



# American Fisheries Society

## *Western Division*

May 13, 2003

Gale A. Norton  
Secretary of the Interior  
U.S. Department of the Interior  
1849 C Street, NW  
Washington, D.C. 20240

Dear Secretary Norton:

The Western Division of the American Fisheries Society (WDAFS) represents over 3,700 fisheries scientists and biologists employed in government, academia, and the private sector throughout Western North America. The mission of the American Fisheries Society (AFS) is to improve the conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries science and by promoting the development of fisheries professionals. AFS also promotes the enlightened management of fisheries resources for the optimum use and enjoyment by the public. Thus, we occasionally bring important issues to the attention of policy leaders and the public. As implied in our mission statement, we only advocate for fisheries conservation and sustainability when our position is firmly founded on quality, peer-reviewed science.

We are writing this letter to express our strong concerns with current water management in the Klamath Basin, and how that affects the fishery resources of the lower Klamath Basin, below Iron Gate dam. In particular, we are extremely concerned about the following:

1. The September 2002 fish kill, that resulted in the loss of over 34,000 fish, mostly fall Chinook but including 344 federally listed adult coho salmon. Although low water conditions due to drought, and large numbers of adult returns were important, we believe water management decisions by the federal government were an important contributing cause to this fish kill. These decisions were scientifically flawed because they were based on the adoption of a single-species management approach (i.e., for coho salmon).
2. That there is a lack of essential habitat modeling to help inform federal water managers.

In the case of species that are extremely rare in the Klamath River, like coho salmon, suitable habitat and habitat modeling are extremely important for species recovery.

3. That there are deficiencies in the U.S. Bureau of Reclamation's (USBR) 10-year Biological Assessment (BA) and resulting Biological Opinion (BO) that govern Klamath Project Operations with respect to compliance with the Federal Endangered Species Act (ESA).
4. That the completion of the Hardy Phase II report has been delayed. We urge the timely completion of this report, as it may substantially aid federal agencies in developing a more ecosystem based, multi-species flow management regimen for the Klamath River.
5. That the scientific standards and associated burden of proof used by the National Academy of Sciences/National Research Council (NAS/NRC) group investigating the Klamath appear to us to be incompatible in philosophy and intent with the ESA. In particular, we view that under law and current policy federal water managers should be using a precautionary approach to water management that is designed to reduce risk to endangered species given the absence of complete data and the resulting scientific uncertainty in how best to manage flows in the Klamath.
6. That the approach taken by the NAS/NRC does not adequately consider the healthy river approach advocated by many scientists and scientific organizations. This view recognizes that the best approach for protecting instream uses is adherence to the natural hydrograph because it protects target species, prey species, spawning behavior, and more importantly the geomorphology necessary to support a healthy riverine ecosystem. We understand that water rights and federal agency obligations constrain the ability to fully achieve natural hydrographs on the Klamath, but believe that maximum practicable achievement of this goal should be a central consideration by NAS/NRC.
7. That, to more fully understand the effects of current water management, a detailed economic study of the impacts of water diversions on recreational, commercial, and tribal fisheries, and associated cultural resources and support industries, is needed. Currently, such a comprehensive study is lacking. Even though the NAS/NRC report will focus on coho, we believe that a final assessment should include a comprehensive evaluation of the impacts on all Klamath River fisheries.
8. That the NAS/NRC should not complete its final report until it is able to review and consider three critical reports that are currently being prepared.
  - a) U.S. Fish and Wildlife Service (USFWS) report on "Estimate of Mortality". We understand that this report should be finished in the near future.
  - b) USFWS final report on the "cause of the fish kill". We understand that this report should be finished in the near future.
  - c) California Department of Fish and Game (CDFG) final fish kill assessment report. The CDFG is currently drafting a final report on the fish kill.

We believe that an NAS/NRC review that is released without first reviewing the information within these critical reports would represent an incomplete evaluation of the most recent pertinent science. This, in turn, increases the risk that the NAS/NRC will be scientifically “obsolete” soon after it is published. In addition, federal water managers should have the benefit of NAS/NRC review and consideration of these reports, rather than having to consider them in isolation from the rest of NAS/NRC’s work.

9. That the various Tribal Fisheries programs within the Klamath Basin have extensive experience and information relevant in the NAS/NRC review. We therefore strongly encourage the NAS/NRC, in their review and analysis, to aggressively seek out and include all applicable published and unpublished data and reports produced by the various Tribal Fisheries programs and other science-based organizations within the Klamath Basin.

### **The Fish Kill of 2002**

The WDAFS believes that the recent fish kill, where over 34,000 fish-died, including over 32,500 Chinook salmon, should be taken as a clear warning signal that current management strategies are inadequate to protect the fisheries of the Klamath River. Adult fish kills in the Klamath River have not been observed in historical time. In addition, the presence of fish kills in unaltered systems is extremely rare.

The causes of the Klamath River fish kill are complex, and involve a number of factors that came together with tragic results. Drought conditions were clearly the dominant problem, as was, ironically, that very large numbers of adult salmon returned to the Klamath River to spawn. However, we strongly believe that federal water managers exacerbated these natural risk factors through their water management decisions, in particular, their decision to limit flows over Iron Gate Dam, and resultant low flows in the Lower Klamath River where the fish kill occurred. We recognized the scientific uncertainty in deciding what are the optimal, or even the minimally necessary flows in the lower Klamath. But even a cursory review of the managed flow regime in the Klamath in 2002, a flow regime in which low flows occurred not just during August and September, but throughout 2002, indicates that federal water managers failed to implement a management strategy that was at all sensitive to the requirements of downstream fish use. Just as troubling is that the impacts of the 2002 flow regimen may have significant negative effects on future production of Klamath Basin fisheries resources as well.

We note that the USBR 2002 and 2003 Operations Plans are largely based on the recommendations of the NRC report<sup>1</sup>, which clearly focused only on coho salmon, and explicitly stated that its recommendations were not meant to be applied to other species. We support the use of science-based flow recommendations by federal water managers in the Klamath Basin, but note with concern that the USBR used the NRC report inappropriately. That is, they ignored the

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<sup>1</sup>NRC (National Research Council). 2002. Scientific evaluation of Biological Opinions on endangered and threatened fishes in the Klamath River Basin: Interim report. National Academy Press, Washington DC.

report's caveat that it was not a basis for multi-species or ecosystem level management of Klamath River biological resources. Thus, we believe that it is highly likely that the 2002 fish kill, which was unprecedented on the Klamath, was a result of a flawed, single-species management approach. Even though the primary species affected was Chinook salmon, a total of over 344 coho died as well (Guillen 2003)<sup>2</sup>. In addition, these counts may underestimate the actual number of dead fish by as much as 50%<sup>3</sup>.

Unfortunately, the mistake of managing flows for a single species appears likely to be repeated. A review of the USBR's BA and the resulting BO, reveal that the USBR's water operations, with some small exceptions, follow the NRC's recommendations for coho salmon exclusively, and that the USBR is managing for a single species. The Klamath River is home to many other species besides coho salmon, but the NRC report explicitly limited itself to addressing coho salmon and suckers of the Upper Basin. When advised of its tribal trust obligation to protect other species, such as Chinook salmon, steelhead, green sturgeon, lamprey, and coastal cutthroat trout, the USBR responded by adding an arbitrary amount of water (20,000 acre-ft) to the flow schedule. This water was released over a roughly one-month period during the summer of 2002.

Then, during the summer of 2002, the USBR removed the water allocation by re-classifying the water year type from "Below Average" to "Dry", thereby severely reducing August and September flows; an action that was not covered by the USBR's BA or subsequent BO. We are not aware of any credible scientific rationale as to why the 2002 Klamath Project Operations plan would be sufficient to protect downstream fisheries resources other than coho salmon.

We are sympathetic to federal water managers who must balance protection of fish and other aquatic resources in the Klamath with their obligations to respect water rights, and to meet water delivery obligations with other interests in the Klamath Basin. It is not an easy job, as any decision will anger someone. Yet, as fisheries scientists, it is clear that the current methods for determining what flows will be delivered to agriculture, versus those delivered to protect upper Klamath Lake resources, downstream Tribal resources, aquatic ecosystems that support coho, and other commercially valuable species involved a certain amount of risk to those resources. In 2002, management decisions most certainly placed the entire risk associated with flow allocations on downstream and Upper Klamath Lake biological resources, as flows to protect downstream resources were curtailed in mid-season but no corresponding cuts were made to agricultural deliveries. We believe that federal water managers need to spread the risk of their water allocation decisions among all the competing uses in the Klamath Basin in order to help avoid a repeat of the 2002 fish kills.

We recognize the considerable uncertainty and controversy in determining what caused the 2002 fish kills. It is not our aim to be the ultimate authority in this matter, as we recognize that extensive studies of the cause of the fish kill are being undertaken by various agencies and tribal fisheries programs. However, despite the uncertainty, several facts about the kill point toward

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<sup>2</sup>Guillen. 2003. Presentation at the Annual Meeting of the Humboldt Chapter of the American Fisheries Society. Arcata, CA.

<sup>3</sup>American Fisheries Society 1992. Investigation and valuation of fish kills. AFS Special Publication 24. American Fisheries Society. Bethesda, MD.

inadequate flow as the dominant factor leading to this event:

1. Although many point to poor water quality conditions as a causative factor in this kill, water quality parameters were not out of the normal range of environmental variability. Water temperatures monitored by the Yurok Tribe in cooperation with USFWS appear to be within the range seen in recent years when there were no fish kills (Figure 1). Dissolved oxygen levels during 2002 were also within a range conducive to adult salmonid survival and migration (Figure 2). Certainly, the temperatures were at levels that could exacerbate disease problems. However, this risk factor was likely exacerbated by the large number of fish returning to spawn, a natural element, combined with high fish densities that resulted from a migrational delay that was most likely due to reduced river volume caused by low flows, a management influenced consideration.
2. As indicated by Yurok Tribal elders and examination of historical records, the river has had much larger runs historically, with no such fish kills. Although the river has had lower flows in the recent past, no fish kills occurred. However, at no time in the recent past, has there been a combination of a relatively large run size (18% larger than the average run from 1981-2002) and low flow such as was seen in 2002 (Figure 3). In situations where large numbers of fish are concentrated, either by migrational delay or other factors, outbreaks of *Ichthyophthirius multifiliis* (Ich) or other diseases, such as *Flavobacterium columnare* (columnaris disease), have caused large fish kill events in other systems<sup>4</sup>, notably in British Columbia in the Skeena River system with sockeye salmon. Low flows were also implicated in fish kills associated with columnaris disease in the Rogue River in the late 1970's and early 1980's<sup>5</sup>. It should be noted that in the case of the Skeena River, mechanical blockage of fish migration led to the large concentration of fish and outbreak of Ich.

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<sup>4</sup> Traxler, G.S. , J. Richard, T.E. McDonald. 1998. *Ichthyophthirius multifiliis* (Ich) epizootics in spawning sockeye salmon in British Columbia, Canada. *Journal of Aquatic Animal Health*. 10:143-151.

<sup>5</sup> Oregon Department of Fish and Wildlife 1981. *Rogue Basin Fisheries Evaluation Program Progress Report*.

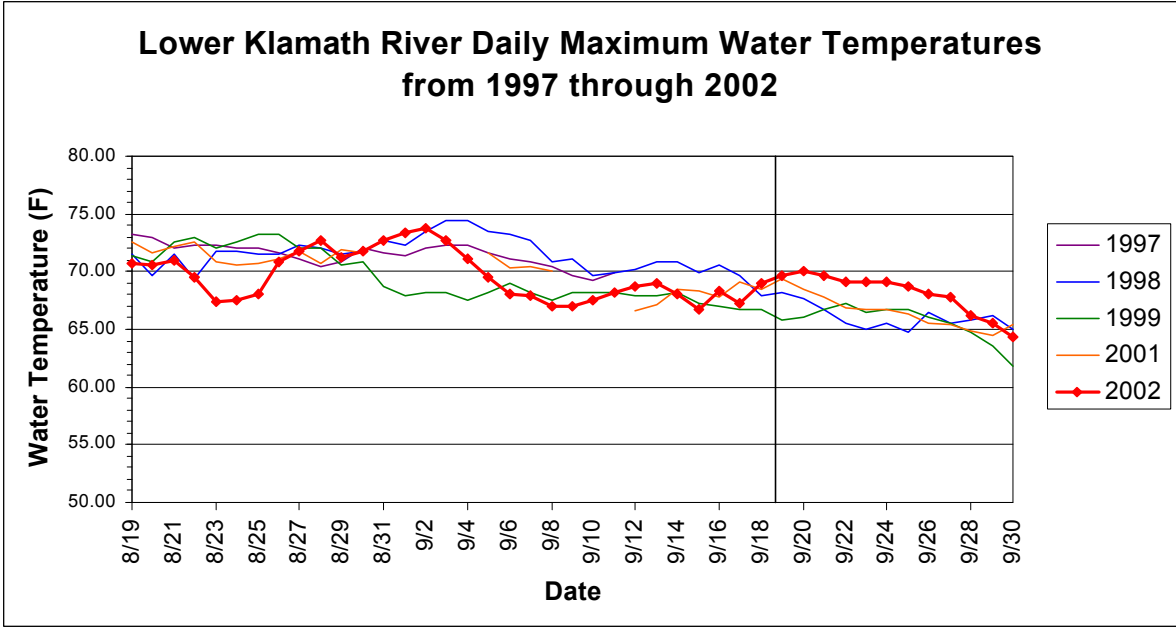


Figure 1. Comparison of maximum daily water temperatures measured at Terwar (Klamath) gage (2001 and 2002) and Omagar Trap.

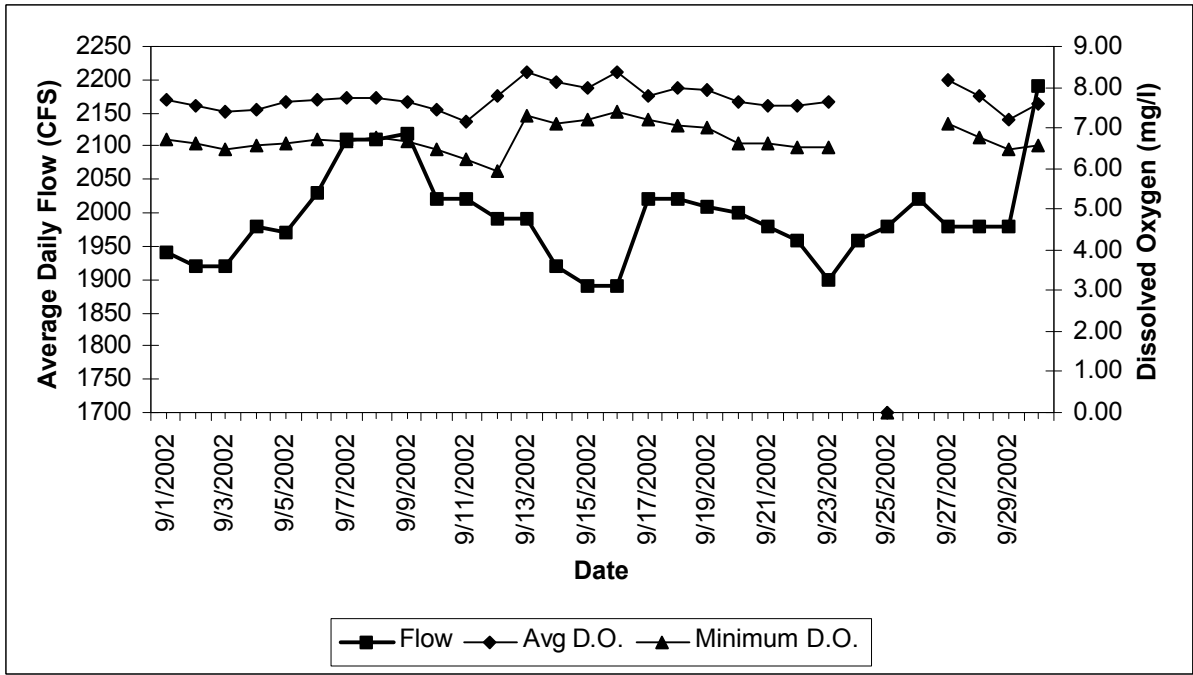


Figure 2. Minimum and average daily dissolved oxygen concentrations measured at Terwar gage (2002).

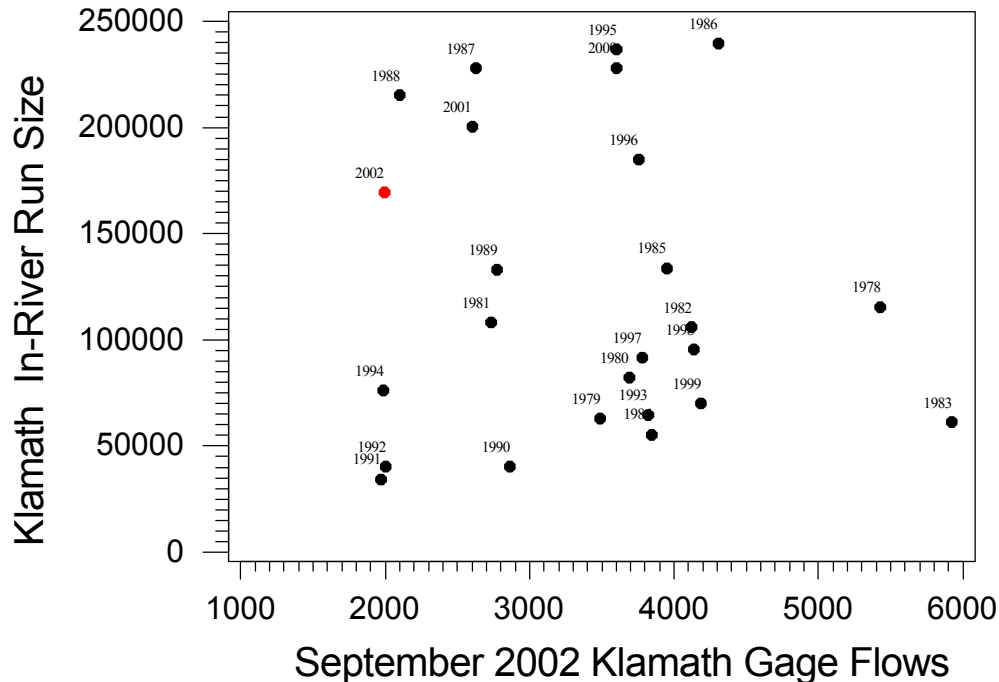


Figure 3. Scatter-plot of in-river run size and flow measured at the USGS Klamath Gage<sup>6,7</sup>. The estimated run size of 2002 clearly stands out as a year with low flows and a relatively large in-river run size.

The WDAFS strongly urges the Departments of Interior (DOI) and Commerce (DOC) to take an approach to Klamath River flow management that more equitably distributes the risk to natural and agricultural resources. We also encourage the NRC to give full consideration to this issue in its next Klamath River review. Uncertainties, risk factors, objective assessments of unknown factors, and consequences all need to be brought to light. For example, large-scale departures from the natural hydrograph carry substantial risks, and it is highly likely that this contributed to the 2002 fish kill event on the Klamath River.

As our comments likely make clear, the WDAFS strongly believes that it is time to adopt a different management strategy on the Klamath River Basin. Instead of those who depend on fisheries resources for their living having to “prove” that instream flows are necessary to protect downstream fisheries resources, there needs to be a shift toward adoption of a precautionary principle of proving that large-scale water withdrawals are not harming terrestrial and aquatic ecosystems. Agricultural water use needs to be examined with the same scientific rigor as are

<sup>6</sup>USGS flow data. 2002 is provisional data subject to revision.

<sup>7</sup>Stacy, G. B. 2003. Megatable: Klamath River basin fall Chinook salmon spawner escapement, in-river harvest and runs-size estimates, 1978-2002. California Department of Fish and Game, Redding, California.

the flow needs for fisheries resources. Clearly, both are a source of livelihood for people, and responsible management of this resource demands that all factors be considered. Current management calls for agricultural deliveries to be determined only by demand. In other words, farmers of the Klamath Project are urged to conserve, but their actual water use and legitimate needs remain thoroughly unexamined. Again, we respect the constraints of existing water rights and water delivery contracts on federal water managers, but we strongly believe that the ultimate solution for the citizens of the Klamath Basin must include solutions that more fairly distribute the risk of uncertainty among use sectors.

Related to this is the need for the USBR and the NAS/NRC to fully evaluate the true impacts of the project on humans in the watershed. To more fully understand the effects of water management, a detailed economic study is needed of the impacts of water diversions on recreational, commercial, and tribal fisheries and associated cultural resources and support industries. The current paradigm involves farming versus protection of endangered species. Although very important, this approach again neglects the impact on the salmonid and non-salmonid fisheries and associated economic and cultural resources of the various downstream tribes. This is just another example of the shortcomings associated with single species management.

## **2002 Biological Assessment and Biological Opinion**

The WDAFS strongly urges the USBR and National Oceanic and Atmospheric Administration (NOAA) Fisheries to re-examine the BA and BO that currently govern Klamath Project operations. Specifically, we would like to see detailed analyses of the risks to the continued existence of coho salmon from delaying implementation of needed river flows for up to 10 years, as well as an assessment of the risk resulting from the potential that flows specified in the BA will not actually be realized. We would also like to see an analysis of the impacts from re-classification of water year types during mid-summer. This is a major digression from the proposed action, with clear implications to coho salmon, yet was never analyzed in the BA or the BO. We also believe that additional analyses of the risks posed to the overall essential functions of the riverine ecosystem that supports coho salmon, including effects on prey species, migrational barriers, and spawning behavior needs to be critically examined.

The WDAFS does not agree with the NRC Committee recommendation that, absent conclusive scientific evidence, the Project should be managed as it was in 1990-2000. Instead, we believe that the National Marine Fisheries Service (NMFS) must also determine and consider expectations about the resulting effects on Klamath River coho salmon populations based on the best available information as required under the ESA. National Marine Fisheries Service should not ignore selected information simply because it does not meet various standards applied by various interests. Indeed, it appears that the NAS has not even clearly defined the standard that should be used, thereby giving federal experts discretion to review and consider all relevant information.

Finally, NOAA/NMFS should consider potential project operations in the context of the significant uncertainty as to the status of the species, including examination of what other



activities could adversely affect the fish (e.g., activities not subject to direct ESA section 7 consultations) and that are reasonably likely to occur. This includes, but is not limited to, the cumulative effect of substantial water management activities outside of the Project boundaries upstream of Iron Gate Dam (e.g. Williamson and Sprague River), and downstream of Iron Gate Dam (e.g. Trinity, Shasta and Scott River, agricultural diversions), water quality management (Total Maximum Daily Loads, permitting), and tributary impacts (e.g. forestry practices, diversions). Recent litigation and court decisions have modified the implementation of the original Trinity River Environmental Impact Statement Record of Decision (ROD). The relationship of the new implementation schedule on downstream Klamath River fishery resources including listed coho salmon needs to be evaluated.

### **Klamath River Flow Studies**

The underlying theme behind the debate over the flow needs of the Klamath River is scientific uncertainty. Realizing a need for more certainty, the Klamath River Fisheries Task Force completed a comprehensive flow study plan in 1999-2000 using an open, collaborative process. The USFWS used these recommendations to make funding requests to the DOI for instream flow studies. To date, this plan has been funded through the DOI at approximately 17% of the funding request<sup>8</sup>. We urge you to make every effort to ensure that these flow studies, intended to aid the responsible management of multiple valuable resources, are fully funded.

### **Conclusion**

Large river systems like the Klamath River are complex and difficult to predict. However, the fact that there is, and always will be, considerable scientific uncertainty with regard to how water management affects fish must not be used to justify a status quo that is inherently distributing all risk to one component of the ecosystem or one sector of the stakeholders. A full characterization of economic and cultural tradeoffs is needed, and the best available scientific information must be provided, so that federal water managers can make informed, defensible decisions.

We urge the Secretaries of Commerce and Interior to reconsider their strategies with regard to Klamath River water management, and place equal scrutiny on upstream water uses. We also strongly encourage that the DOI to facilitate the timely completion and distribution of the USFWS “Final Report on Cause of the Fish Kill” and “Mortality Estimate” and the Hardy Phase II reports, so that this information can be fully considered by the NAS/NRC.

We strongly encourage the NAS/NRC to delay production of any final assessment and recommendation until the final CDFG, USFWS, and Hardy Phase II reports are completed. We also encourage the NAS/NRC to aggressively seek out and include all applicable published and unpublished data and reports produced by the various Tribal Fisheries programs within the Klamath Basin in their review and analysis. The respective sponsoring agencies, including DOI, should provide sufficient resources to complete these reports within a reasonable time.

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<sup>8</sup>USFWS has requested \$4.5 million per year for the past two years, but has been allocated only \$750,000.

The DOI, NMFS, and CDFG should also encourage their staff to produce manuscripts based on portions of these final reports in refereed peer-reviewed fishery science journals. This would help insure the widest distribution, full disclosure and production of scientifically defensible work products.

Let us state clearly that our requests for more information and study are not designed to “stall” development of an appropriate water management regimen for the Klamath River Basin, or to further the self-interests of our members, many of whom could be expected to participate in any such efforts. Rather, our goal is to ensure that federal water managers on the Klamath have comprehensive, high quality scientific and economic information to assist them in the implementation of flow management on this river system. Such information is critical both to ensure that the best decisions are made with the available information, and to aid these managers in what has become a difficult, “no win” job.

We appreciate the opportunity to comment on this important issue and stand ready to assist in information transfer or expert consultation if the need arises.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. MacDonald', with a long horizontal flourish extending to the right.

Donald D. MacDonald, President  
Western Division of the American Fisheries Society

c.c. Dr. Bruce Alberts  
Secretary Evans  
Ms. Suzanne van Drunick  
Governor Kulongoski  
Governor Gray Davis  
Senator Dianne Feinstein (D-Ca)  
Senator Barbara Boxer (D-Ca)  
Honorable Mike Thompson  
Honorable Wally Herger  
Honorable Ron Wyden  
Honorable Gordon Smith  
Honorable Greg Walden  
Robert Lohn