

Davis Hydro, LLC.

27264 Meadowbrook Drive
Davis, California, 95618
530 753-8864 Fax 530 753-4707
Email: Dick@davishydro.com

March 22, 2010

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
Office of Energy Projects
888 First Street, N. E.
Washington, D.C. 20426

Re: P-606 Comment on National Marine Fisheries Service's Biological Opinion

Dear Ms. Rose:

Enclosed please find Davis Hydro's comments on the National Marine Fisheries Service Biological Opinion in P-606 .

Respectfully,



Richard Ely
Davis Hydro, LLC

Enclosure: Certificate of Service, Comment

CERTIFICATE OF SERVICE

I hereby certify that I have on this day served the foregoing document by first class mail postage prepaid or email upon each person designated on the official service list compiled by the Secretary of the Commission in this proceeding.

Dated at Davis, California this 22th day of March 2011.

A handwritten signature in black ink that reads "Richard Ely". The signature is written in a cursive style with a large initial "R" and a stylized "E".

Richard Ely
Davis Hydro LLC
27264 Meadowbrook Drive
Davis, California 95618

A Comment

on the

National Marine Fisheries Service's

**February, 2011
Biological Opinion**

on the

Kilarc-Cow Creek Hydroelectric Project

FERC Project P-606

March 22, 2011

By

Richard Ely

**Davis Hydro, LLC
The Kilarc Foundation**

**March 14th 2011
Davis, California**

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A Comment on the National Marine Fisheries Biological Opinion
by Richard Ely – Davis Hydro

Preface

FERC has asked the National Marine Fisheries Service (NMFS) to provide a Biological Opinion on the ESA impacts of FERC's preferred alternative for the disposition of FERC Project P-606. NMFS has complied with FERC's request. In this comment we hope that NMFS will consider it an opportunity not just to respond to FERC, but instead to do what is best for the fish. We ask NMFS in their response to these Comments, to take the opportunity to tell FERC that this project may have an alternative outcome that is better for the fish, the community, and possibly the planet.

Many of the points presented in this Comment have been made previously, over a three year period in numerous FERC filings. This Biological Opinion (BO), and FERC's parent draft NEPA EIS, may be inconsistent with substantial FERC-filed, physical, and logical evidence to the contrary, and therefore we request NMFS use this review to reconsider options available to it. We appeal to NMFS desire to help these fish, and not to bow to FERC's incomplete analysis, and therefore we have expanded our comments beyond they in necessary to minimally respond to FERC to address the far more important question of what can we do for the fish.

Davis Hydro, and its Kilarc Foundation, have presented an extensive set of long-term aggressive alternatives. We have provided plans for substantial actions that will help the fish, and have shown in previous filings how harmful the destruction of the Kilarc facility would be in this regard. This destruction is ignored in the BO, and NMFS appears to ignore the negative consequences of its decisions. Davis Hydro has outlined several general and specific ways that strong conservation plans could be implemented within Federal law and FERC practice, to benefit the fish. These plans would not cost any agency money or time, other than perhaps providing a representative director or advisor to the Kilarc Foundation. Examples of FERC-process-compliant implementation schemes were put forth last year, and this year, in discussion format in the Kilarc Project summary filed January 2011.

Finally, as we move towards the fourth year of counter-arguments, we are heavily conflicted by having to criticize work by the very agency we need as a partner. We would welcome the opportunity to work with any State or Federal Agency on this project.

Richard Ely,
March 2011

Executive Summary

The Biological Opinion (BO) concludes that PG&E's demolition alternative is not likely to jeopardize the continued existence of the listed species, or adversely modify critical habitat. It arrives at this conclusion by a selective review of some of the local effects of the project and ignoring most others – some of which are important.

It is unclear what the purpose of this BO is, other than to address the narrow Endangered Species Act question. Its purpose could be to open and explore data, and investigate alternative project outcomes to help the fish, but that path has not yet been chosen. Due to its incompleteness even on the narrow ESA issue addressed, this BO is not yet suitable for consideration in any NEPA/EIS or CEQA process. Separately, to the detriment of our environment, it does not yet serve the mandate of the agency by addressing the alternative proposals, and it has virtually no local environmental data or science behind the conclusions it came to on FERC's presented preferred alternative. It discusses most of the factors that demolishing the green power source will inflict on the environment, but fails to include these negative effects in its invisible analysis. It ignores physical data and scientific analyses conflicting with the presented BO conclusions and presents no little local data or science of its own. Ignoring most negative effects of demolishing this green power source, NMFS concludes that its demolition will have no effect.

The BO does not consider that demolishing the facility will preclude the potential beneficial effects of its continued operation. By ignoring both its current beneficial effects, and the positive effects that would result from existing alternatives, the BO's supported demolition alternate deprives the listed species from all possible benefits that could flow from a carefully worked-out alternative of continued operation under appropriate terms. Detrimental effects include irretrievable and irrevocable impacts on resources, including:

- Increased fire impacts on critical habitat,
- Increased water temperature in critical habitat areas,
- Increased fishing pressure on known existing endangered populations,
- Construction effects of alternative power sources,
- Delay in green power expansion, and
- Delay in implementing any constructive alternatives.

Other probable direct effects are:

- Decreased funding for habitat restoration, and
- Decreased long term cooperation by ranchers.

While the BO has to address decommissioning, the effects on the listed resources could be examined under various possible dispositions of the project components. Davis Hydro has suggested for three years that the two projects be examined as separate components. The South Cow with its extensive known habitat areas is quite different from the Old Cow with its incised valleys and barrier falls. In one case, it makes sense to use the site to generate income

to improve habitat, but in the other it may not. By separating the project into viable and logical components within the rubric of the decommissioning alternative some of the many options that have been proposed by Davis Hydro for the Kilarc/Old Cow half of the project could be enabled as part of the cost of decommissioning. A complete analysis would look closely at the two different creeks and hydro sites under the FERC license and examine how these can be used for the best interest of the fish, the community and the planet.

Finally, this BO is deficient in that it may violate the Federal Data Quality Act, a recent presidential memo, and the Administrative Procedures Act. .

Davis Hydro Comments on the National Marine Fisheries Service Biological Opinion on the FERC Project 606 Demolition Alternative

Introduction

Without question, NMFS staff have devoted much time to this extensive compendium of status, reports and work that is being done to help the steelhead and salmon in California. This Comment focuses entirely on the Kilarc Project and says almost nothing about the South Cow part. If we are interested in helping the fish, we need to think of these two areas separately as the opportunities are very different. The impacts on ESA resources can be divided into irretrievable and irrevocable impacts on resources and other probable direct effects that are less tangible, but that will have a statistical impact on resource destruction. This comment concludes with a discussion of the incomplete analytical structure of the BO which erroneously infers causality in its conclusions, and finally addresses Federal data and study adequacy in the current regulatory environment.

Irretrievable and irrevocable physical impacts

Fire

The Reservoir

The Cow Creek Watershed has experienced several major fires in the last 30 years, plus numerous smaller fires each year that were caught in initial stages by aggressive fire suppression or otherwise restrained by less than perfect fire weather conditions. CAL FIRE records indicate a total of 42 wildfires have occurred within the planning area. Nine have been in excess of 3,000 acres. The two largest fires were the 1992 Fountain Fire of 65,300 acres and the 1999 Jones Fire of 26,020 acres¹.

The Kilarc Reservoir provides critical water at a perfect placement and altitude for fighting fires in the area. Removing this facility will put the local human population at risk, and will forever increase the prevalence of fires in the area. Anyone who has flown a helicopter knows that the Kilarc reservoir is perfectly placed to cover the valley around Whitmore, and its accessibility, proximity, and altitude make it an irreplaceable efficient fire fighting water source. There is no substitute.

Firebreaks

The Kilarc Project maintains access roads to and along the Kilarc Canal form important firebreaks. They are especially useful as firebreaks with the water supply available from the Kilarc reservoir at the right altitude. Further, with the canal full of water there is a near

¹ Cow Creek Strategic Fuels Reduction Plan Update Western Shasta Resource Conservation District 2010

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infinite supply at access points along its length for trucks and fire fighters on the ridge. Finally, these firebreak and access roads are especially useful because the canal and its support roads run East-West¹ (cross-wind) and are well maintained for the hydro and associated recreation. Were this project demolished, the project roads would be abandoned. Others would revert to timber road maintenance and Miller Mountain Road maintenance would drop if the hydro were abandoned.

Effect of Fire

The effect of fires on fish is well documented. Fire is identified as a key threat in several places in NMFS Public Draft Central Valley Salmon and Steelhead Recovery Plan (CDSSRP)². The amount, composition and toxicity of soil runoff and destruction of cover are among the effects that will extend downstream into critical habitat areas for numerous known anadromous species. This spiking sediment load and turbidity will be due to increased frequency, intensity and duration of hot fires. This has been brought to light in many filed documents and at every public hearing. Increasing the statistical prevalence of fire in this area conflicts with the Central Valley Salmon and Steelhead Recovery Plan and constitutes an irretrievable and irrevocable loss of critical habitat that will extend into the indefinite future.

In summary, the long term increased prevalence of fires from the removal of the reservoir, removal or diminishing the fire breaks, removal of the Kilarc Canal and reducing access road maintenance will decrease fire resistance in the immediate areas and decrease fire fighting ability over a wide area. This constitutes an annual “take” not only of habitat but statistically of fish directly. Since this effect was not included, this Biological Opinion (BO) is deficient and should be rejected.

Increased water temperature in critical habitat areas

It is documented in the filed record and public testimony that the water coming out of the Kilarc hydropower site is colder than the water coming down the bypassed reach especially in the summer. The explanation is two fold – a larger effect and a smaller effect. The larger is that the water is very cold in the summer coming down from Buckhorn Lake and this water is passed rapidly down the headrace through turbines while it is kept cold by short transit time at high elevation. In contrast the far longer transit time coming down the bypass is at lower elevation and higher valley temperatures netting a far higher temperature in the summer. This is true whatever the mix of flows. The much smaller effect in the summer comes from the project removing heat from the project in terms of electrical energy. These temperature effects were documented in the Kilarc Project³ (KP) summary, the Draft Environmental Impact Statement (DEIS)⁴, filed public comments, and public testimony⁵.

² See CDSSRP pages, 165 for the importance or C-141 for Recovery action: “Enhance watershed resiliency in Cow Creek by identifying and implementing projects that would reduce the potential for, and magnitude of, a catastrophic wildfire, and restore forested areas within the watershed including riparian areas.”

³ See [http://kilarc.info/Docs_Maps_Drawings/Documents/KC0637%201-14-11%20DH_Proposal_Summary_of_Dec_2010_20110114_DH_5162\(24719271\).pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0637%201-14-11%20DH_Proposal_Summary_of_Dec_2010_20110114_DH_5162(24719271).pdf)

⁴ These and nearly all other documents and references are available at http://kilarc.info/Docs_Maps_Drawings/Docs_Maps_Drawings.htm. Due to the number of filings and references, we will not include most of the common references and older ones here as they are discussed in the Kilarc Project Summary and many others are available on the [Kilarc.info](http://kilarc.info) website.

“There would be no effect on critical habitat for steelhead on Old Cow Creek or spring-run Chinook on Cow Creek, because their critical habitat is located many miles downstream of the {Kilarc} Action Area.” PG&E, BE⁶. 2007 p. 5-10.

While it is true that the critical habitat is many miles downstream of the Kilarc action area, it is not clear that the effects of the temperature increase will not extend downstream to them. Downstream of the Whitmore Falls is a very large critical habitat for both *O. mykiss* and endangered salmon. The health, extent, and viability of these critical habitat areas are defined by temperature⁷ (BO p. 36, KP). These critical habitat areas are far larger than any total in the Kilarc bypass due to its incised nature and will be negatively affected if this cold water is removed. Further, as pointed out in NMFS Public Draft Central Valley Salmon and Steelhead Recovery Plan, temperature affects all life stages and is considered **the key threat** to Cow Creek steelhead⁸.

Raising the temperature in these enormous habitat areas would cause a critical physical, irretrievable, and irrevocable destruction of resources, both in the present and in the future. This constitutes an annual “take” not only of habitat but of increased fish stress. Since this “take” was not included, this Biological Opinion (BO) is inadequate and should be rejected.

Increased fishing pressure on existing endangered populations

There are FERC annual recreation reports by PG&E citing extensive fishing at the Kilarc reservoir⁹. People testified in several hearings to that effect. PG&E has collected data in their recreation reports as to how many families from both local and distant towns fish at this reservoir. Assuming the put-and-take Kilarc reservoir facility is demolished, some of these fishing families who come from as far as Chico will fish in the lower Cow and other critical habitat areas along the Sacramento where there are known populations not only of *O. mykiss* but also of endangered salmon¹⁰. In these areas, incidental, illegal, and intentional hooking and keeping do occur and will increase. This constitutes a “take”¹¹. This analysis had not

⁵ Davis Hydro has sponsored an ongoing long term study of the water temperatures and hydrology of the Old Cow and parts of the Cow and South Cow to evaluate the future of removing the Kilarc project on the habitat areas downstream.

⁶ Kilarc-Cow Creek Hydroelectric Project FERC Project No. 606 Biological Evaluation Aug.2009.

⁷ See BO (p.35, 36), Thompson, L., L. Ferraro, Yukako, Impact of environmental factors on fish distribution assessed in rangeland streams *California Agriculture* 60(4) October-December, 2008

⁸ NMFS Central Valley Salmon and Steelhead Recovery Plan. Note that despite repeated statements as to its importance, the only NMFS response to this threat is “Install water temperature recorders at select locations in Cow Creek; develop recommendations for minimum in stream flow based on temperature needs.(*ibid* P. C-141) Davis Hydro has an extensive water temperature monitoring program in place since summer 2010 focusing on the Old and South Cow Creeks. Also cited in PG&E BE p. 6-2.

⁹ See PG&E’s annual P-606 annual Recreation Reports on file at FERC.

¹⁰ Also J. Buell - Personal 3/2011 communication. Incidental hooking and guided boat fishing increases do and will impact salmon in the Sacramento River, and other Creeks that may actually have endangered steelhead or salmon.

¹¹ As a first approximation, this take might be estimated by multiplying the recorded fishing effort at Kilarc by a typical catch rate and the illegal take and morbidity figures per fish caught. Given the PG&E filed recreation report data, and standard catch rates, estimates of this take alone could exceed the highest estimates of new fish resulting at the Kilarc bypass by many times.

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been done even if based on PG&E filed recreation data. So this BO is deficient and should be rejected.

The direct damage to the fish populations from changing location of fishing pressure maybe eclipsed by the damage to the redds and habitat by fishermen walking in these real critical habitat areas. These direct and indirect effects should be studied and included in the calculus of effects on target endangered populations. They clearly constitute an irretrievable and irrevocable impact on endangered fish resources. Since this “take” was not included, this Biological Opinion (BO) is inadequate and should be rejected.

It might be argued that the hypothetical migration of the fishermen to new streams where there are fish is not proven. Common sense will find it more likely that the fishermen will migrate to where there are fish than the hypothetical unlikely and uncommon migration of steelhead up past the Whitmore Falls complex, and then pass three miles, of acceptable spawning habitat below the Kilarc Project.

Effects on Chinook Salmon

Temperature

Page 28 of the BO cites that many miles downstream of the Action Area is critical habitat for spring Run Chinook Salmon as well as steelhead. This designated critical habitat (September 2, 2005, 70 FR 52488), occurs at the confluence of Old Cow and South Cow Creeks. There the temperature is identified as too high and the flows are generally low. This reference page concludes that from the junction of the Old Cow and the South Cow down the Spring-run Chinook salmon are not likely to be adversely affected by the decommissioning of the Kilarc-Cow project; the potential for adverse effects is therefore discountable and not expected to reach the level where take will occur.

At this point, the BO dismissed opportunity to maintain what habitat exists up these miles of the Old Cow Creek where the water is colder as a summer refuge. The foremost reason for the decline in these anadromous salmonid populations is the degradation and/or destruction of habitat (e.g., substrate, water quality, water quantity, water temperature, water velocity, shelter, food, riparian vegetation, and migration conditions). (BO p.35) The BO ignores the “take” from removing the cold water from the Kilarc Project from this known steelhead and salmon habitat up the Old Cow from its Junction (PG&E BE p.3-12) with the South Cow. The BO also ignores the “take” downstream of the junction of the two Creeks from temperature effects identified by L. Thompson *et al*¹². This take addresses directly the take of critical habitat for multiple listed species where again defined this habitat is defined in large part by temperature. Direct relationships exist between water temperature, water flow, and juvenile Salmonid survival (BO p.36). This take has not been included in the BO, therefore, the BO is deficient should be rejected.

¹² See Fn. 7

Predators coming down the Old Cow

The demolition of the Kilarc facility will increase predation and competition of listed species from existing brown trout and resident adapted trout juveniles coming down the Old Cow bypassed reach. This increase in predators is from two sources triggered by the removal of the Kilarc Diversion.

1. There will be an increase in production in the bypass with increased flows (the whole justification for demolition of the Kilarc Facility). The source of the undesirable resident-adapted *O. mykiss* will be kept pure by numerous natural barriers to upward migration including the “impassable” falls miles below the Kilarc diversion, and boulder cascades below (BO p. 23) and just above the Kilarc diversion.
2. Currently, brown trout¹³ and resident-adapted trout drifting downstream are from above the Project are diverted and fatally consumed in the Kilarc diversion (BO p.52).

So there will be an increase in injection of undesirable fish from upstream of the diversion, and this increased population will (according to the theory of this BO) be increased significantly in the Old Cow Creek bypass region due to the increased flow. Then, this flux of predatory brown and resident adapted rainbow trout will pour downstream onto the critical habitat providing a source of downstream competition and genetic pollution of any steelhead from resident-adapted fish.

In summary, removal of the Kilarc diversion will increase predation in the long term, and competition from resident adapted rainbow trout will forever “take” from downstream listed species. This constitutes an enduring take that has not been incorporated in the BO; therefore the BO has not included this long term catastrophic take and should be rejected as deficient.

Construction Effects of Alternative Electric Generation

Cross-Sectional Impacts

Regulations that implement section 7(a)(2) of the ESA require biological opinions to evaluate the direct and indirect effects of Federal actions (BO p.56). Replacement power sources will have to be built. The best standard for the type of green power being demolished here is another multi-megawatt green hydro facility. The Kilarc hydroelectric facility exists and is operating. Any replacement project will have to be constructed *de novo* which will have mostly short term local but widespread consequences across our planet through economic multipliers and industry applicable environmental impact coefficients.

The direct damage caused by these construction activities must be addressed under this BO, NEPA, or CEQA analysis protocol. Since this is a very narrow ESA analysis, it may be suggested that the footprint of the replacement power can be built outside of ESA territory. However, the environmental damage and damage to ESA species (and the planet) does not stop at the generation plant footprint. Impacts extend up and down rivers, and as global

¹³ The area has brown trout and resident rainbow upstream (PG&E’s Br p.2-30,4-5). These are a sustaining population for the past 30 years.

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warming has demonstrated, around our globe affecting thousands of endangered fish (including these very species) remotely as well as all endangered species. Most of the O. Mykiss populations are on other continents. NMFS has not ability to control or mitigate for this damage once wrought. While it may hope to mitigate for this take in the US, most of the jeopardy to the species will be in far larger stocks elsewhere. Should the replacement plant not be hydro, according to the CEC (BO p.58), other types will require supplementary fossil fuels, and the consequences of burning these fuels will have incremental effects across our continent.

As we have seen under the modern paradigm of “stimulus,” any new construction project has a multiplier effect through the economy, not just under the footprint of the dam. Just as the environmental effects of a dam extend up and down stream, construction impacts cascade through the global economy and cannot avoid impacting ESA species wherever that increase in economic activity occurs. This being the case, the marginal effect of this increase in industrial /economic activity¹⁴, with EPA multipliers, can be used to evaluate the negative transient and irretrievable and irrevocable destruction of all critical resources and species caused by this activity.

NMFS recognizes this in its jeopardy approach and discusses the importance of “consider[ing] the additive effects (BO p.57) of the environmental baseline, the effects of the action and any reasonably foreseeable cumulative effects to determine the potential for the action to affect the survival and recovery of the species”¹⁵. NMFS understands the legal requirement and importance of the indirect effects and discusses their importance, but has not yet included them in the analysis. We request that this analysis be redone; it should include not just the steelhead and salmon, but the thousands of endangered species that are affected by changes in economic activity¹⁶. The scope of the National Marine Fisheries Service and the National Oceanic and Atmospheric Administration is broader than Cow Creek, but it is not so broad as to be able to mitigate, regulate, or inhibit these effects world wide.

At a minimum, the balance of any “take” saved as the result of demolishing this green power source should be evaluated against the incremental “take” of the same fish elsewhere as well as all other endangered species. Since this “take” was not included, by NMFS own indications of what is important, this BO is deficient and should be rejected. Like contributions to global warming, these short-term, cross-sectional effects of demolition and consequential construction have minute but catholic changes have long term consequences, which will be discussed next.

¹⁴ *Concepts and Methods of the U.S. Input-Output Accounts*, Bureau of Economic Analysis, or similar sources for I/O modeling as applied to environmental burden.

¹⁵ BO pp.56–58

¹⁶ Not to include the many other species that are being destroyed as the result of this activity would only suggest that the National Oceanic and Atmospheric Agency is only interested in anadromous fish to the detriment of all other endangered species affected through changes in the oceans and atmosphere.

Long Term Impacts

Global Warming

The Kilarc site is an existing green energy source. If it were removed, our efforts to reduce and delay the increase in planetary temperatures will be set back. This is an irretrievable and irrevocable impact, identified in Section 7 of NMFS Public Draft Central Valley Salmon and Steelhead Recovery Plan, on all endangered resources, indefinitely into the future. The BO correctly identifies the issue (p. 44) but has not, as yet, incorporated the impacts from removing green power on the rate of global temperature rise. It identifies the local effect of global temperature rise from actions such as this (pp. 44-45), but fails to see that this effect constitutes a “take” on the local target fish populations and a decrease in their critical habitat. These “takes” (multiple listed species at all possible sites) are a consequence of the demolition of this green power source. This tiny but catholic incremental effect has not been included in their calculus, yet, it alone may eclipse all other effects combined¹⁷. Unless NOAA can demonstrate how it is controlling these (NMFS-identified-as-important) long term offshore effects, even in a minimalist sense this BO should be rejected in its entirety.

Acid Rain

Since it is unlikely that any replacement green power will be hydro, the replacement power will have a carbon content causing a continuation of the small effect on the pH of all waters downwind. This “acid rain” effect is separable from the “global warming effect, and in an incremental way impacts pH sensitive fish. This effect, while small and generally immeasurable in any one water body, can be modeled and estimated statistically, as it has been in the North East, and its effects estimated on all fish affected. This downwind effect has yet to be included in the analysis and constitutes a “take” incident not only on the US but beyond NOAA’s reach to Canada and all downwind countries.

In summary, long term impacts are very important (BO19, 27, 60,63). They are incident globally and as such are far beyond NMFS’s ability to manage. They have no known reasonable and prudent mitigating measures other than reconsideration of other alternatives by FERC. In terms of estimating “take” it is not meaningful to compare the transient “take” during construction of a few resident-adapted and hatchery fish to the integral take of all future listed species impacted by these actions.

Decreased Long Term Cooperation with Ranchers

Many local residents, ranchers, and their families fish. They, their friends, and the whole community use the Kilarc facility and consider it a part of their extended community facilities. Requiring them to now drive to the lower Cow and Sacramento where they will intentionally or incidentally catch endangered species, will not help community relations or the listed fish. Further, demolishing the Kilarc facility increases the prevalence of fire around their houses and possibly impacts their water supply. These consequences are unlikely to generate rancher cooperation. Even if we ignore the fishermen who may inadvertently

¹⁷ BO page 44-45 is an exercise in thinking globally and not acting locally..

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trespass on redds on these ranchers creeks, if there is no Kilarc Fishing reservoir, the overall effect on the fish and their habitat will be negative. The public outcry over removing the Kilarc facility has been, in the words of FERC “overwhelming” forecasting a fish resource agency public relations catastrophe. Generating rancher cooperation is a central restoration action identified in the Central Valley Salmon and Steelhead Recovery Plan. Since rancher cooperation is an important action item identified by NMFS to help re-establish the steelhead habitat, negatively impacting relations constitutes an unaddressed take, the BO is deficient and should be rejected as inadequate.

Summary Discussion of Physical Impacts

Comments on all of the above physical effects have been filed usually multiple times by various parties and have irretrievable and irrevocable impacts on these fish resources. Since all public testimony and most filings - no matter how cogent, scientific, or authoritative have been ignored by NMFS as evidenced by the BO text and its references, it is clear that this BO is not based on current information, and thus is deficient and should be completely rejected.

Ignored FERC Filed Information

On ESA listing issues, NMFS does not have to conduct additional studies. However, even there, NMFS cannot ignore available physical and biological information and studies, especially if that information is the most current or is scientifically superior to that on which the decision-maker relied.¹⁸ In the issues cited above there is science, reports, studies¹⁹, and data to indicate that removing the Kilarc Facility will have a negative effect on the habitat and also in some cases directly on the fish. These best-available sources are all relevant and cannot be ignored.

In this case heavy reliance on consultation with and documents from PG&E which is a prejudicial source and avoidance of other filed studies, data, and local observations and expertise has led NMFS to err in its Biological Opinion. NMFS has an obligation to propose

¹⁸ The Endangered Species Act and “Sound Science”, E.H. Buck et al. Congressional Record Service Pub. RL32992, 2007.

¹⁹ Typical avoidance of science and reports is the filed and publicly presented analysis done by Robert L. Carey, a qualified biologist based on the 1985 Power and Osborne paper showing it unlikely for steelhead to get over the larger of the Whitmore Falls. See: Attachment A Exhibit 1 to document KC0625 in the documents at Kilarc.info, or [http://kilarc.info/Docs_Maps_Drawings/Documents/KC0625%208-25-10%20Tetrick%20-%20A%20Killer%20Analysis%2020100825-5114\(24101207\).pdf](http://kilarc.info/Docs_Maps_Drawings/Documents/KC0625%208-25-10%20Tetrick%20-%20A%20Killer%20Analysis%2020100825-5114(24101207).pdf). The Power and Osborne paper was used as the definitive (and only) reference paper by Benthin, Berry, and Manji who concluded in Feb. 2002 that steelhead may be able to ascend the upper Whitmore Falls. (see Attachment A Exhibit 2, *ibid*). The analysis was filed with FERC and presented at one of the public hearings didn't even consider the additional difficulties imposed by the nexus of the lower Whitmore falls and the canyon in between.

Rather than referencing the analysis of MR. Carey, offhand statements quoted by PG&E are taken as fact, “No anadromous fish have been observed above Whitmore Falls, but it may be possible for them to pass over the falls during some high flow events (Myers pers. comm. 2008). The frequency with which steelhead or Chinook salmon might pass over Whitmore Falls is unknown, as there have been no studies to assess this.” BO Page 52 quoted from PG&E BE p. 4-4.

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reasonable and prudent measures, not to change a project but, to improve the environmental outcome of a project. For example, as a prudent measure, it could split the project into two action areas and undertake a careful analysis of all alternatives proposed might be a proposed and negotiated as part of the cost of a project. (For example, simply leave Kilarc facility standing as part of the cost of decommissioning.)

Discussion of the Existing Biological Opinion Conclusion

The BO assessment concludes:

Project {demolition} is expected to result in overall net benefits to **migration, flow, temperature, entrainment, food availability, and predation**, in the Cow Creek watershed (BO p.57).

We suggest that for the Kilarc half the project that has not yet been clearly shown. The best available information suggests differently. The following section will look at each of these cited benefits separately:

Migration

“No anadromous fish have been observed above Whitmore Falls, but it may be possible for them to pass over the falls during some high flow events (Myers pers. comm. 2008). The frequency with which steelhead or Chinook salmon might pass over Whitmore Falls is unknown, as there have been no studies to assess this.” (BO p. 52)

First, the Kilarc project has neither a significant effect on the water flows over the Whitmore falls nor a significant effect on the 9 miles (DEIS p. 80) of habitat between the falls and the project. Thus, given that no steelhead have ever been seen in this reach whose flows are unaffected by the project, how removing the project provides net benefits to migration is unknown.

The filed analysis¹⁹ by Bob Carey cited finds that it is near impossible for steelhead to mount the Upper Whitmore Falls starting just below it. This feat, were it possible, is made considerably difficult at high flows by the canyon between this Upper Falls and the Lower Whitmore falls which has few resting points in it. In judging passage, it is not only the height of the Upper Whitmore Falls which is determinant, it is integral passage up a long entrance gorge below the Lower Whitmore Falls, then mount the smaller Lower Whitmore Falls, then up the quarter mile gorge which is a confined torrent at high flows inhibiting rest, to then the fish must mount the upper Falls, a feat of a significant magnitude.

Third, even if fish were to make it to and over both Whitmore falls, and the gorge between them, their numbers would be small relative to the continuous rain of juveniles from the upstream population of resident-adapted fish. How they could make this upward migration in

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sequential years for any kind of sustaining population is unclear in that by any estimation these flood events are infrequent. Since return above Whitmore Falls is unlikely, the ones that get to the Whitmore Falls base end up in an area of Old Cow Creek below the falls that is a narrow canyon with limited habitat for miles downstream.

In summary, there is no upstream migration or sequential migration to support the premise that demolishing of the Kilarc Project would enhance.

Flow

There will be no change in flow in any area where there are will ever be significant anadromy. It is nine miles from the two Whitmore falls up to the Project tailrace. That net benefit from flow changes is zero.

Temperature

The Kilarc plant does have a temperature effect – that is of cooling the water below it where most of the good habitat is. This has been mentioned in filings testimony at public hearings. Removing the hydro will increase temperatures down the Old Cow including all the fish-accessible areas below Whitmore Falls and on down to the areas in the Old Cow and Cow where there is documented critical Chinook and steelhead habitat. It is unclear how raising the temperature in critical temperature impacted habitat is a benefit. This is a take.

Entrainment

It is documented in the BO that there is possible anadromy upstream of “the impassable falls” about 2 miles below the Kilarc Diversion (BO p. 23). What fish are entrained by the unscreened Kilarc diversion (BO p.53) are predatory brown trout, and competitive and predatory resident-adapted upstream *O. mykiss*. As most water is swept into the Kilarc diversion, all these fish are sent to their death. If the Kilarc diversion were not to exist and these fish were not caught or killed in the turbines, they will pass down the Old Cow bypass to critical habitat areas and will consume, and compete with known, listed species populations.

It is unclear how increasing the prevalence brown trout and genetic competition from resident rainbow trout will help the prevalence of steelhead. This action – removing the Kilarc diversion, and thus increasing competition and predation in critical habitats, below the Kilarc facility, should be considered a permanent and significant permanent “take.”

Food Availability

Increasing resident-adapted *O. mykiss* and trout propagating downstream in the bypass will absorb any primary production that might increase food availability to documented downstream salmon and steelhead in the lower Old Cow and Cow.

The increasing prevalence and competition for food from browns and resident-adapted fish will diminish food available to listed species downstream in critical habitat. This is difficult not consider a permanent take.

Predation

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Again, the Kilarc diversion currently sweeps predatory brown trout and resident-adapted rainbow trout out of the Old Cow to their death. If the diversion were removed, these fish would tend to increase the number of predators downstream where they will prey on steelhead and salmon. That would be a permanent take.

In summary, the conclusion that the Kilarc project demolition is expected to result in overall net benefit is not supported by logic, observation, or fact. Given that these facts have not been included, this BO errs and should be rejected. Given that the conclusions are the reverse of those stated, a complete reversal of the BO is warranted.

Foregone Opportunities

Other direct effects are many and will not be dwelt on at any length as they are speculative and dependent on NMFS reviewing ideas to help the fish beyond the preferred alternative. It is the clear intention of Davis Hydro is to act with, and through, the Kilarc Foundation to help these fish. As tokens for our future work, only two areas will be mentioned²⁰.

Decreased Funding for Habitat Restoration

If the Davis Hydro proposal were accepted there would be money and assistance to help the fish – primarily through habitat enhancement, fish passage projects, education, outreach, research, and various re-establishment support projects. If the relationship with Davis Hydro is delayed, helping the *O. mykiss* genepool will be delayed with predictable consequences²¹.

Decreased funding for Re-establishment Work and Research

Davis Hydro wants to support research on outbreeding programs to restore genetic and epigenetic health to all the Northern Central Valley Steelhead.

These and other (non-listed species) benefits such as habitat provided to fish and wildlife in the canals and forebays have been made clear in multiple FERC filings. Implementing the demolition alternative precludes discussion and implementation of these ideas. This elimination engenders a take of the best options for the fish, the community, and the planet. This also constitutes a take of the listed species -- In this case, a very large one. Recognizing that NMFS cannot change a project but could work with FERC to reasonable and prudent measures to compensate for unavoidable projects impacts on listed species. It is certainly reasonable and prudent for NMFS to dissect the project into its two components and to discuss the proposed Alternatives with their proponents.

²⁰ See the extended list as of last December in [The Kilarc Project](http://kilarc.info/Docs_Maps_Drawings/Documents/docs.htm) dated January 2011 (Doc. KC0637 http://kilarc.info/Docs_Maps_Drawings/Documents/docs.htm).

²¹ See Chapter 13 of R. Frankham *et al*, Introduction to Conservation Genetics 2010 and Pages 4-110-115 of the Hatchery and Stocking Program EIS/EIR, CDFG 2010 describing the long term depressive legacy consequences of the current hatchery infused population.

Analytical Structure

An alternative to demolishing the complete complex FERC Project 606 is to study and relicense it into its two components as has been suggested by Davis Hydro. The reason is simple. There are two separate complete hydropower facilities on two different watersheds. These sub-projects have very different geomorphology, ecosystems, and fish habitat resource potential. Not separating the Kilarc - Cow Creek project into its two components and examining each action on its own merits has two effects.

First, the Davis Hydro alternatives, among others, could be more carefully considered. This opportunity can yet be taken. The second is combining two complex projects into one analysis leads to sweeping statements that are inaccurate in their generality and thus misleading. See Attachment I for examples.

By considering the individual sites separately within this BO, a constructed conclusion is to request, as a reasonable and prudent measure, to continue the operation of the Kilarc facility under appropriate terms and conditions as a cost of demolishing the rest of the project.

Federal Data and Study Adequacy

Davis Hydro professes no professional understanding of Federal law but a brief review of the filing raises questions of the following Federal actions that provide a framework for Federal Agency analyses. Clarification would be gratefully appreciated; we regret any misunderstand of Federal law and administrative practice.

Federal Data Quality Act

The BO does not seem to comply with the legal requirements of the Federal Data Quality Act (also called the Information Quality Act) (IQA). This act requires maximizing the quality, objectivity, utility, and integrity of disseminated information. To meet this law, as yet in this BO, the following issues need to be addressed {we will focus only one of the following areas for brevity}:

Quality: There is no quality information provided on key physical issues such as temperature, fire impacts, fishing pressures, fish populations, passage statistics or any other key determinant of a scientific analysis that can make a determination of “take”. Even under the bar of “best available information” the BO ignored all FERC filings and local information other than the near singular PG&E BE. These filings, reports, analyses were not discounted, they were not even addressed. For example, in the question of fire, there is ample existing local data on fire prevalence and preventive measures such as the recent work by the Western Shasta Rural Conservation District Paper cited above. It is poor quality report to ignore these available data. Temperature effects of removing the hydro have been repeatedly introduced into the

public record. Any hydrologist will confirm the effect described. It is poor quality to ignore the inherent physics of hydro and the obvious meteorology of water picking up heat from the atmosphere when it moves slowly at low elevations. This heat gain is identical to that leading to the high water temperature is cited by NMFS as a central problem of Cow Creek in the summer, yet summer heat gain is ignored when non-supportive of the preferred alternative.

Objectivity: The objectivity of any opinions by NMFS is compromised by participation in the March 2005 Kilarc Cow Creek Project Agreement²² that was made prior to all reasonable alternatives being presented and any studies made (BO). When a decision had been reached and agreed to *in camera* and without local data or study of the consequences, the participants are parties to that process and are compromised in making any subsequent objective decisions. Attachment II to this Comment addresses this further.

The analysis is separately deemed non-objective in that it relies to a great extent on the PG&E's BE, a document written many years after the decision was made to demolish the facility. PG&E is a party interested in pleasing NMFS due to its reality that it knows NMFS wants the site demolished. Nothing PG&E writes of files can be considered objective in light of this derived liaison. Yet, the PG&E BE forms the basis of most statements on the Cow Creek area and functioning in the BO.

Utility: The key data on local, global, long-lasting, and cross species effects are useful if not critical for evaluating net effects of an action of that scope. No useful local data on these effects have been provided, yet there have been hundreds of studies of the effects of man and his industry on the environment. None have been incorporated. The utility of the non-included data is zero.

Integrity²³: While this normally this typically refers to the integrity (unbiased, without prejudice) of the evaluation, that criteria cannot be met due to the prejudicial 2005 Agreement, so we use another sense of the word: "unity or unbroken completeness". Here "integrity" is used to describe the integrity of addressing steelhead enhancement at the Kilarc site. The concept of "integrity" here includes: geographic, genetic, ecotype, and data integrity.

²² Available as a PDF as document KC0020 on the Kilarc.info website, or directly at http://kilarc.info/Docs_Maps_Drawings/Documents/KC0020%20Decommissioning%20agreement.pdf

²³ The reference in the guidelines from OMB are different that stated by NMFS's interpretation. Because there is some ambiguity in the legislative reference; we choose an idiosyncratic but relevant usage of the word "integrity" here. The NFMFS IQA guidelines can be found at: <https://reefshark.nmfs.noaa.gov/f/pds/publicsite/documents/policies/04-108.pdf>

Integrity Discussion

Genetic Integrity

The lack of genetic integrity has been made clear in the work of Lindley *et al*²⁴ 2006 as cited in the Hatchery Impact Study of 2010²⁵. The entire Californian steelhead gene pool has been repeatedly corrupted by imported steelhead²⁶ and widely mixed across California hatcheries for many years, destroying any native *O. mykiss* strain.

Artificial propagation of *O. mykiss* began in the 1870s in the San Francisco Bay area (Behnke 1992). These fish were presumably rainbow trout. From 1877 to 1888, egg taking stations were established on the lower McCloud River (upper Sacramento River Basin) for propagation of redband trout and coastal steelhead, with no apparent effort to separate the two forms (Behnke 1992). From that time, *O. mykiss* has been widely propagated, and stocks have been transported literally around the globe. Behnke (1992, p. 174) stated that "the overwhelming majority of brood stocks of rainbow trout maintained around the world originated mainly from various mixtures of coastal steelhead." Therefore, in evaluating artificial propagation of steelhead, it is also important to consider the propagation of rainbow trout. The popularity of *O. mykiss* as a cultured species makes it infeasible to discuss each propagation facility on the west coast in this document. Behnke (1992, p. 174) noted that, "in California alone, 169 hatcheries and egg-taking stations drew on diverse populations of rainbow trout from 1870 to 1960." (*NOAA-NWFSC Tech Memo-27: Status Review of West Coast Steelhead*)

In summary, the mixing of hatchery fish and all known significant below-dam populations has been significant for many years²⁷ eliminating any genetic integrity.

Geographic Integrity

This NOAA reference further documents that steelhead stray extensively from natal habitats on return²⁸. They revert commonly to the ubiquitous resident form, rainbow trout. Finally,

²⁴ Lindley, S. T., R. S. Schick, A. Agrawal, M. Gosling, T. E. Perason, E. Mora, J. J. Anderson, B. May, S. Greene, C. Hanson, A. Low, D. McEwan, R. Bruce McFarlane, C. Swanson, and J. G. Williams. 2006. Historical Population Structure of Central Valley Steelhead and its Alteration by Dams. *San Francisco Estuary and Watershed Science* Vol. 4, 1 (February 2006): Article 3 This is available through:

http://www.cbr.washington.edu/papers/hist_pop_structure.html

²⁵ CDFG Hatchery Operations Final DFG Environmental Impact Report (EIR/EIS)

<http://www.dfg.ca.gov/news/pubnotice/hatchery/> See in particular P. 4-172 and the Araki *et al.* references, and the conclusions "Impact BIO-214" on p. 4-197-201

²⁶Primarily Skamania directly and indirectly from a single hatchery in Washington State. (Buell *ibid*, NOAA-NWFSC Tech Memo-27 Status Review of West Coast Steelhead, *et seq.*) The limited genetic diversity of the Skamania hatchery population has been outcrossed into the limited genetic diversity of *O. mykiss* in the hatcheries northern Sacramento River. Ignoring the depressing effects of the inappropriate environmental epigenetic coding, the underlying outcrossing genetic depression could be a major source current steelhead recession. Ignoring hatchery condition effects, it is unlikely the Skamania environment is similar to the more southerly Sacramento River leading to maladapted genes or coadapted gene complexes. While this artificial gene flow may have been intentioned to strengthen local stocks, there little evidence of its success. Given that this gene flow had occurred so repeatedly, it is unclear on what basis an integral ESU could be defined.

²⁷ See footnote 25, pages 4-197-201, and references.

²⁸ See NOAA reference in footnote 26 above. Straying in the California Central Valley is found to be as high as 24-35 percent. With gene flow anywhere close to this level, it is unclear how the idea of an ESU could be

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the California Fish and Game (CDFG) can find no *refugia* where any ancestral genotypes exist²⁹.

There appear to be no steelhead-bearing rivers in the Sacramento River Basin that have not received releases of multiple hatchery stocks ... Major steelhead production facilities ... have utilized steelhead stocks originating from within the basin as well as out-of-basin stocks; stock transfers between the Central Valley steelhead facilities have historically been commonplace (CDFG 1994) (*ibid*).

There is no *O. mykiss* geographic integrity here. Not when fish are carried hither and yon and mixed in for over a hundred years.

Ecotype or “anadromy” Integrity

While many diverse populations have genetic differences, no cross-population anadromy-specific allele sets have been found. It has yet to be shown that steelhead have a unique allelic structure from rainbow trout that is the same across allopatric populations. When they can change eco-responses back and forth with the same genes or gene pool, observed genetic differences may only be phenomenological or derivative, not causal. If the same allelic markers were found differentiating eco-behavior adaptation across genetically distributed populations, there would be a basis for of ESA consideration.³⁰ Trout that readily adopt anadromy are different. But the cross population “anadromy imprint” signature is likely to be on the malleable, heritable epigenome, not the integral, intact genome.

Data Integrity

Plenary data on steelhead population in California, the 2008 Review of Steelhead Monitoring Programs in the California Central Valley,³¹ clearly indicates the paucity and lack of integrity of local species data or even wider area effective monitoring programs for steelhead:

Although 36 of the 63 programs listed in this review are designed to monitor juvenile anadromous fish, none of these programs are capable of generating abundance, production estimates, or trend data for juvenile steelhead. These data are required to adequately assess progress towards recovery goals mandated by the Central Valley Project Improvement Act, Salmon, Steelhead Trout and Anadromous Fisheries Act, California Endangered Species Act, and the federal Endangered Species Act. Captures of juvenile steelhead are too low (resulting in

supported. However, while there may be no genetic basis for these legal distinctions, there may be an epigenetic one.

²⁹ M. Brown, USFWS RB Personal Com. 2011; J. L. Nielsen, S. Pavey, T. Wiacel, G.K. Sage, and I. Williams, Genetic Analyses of Central Valley Trout Populations 1999-2003. Hatchery and Stocking Program Environmental Impact Report/Environmental Impact Statement. p.4-200.

³⁰ Causality may yet be shown, but a review of the literature shows only association, not causality. Candidate loci reveal genetic differentiation between temporally divergent migratory runs of Chinook salmon by Kathleen G. O’Malley, Mark D. Camara and Michael A. Banks is a typical paper (albeit it in a different species) that finds clear genetic markers indicating, or even forecasting, behavior in one bimodal population but does not demonstrate a basis for its conclusion that the genetic differences “may influence migration.”

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low confidence in the estimate) throughout the CV for a meaningful assessment of production or trends³¹.

This California-wide data paucity is complemented by only two brief survey of the Old Cow over the past 20 years. Showing, as expected from many years of hatchery planting some presence of brown and resident rainbow trout.

Integrity Summary

It appears that by any account, “integrity” of analysis of California steelhead is singularly lacking. In addressing the issue before us, the BO, it is not possible to castigate or support an analysis of a phenomenon that has no integrity of its own or its analytical structure. A Federal court³² found that a fundamental purpose of the ESA - to preserve natural, self-sustaining populations - caused it to be scientifically questionable whether risk assessment criteria developed by NMFS for making status determinations could be applied to fish populations that included both hatchery and wild fish, since the criteria were designed to be applied only to wild fish³³. Whether this is applicable here is to be determined by others with legal training.

With these four concerns in mind under the IQA, and questionable legal applicability, we request that FERC work with NMFS, or another appropriate agency, to correct separate deficiencies in quality, objectivity, utility, and integrity in the BO. If these data do not meet the four criteria, we suggest the BO is deficient and should be rejected.

Administrative Procedure Act (APA)

Under the Administrative Procedure Act (APA), a court may set aside an agency’s decision if it is “arbitrary, capricious, an abuse of discretion or otherwise not in accordance with law.” “Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem offered as an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.³⁴” The agency must “examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made.³⁵”

³¹ Review of Present Steelhead Monitoring Programs in the California Central Valley, C. D. Eilers, Pacific States Marine Fisheries Commission for the CDFG Admin Report 2010-1, Oct. 2010.

³² Trout Unlimited v. Lohn, No. CV06-0483-JCC, 2007 WL 1795036 (W.D. Wash. June 13, 2007)

³³ This ruling might be extended to suggest that NMFS likewise has no authority to write a Biological Opinion derived from an unfounded status determination.

³⁴ Motor Vehicle Manufacturers Association v. State Farm Mutual Automobile Insurance Co., 463 U.S. 29, 43 (1983); Okeeffe’s, Inc. v. U.S. Consumer Product Safety Commission, 92 F.3d 940, 942 (9th Cir. 1996).

³⁵ Motor Vehicle Mfrs., supra, at 43; Dioxin/Organochlorine Center v. Clarke, 57 F. 3d 1517, 1525 (9th Cir. 1995). See footnote 18 for origin of some material on this page and further related issues and sources.

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NMFS, as yet, has failed to consider fire, fishermen, temperatures, and indirect effects of various types. NMFS has articulated nothing about data on these subjects, and has demonstrated no rational analyses or data supporting its opinions. We request that the studies requested in scoping documents and numerous filings over the past two years on the various impacts of these alternatives be brought to bear under this act and the results of those studies defended as proscribed by Federal law. While nothing in this law may require NMFS to undertake new studies, the needed studies are the identical studies needed in the EIS and necessary for Alternative selection by FERC. If NMFS chooses to rely on the best scientific data available, it should present it and at the same time realize that the best scientific data now available may not support any genetic basis for continuation of listing steelhead as genetically distinct from common rainbow trout³⁶.

With this existing science in mind, we request FERC work with NMFS to explain why they have failed to consider important aspects of the problem including water, temperature, displaced human and fish predation, fire, indirect effects and long term effects. We request information on why they have made an arbitrary and capricious decision that runs counter to the evidence already presented in FERC filings, and a satisfactory explanation for its lack of a rational connection between the present facts and analysis³⁷ in the FERC record, the existing science and the thrust of the BO. If this connection is not presented, we suggest the BO is deficient and should be rejected.

Federal ESA Jurisdiction

The BO shows on Figure 4 that:

Designated critical habitat for Chinook Salmon September 2, 2005, 70 FR 52488), occurs at the confluence of Old Cow and South Cow creeks, approximately six *{sic}* miles downstream of the Action Area, and its intermittent usage consists mostly of rearing juveniles (BO, and BO Figure 4).

Critical habitat was designated for Central Valley steelhead on September 2, 2005 (70 FR 52488). On NOAA maps as of 3/2011³⁸, it appears to extend to just above the Whitmore Falls almost nine miles below the Kilarc tailrace. It does not extend to anywhere near the Kilarc Action Area. In 2003 CDFG and NMFS revised their management objectives for the Kilarc Area to include anadromous Salmonids based on a re-evaluation of the Whitmore Falls (PG&E BE cited in BO, pp. 51-52³⁹). However, modification of Critical Habitat designation from the September 2005 boundaries may require a significant Federal process

³⁶ A Federal court in *Alesea Valley Alliance v. Evans* invalidated the NMFS decision to distinguish between hatchery and wild salmon for purposes of listing determinations under the ESA in instances when there was no evidence of a genetic distinction between the two stocks. See Reference 18.

³⁷ See Pages

³⁸ BO Figure 5 and <http://imaps.dfg.ca.gov/viewers/calfish/app.asp?LyrIDs=1-16|1-17|1-12|1-11|1-10|1-14|1-15|1-18|1-19|2-2|2-12-232|2-233|2-7|2-5|2-6|2-5b|2-3|2-4|3-2|3-5|3-209|3-1a|3-1> This CDFG map is clearer.

³⁹ PG&E BE cited in BO, pp. 51-52.

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that is not documented in this BO. Finally, there is no evidence that the project almost nine miles upstream of the designated critical habitat areas has anything but a positive effect on local predation, water quality, (temperature, and fire runoff pollution and turbidity). Since the critical habitats for both target species are far downstream from the Kilarc action area, it is unclear the extent of authority NMFS has to address this concern under this BO without an *a priori* determination. No such determination has been presented. Combining these two sites under one rubric leads to misleading results and a poor outcome for the fish.

Presidential Directive dated March 9 2009

Finally, the BO does not meet the Administrative Directive of our president on scientific integrity dated March, 2009⁴⁰. This memo requires that each agency should have appropriate rules and procedures to ensure the integrity of the scientific process within the agency. The directive goes on to require that when scientific or technological information is considered in policy decisions, the information should be subject to well-established scientific processes, including peer review where appropriate, and each agency should appropriately and accurately reflect that information in complying with and applying relevant statutory standards.

We request clarification of how the BO complies with this directive by showing how they used well-established scientific processes when they produce the final version of this BO. Further, it is requested that the supporting data and resulting scientific or technological findings or conclusions considered or relied upon in making this BO be made available to the public. Until this is provided, this BO is deficient and should be rejected.

Conclusion

This is a start on producing a Biological Opinion, for a singular narrow response to a FERC request. It is, as yet, may be found to be incomplete under ESA, IQA, APA, or at variance with a recent presidential directive. It does not look at or consider what is best for the fish other than to reiterate its review of previous proposals. It has not explored with all proponents how to construct the best solution for the fish. While not “required” in a BO, addressing how to help the fish is an opportunity yet to be taken.

Increasing wildfire prevalence increases take as identified in the Central Valley Salmon and Steelhead Recovery Plan (SRP). This has not been addressed. The “take” of higher water temperatures identified in the same SRP has not yet been incorporated. Predation from resident fish has yet to be incorporated. The indirect and long term “takes” identified in the BO have not yet been incorporated. Finally, and, somewhat hypothetically, the “take” of not allowing Davis Hydro’s Kilarc Project to start on fish screening and bypass development, easement acquisition, in-stream and riparian habitat reconstruction, education/outreach, and similar recovery actions steadily increases as the genetic diversity in the remaining population declines. These same actions, identified as funded activities in the Kilarc Project, are identified as needed recovery actions in the SRP. The only positive SRP action the demolition alternative engenders is the destruction of the Kilarc community fishing site (the Kilarc Reservoir) which may have a negative outreach effect on community/ NMFS relations for generations to come.

⁴⁰ Memorandum for the Heads of Executive Departments and Agencies, Mimeo, The White House March, 2009. Of particular focus is compliance with sections 1.(c), and 1.(d).

Reasonable and Prudent Measures⁴¹

The Biological Opinion fails to identify significant impacts of the proposed action on steelhead, a listed species under NMFS' jurisdiction. To focus the discussion, we will focus on two of the many impacts cited above: 1) increases in turbidity and fine sediment transport caused by increases in frequency, duration and severity of hot fires in the Old Cow Creek watershed because of the removal of the Kilarc Reservoir and canal system, critical fire suppression water sources, and 2) water temperature increases during the critical summer base flow period when water currently routed through the reservoir and canal system would follow the natural stream channel down the non-anadromous bypass reach and be warmed due to a longer route and transit time and warmer air temperatures. Details related to these and other impact are discussed above.

NMFS has an obligation under ESA to propose reasonable and prudent measures (RPMs) to mitigate unavoidable adverse impacts of any project on a listed species under their jurisdiction. The impacts identified above are two such impacts. There are two obvious RPMs available for implementation to mitigate these impacts. These are:

- Keep the project roads intact (for fire) and to keep the canal and reservoir full for fire prevention and suppression;
- Maintain the canal system and route sufficient water through a kinetic energy dissipation device at or near the existing powerhouse to reduce downstream predation and maintain downstream water temperatures in critical habitat areas at or above their present values during the critical summer base flow period.

Costs associated with both of these RPMs should be accounted as part of the costs of decommissioning.

Obviously, if an alternative proposed by stakeholders but not considered by FERC were to be elevated to the level of the "Preferred Alternative," the continued operation of the Kilarc part of the project, these RPMs would become moot and any costs associated with maintenance of fire-suppression water supplies and the cooling influence of bypass water would be born by the new licensee.

More work needs to be done, and we look forward to working with NMFS to define and implement what is best for the fish. We see this as an opportunity for a fresh look at all alternatives. Time is of the essence. We ask for reconsideration not only of this BO, but whether FERC has identified the correct preferred alternative in its Draft EIS. .

Richard Ely
Davis Hydro
Davis, California
March 22, 2011

⁴¹ If this or any RPM are not regarded as "reasonable" by FERC, we understand that it is NMFS obligation, in consultation with FERC, to come up with alternative RPMs that are. This affords FERC the opportunity to reconsider alternatives as the result of consultation and reflection such as the one described in Davis Hydro's Kilarc Project. If that action were taken, no RPMs addressing these issues would be necessary.

Attachment I - Misleading Statements

Having two very different hydropower sites reviewed under one license leads to misunderstanding and misleading statements. A few examples follow.

“without implementation of the decommissioning of the Kilarc-Cow Hydroelectric project, the likelihood of survival and recovery of naturally-reproducing steelhead in Cow Creek is very low” (BO p. 56).

Comment: There are not and have never been any reported steelhead or salmon in the Kilarc project reach. This is a fishing community that so prides itself on its fish that it has had a large stuffed one in a glass case in the town general store for many years. If there were any steelhead caught or sited, all would know it.

“Steelhead and Chinook salmon could be present near the Kilarc Tailrace” (BO p.58)

Comment: It is probable, that resident-adapted juvenile *O. mykiss* may, on occasion, be in the Old Cow Creek reach area of the Kilarc powerhouse⁴². However, except in the most extreme flood, salmon could not be present. Further, for the purposes of this BO, it would be difficult to argue that an uncommon single-year⁴³ flood-enabled entry of a steelhead or salmon would constitute any significant support the continued prevalence of the desired anadromous epiallele.

“Without consistent access to suitable habitat, screening of the hydropower diversions, and a return to a more natural hydrograph, it is unlikely that they would be able to maintain these remnant populations”. (*ibid*)

Comment: The Kilarc diversion is not screened and is above any conceivable habitat for anadromous fish (BO)⁴⁴. There is a population of resident-adapted rainbow and browns above the diversion⁴⁵.

These and other errors of fact demonstrate that there is almost no existing science or studies existing FERC filings, public comments were used on which to base the Biological Opinion⁴⁶

⁴² There are trout upstream. Anecdotal reports are that trout were planted up at Buckhorn Lake along with Browns and other species. Juvenile trout have been seen in the Kilarc reach and resident-adapted trout are reported above the project. See footnote 44.

⁴³ A steelhead is a rainbow trout that goes to the sea and comes back. The coming-back is statistically uncommon when the combination of multiple falls and incised gorges and infrequent flooding conditions, consecutive year returns is unlikely. The last reported flood in the area was Christmas 2005.

⁴⁴ There are observed and reported resident-adapted *O. mykiss* in and above this area up to Buckhorn Lake. The juveniles from these fish pass downstream both into the project and down the bypass. These would compete and interbreed with any upstream coming fish thereby negatively impacting any potential anadromy epiallele.

⁴⁵ Fishermen reports, and M. Barry CDFG personal communication.

⁴⁶ Biological Opinions for listing determinations may be made under federal law on existing studies and data. However, this low bar is not available for NEPA EIS applicability and its applicability for agency consultation

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other than copied sections from PG&E's BE. Further; the complexity of the dual sites within P-606 leads under a limited effort to only a distant understanding of the site⁴⁷, its opportunities, and the consequences of demolishing the facility. This lack of understanding inhibits discussions and analysis on what is best for the fish.

rather than species-listing may be problematic. More important, in this case, it may be leading to an unfortunate decision on what is best for assisting these fish.

⁴⁷ Throughout the Opinion, the Project is randomly named the Kilarc-Cow Project and the Kilarc-Cow Hydroelectric Project. Neither are correct. This point is important only because there are two potentially separable hydroelectric projects here, [The Kilarc Project](#), and the South Cow Project.

Attachment II Prejudice

A Regrettable Legal Position

Parties to the 2005 agreement foresaw the issue of prejudicial decision making and attempted to address it (BO p.1-2). Never the less, all parties to that agreement have exhibited a partiality that prevents objective consideration of this issue and now cannot easily back out of their positions without abandoning their preconceived judgment made without ascertaining the facts to be derived from studying the alternatives under NEPA.

All parties are tainted and trapped by the prior 2005 agreement⁴⁸ and are thus demonstrate clear prejudice. All parties want is best for the environment – but the prior agreement was not consultation or fact gathering, it was a *de facto* decision, now being referred to at length in the BO, and elsewhere. It was (§2 of the Agreement), and is (BO pp.1-2), recognized as inadvertently prejudicial, (despite all disclaimers) to any unbiased participation in the process. It is prejudicial because in signing this agreement, the signatories demonstrated a prior judgment and separately created a *de facto* reluctance of any party changing their mind and abandoning their partners – the very partners that they work with on many similar issues.

Discussion

As typical examples of this confliction: CDFG cannot easily abandon their support for their National partner, and visa versa. The environmental interveners can not easily publicly question the prior judgment of NMFS whose help they need on many issues, PG&E will quietly but solidly accommodate the agencies as this is a small site for them and PG&E will have the same reviewers evaluating many other sites. Thus, this “prior” agreement compromises all parties and interferes with an optimal solution in several ways. It denigrates or any need for studies or consideration of any data they might uncover; it inhibits a path to adequately address new information as mentioned in 50 CDR 402.16; and in this case, it precludes the unbiased evaluation of a late arrival in 2008 of Davis Hydro and their increasingly sophisticated flexible alternative, the Kilarc Project.

Evidentiary Demonstration

The primary references for local effects of this project are discussions with other signers of the March 2005 Kilarc-Cow Creek Agreement and documents written by or for members of that group. Ignored completely are all filings, data, and observation by non-complicit scientists, residents, interveners, and their representatives. While there are a great many references, close examination shows that most are generic California plenary documents, or citations from PG&E’s filings. This lack of analysis or considerations of any public testimony or public filings indicates this Opinion is written by a group of insiders with their mind made up not allowing any outside opinion to penetrate their record. This record of prejudice can be found in both the structure and content of the BO. In NOAA’s BO cover letter, and opening pages, it indicates reliance on PG&E’s BE, PG&E’s License Surrender Application, meeting with PG&E, and their consultants, field investigations and other sources

⁴⁸ See footnote 22 for reference and access.

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of information. No mention is made of any non-signers to the 2005 Agreement, the public record at FERC including extensive filed observations, analyses, and reports.

Attachment III: The CEC's Review

A Difficult Political Position

NMFS references the California Energy Commission for an evaluation of environmental benefits. CEC staff have responded with the following comments:

1. the whole Kilarc project generates 31.1 GWh per year and that this site's resource value is low due to lower summer production,
2. It would be replaced with a gas fired power plant, and
3. they concluded that the environmental benefits of removing this small facility outweigh its electricity generation benefits.

On these numbered points, we have the following comments:

1 30 GWh or (18 GWh from the Kilarc site) is a significant distributed green energy source. A review of independent hydro projects in California will find this as a large valuable plant. It is true that production drops in the summer, however, the availability, and separately, value of its power then increases in the ancillary services market. This spinning reserve service is needed for regulating wind power variability is valuable as otherwise the utilities have to rely on natural gas for regulation. The CEC may not have understood at the time that unlike small hydro, wind has to be discounted about 17 % in its capacity value, and this has to be made up from other sources such as hydro.

2. Yes, natural gas, along with the delay in retiring coal burning plants currently polluting most of the Southwest. The demolition of this green source perpetuates fossil as a source of acid rains across our country and as an accelerator for global warming.

3. These statements were a staff opinion unsupported by any environmental facts or analysis, and at variance with CEC policies and practice. The CEC supports small distributed generation. The CEC normally retains biological consultants to carefully construct biological opinions. The CEC supports Green generation. The foundation, if any, of this opinion is unclear.

Finally, and most important, we understand the difficult position the CEC is in, and the balance of political capital decisions it must make. The CEC is charged with the promotion of green energy – or more important, the total of all green energy – not any particular type or project. All possible small hydro, in the state may only total to less than 60 MW. All other green energy in the state solar and wind and bio fuels may approach 100 times that. There are about 100,000 fishermen for every small hydropower developer. It is not worth the political capital and CEC resources generally to support a resource that is limited, controversial, and politically costly. We respect their goals.