life history. Therefore, the Council recommends that the BOR:

• Reinitiate consultation with National Marine Fisheries Service (NMFS) as soon as possible regarding the effects of water project operations on chinook and coho salmon essential fish habitat (EFH), and that the analysis and flow recommendations include a credible biological basis, such as contained in the draft Hardy Phase II report referenced in our previous letter.
• Implement draft Hardy Phase II recommendations as an interim measure while consultations are ongoing.
• Revise water bank accounting to reflect actual savings of water in those areas critical for
salmon survival.
• Support studies of juvenile survival and health and provide adequate funding for the Klamath monitoring programs.
• Develop credible long-term solutions to water management problems within the Klamath
Basin.

The Council is concerned that the biological opinion (BO) discussed in your letter, which is used
to guide flow releases from Iron Gate Dam, is not based on a biological analysis that addresses
the needs of coho salmon. In addition, the impacts to the essential fish habitat (EFH) of coho
and chinook salmon were not sufficiently analyzed.

We appreciate the Bureau of Reclamation's (BOR) action to provide water bank assets for
additional water for river flow, but believe that the additional quantity of water provided may not
be adequate to meet salmon recovery and productivity goals in the basin. Also, because of water
bank accounting methods, it is difficult to determine whether water bank allocations result in
meaningful changes to water flow. Actions cited in your letter, such as groundwater pumping,

may be beneficial in the short term, but it is unclear if these can be sustained over the long term
to provide meaningful benefit to the salmon populations in the basin.

A continuing disease problem (*C. Shasta*) in the main-stem Klamath River significantly affects
juvenile salmon survival and productivity. The emergence of this disease issue supports the need
for a renewed consultation with NMFS. Studies should be established and adequately funded to
determine the rate of in-river juvenile mortality associated with these pathogens and to identify
appropriate mitigating actions.

The Council remains committed to working with you to resolve these issues as we execute our responsibilities under the Magnuson-Stevens Fishery Conservation and Management Act. We invite the BOR to meet directly with us to affect a timely resolution of these issues as the health of salmon stocks remain in question and the lives of the fishing communities dependent on these stocks are severely impacted.

Sincerely,

Donald K. Hansen
Chairman

JDG:ckc

Cc: Honorable Barbara Boxer Honorable Dianne Feinstein
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