

Dec. 28, 2011

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Ms. Elizabeth Vasquez
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Gordon Leppig
California Department of Fish & Game
619 Second Street
Eureka, CA 95501

Dear Ms. Vasquez and Mr. Leppig:

The following are comments to the **Klamath Facilities Removal, Public Draft, EIS/EIR**

**An Engineers Review and Analysis
of the**

**“Klamath Facilities Removal Public Draft
Environmental Impact Statement/
Environmental Impact Report”**

By

Werner F. Hoyt, PE (Mechanical/Marine Engineer)

28 December 2011

Conclusion

As a professional engineer I am appalled at the lack of professionalism that is represented by this report.

Under both ESA/NEPA/CEQA an EIS/EIR is required to accomplish costed impacts, identify sources of funding and evaluate the impacts of the costs and funding as part of the study. This report clearly does not meet that basic legal requirement in that costed impacts are not provided for each of the options, financing requirements of

the options is not realistically evaluated, nor have sources of funding been fully evaluated with their viability to rate and compare the options.

The report does not adequately identify parameters affecting the decision, quantify, correlate, or assign values for the purposes of the decision making process as required under ESA/NEPA/CEQA.

The basic premise of the removal is the requirement is to restore upper basin as salmon and steelhead habitat is a predetermination of the KRBA. Evidence not presented in the EIS/EIR is that there was not habitat above Keno due to the reef at Keno. In absence of the Keno Dam the natural reef would prevent any migration further into the Klamath basin.

Coho were introduced in 1895 by DFG in one of the Trinity River tributaries. Studies have indicated that the Coho runs on the Klamath did not become viable and sustainable until after Copco.

The endangered species status to the Coho salmon runs on the Klamath is erroneous 1 and 2 had sufficiently modified river conditions. The fact that Coho were planted should be reflected in the timeline in 1895 eliminates critical information from the review and decision making process.

Agency mismanagement of the river flows for the benefit of the Hoopa Boat festival, a newly created event (unnatural August/Sept water flow) utilizing Lewiston storage capacity, by ramping the Trinity River for the period of the boat festival in 2002 triggered a Salmon run in which 20,000 plus fish died as a result of starting their migration and having the water cut off by prematurely decreasing the river temperature. Normal runs begin with the natural fall cooling of the river water. Mismanagement does not justify a removal decision. Citing the event without citing the cause in the timeline is highly misleading.

Summary:

The EIS/EIR has extremely serious shortcomings in that it has been tailored to achieve a specific outcome.

- 1) It fails accomplish the basic necessary items to come to a reasoned decision
- 2) It did not identify nor quantify contributing factors.
- 3) It did not identify all laws/regulations which were required to be addressed
 - a. EPA greenhouse gas emissions – federal goals to reduce emissions by agency decisions.
 - b. Strategic energy impact.
 - c. Energy security at national, state, regional, local levels.

- d. Balance of trade – increase in import requirements or the loss of reductions that will remain in place through continued use of renewable green hydro power.
 - e. Economic impacts by the export of wealth through the requirement to import fuel. Economic impact can be modeled at 3x the costs of fuel import cost in annual decreased economic activity.
- 4) Fails to sufficiently identify source of funding, cost of that funding. E.g. If funded by bond issues the stated \$250M cost is on the order of twice the face value of the bonds issued. The real cost is \$500 Million to tax payers of California.
 - 5) Fails to identify the impact on other programs in the California or Oregon budgets. Bond servicing and payback is from the general funds of each state. Cost of bonding is 2x the face issue of the bond issued. Bonds are borrowing. The bonding alone represents a legislative budgeting impact of \$500 million.
 - 6) Jobs creation – fails to identify the fact that all of the basin monitoring jobs to be created are government employment. Source of funding of these new positions is not identified nor the impact on the State and Federal budgets. Since these jobs are consumers of wealth vice wealth creation they have a net impact on the overall economy by reducing the tax base through wealth consumption. The budgeting impact for the monitoring positions as estimated in the attached analysis has an impact of \$100 million per year.
- 7) Ignores data that does not support the desired outcome of the study
 - a. Historical conditions of the Klamath River during dry season are noticeable absent in terms of evaluation of post removal water quality.
 - b. Impact of climate change in driving the salmon runs northward to cooler waters.
 - c. Impact of the explosive growth of pinnaped populations on the salmon
 - d. Uses as primary supporting documentation the 2002 fish kill on the Klamath River which resulted from ramping the Trinity River by the Bureau of Reclamation in support of the Hoopa Boat Festival.

The National Science Foundation Review issued in March 2010 of the science behind decisions regarding water use cut off decisions. Driving these decisions were suppositions based on various ideas that certain activities were responsible for the collapse and subsequent listing of Delta Smelt and Longfin Smelt as threatened or endangered species. The foundation cited although the individual study science was good, they directed that the agencies go back and “Quantify the various elements of the situation. Spending 95% of your effort which attacks 5% or less of the global problem is bad science and bad management of scarce resources.

Subsequent to this Pacific Legal Foundation won their case *Stewart & Jasper Orchards, et al. v. United States Fish and Wildlife Service, et al.*). 18 May PLF statement

“Judge Wanger recognized that federal regulators had not taken account of how water cutoffs could damage the human environment, and they did not use the best available science,” said PLF attorney Brandon Middleton.

“This is a powerful, excellent ruling,” said Middleton. “The judge is telling the feds that they can’t ignore the harsh human and environmental impacts of cutting off water to farms, workers, businesses, and communities. The judge is also saying the feds can’t get away with using slippery science to justify environmental restrictions that rob communities of their lifeblood – water.”

The impact of the removal of the Klamath River Facilities or imposition of major modifications will fall on the residents of Siskiyou, Del Norte, Jackson, and Klamath Counties in the form of increased energy costs and reduced power reliability and security. In view of the impact on the communities involved a proper study is required to address and review **all** contributing factors. The review should not tailor the selection of information to achieve a political end. As stated in the judges ruling regarding water allocations in the CA delta the same applies to any EIS/EIR for the Klamath River Facilities, identify parameters, quantify, correlate, determine relative costs, then evaluate the options on real costs.

This has clearly not been accomplished in the Klamath Facilities Removal EIS/EIR.

Respectfully submitted,

Werner F. Hoyt, PE (R.M.E 28342)

Analysis

Funds to Accomplish the Kamath River Facilities Removal.

1. \$200,000,000 to be paid for by the rate payers - put into real terms this is approximately – \$3,500 average per rate payer (assuming 500,000 rate payers). If this is spread across the rate payers for Siskiyou, Jackson, Klamath, Del Norte, Modoc counties this number is substantially higher.
2. 91-250 million to be paid for by the State of California by bond issue. Bonds are paid back at approximately 2x the face value of the bond directly from general revenue. Any new bond impacts all state commitments. Reality: California is broke and cannot afford approval of such a bond. California cannot continue to deficit spend and will be required by law to balance its finances. The removal of the Klamath Facilities is an obligation without the ability to payback.
3. Federal government has absolved itself of any financing responsibility.
4. Total cost of the base proposal as presented is on the order of \$700,000,000 when bond financing is considered.
5. Cost of the basin monitoring presented in the jobs to be created. The EIS presented approximately 1,000 jobs to be created at the county, state, and federal levels in the Klamath Basin. This is at an estimated cost of 100,000 per position when employment benefits, payroll taxes, unemployment, and workers compensation insurances are accounted for. Total cost per annum for the 1000 jobs is \$100,000,000/year. Reality check: neither the county governments in the basin nor the state governments can fund these positions. It is highly unlikely that NOAA,/FWS will be able to expand their funding to cover this requirement. These positions are a luxury in an environment of severely constrained fiscal resources for government administration.
 - a. Cost over 10 years 1 Billion.
 - b. Cost over 100 years 10 Billion
6. Economic impact of the positions created. These positions are a consumer of wealth and remove capital from the economic tax base. Removal of capital from the economic system is modeled for total impact as negative wealth creation. In this case similar to exporting dollars for fuel there is a net impact of 3x the funds spent on consumption. The costs when the multiplier is factored in are
 - a. Annualized cost 300,000,000 to the overall economy
 - b. 3 billion over 10 years
 - c. 30 billion over 100 years.

A quick review of the Parameters impacting the Klamath River Power Plant Removal Proposal

- 1 – What are the Major Factors Impacting Salmon and Steel Head Runs
- a) Marine Mammals/Predation – not addressed in the EIS/EIR
 - b) International fishing – not addressed in the EIS/EIR
 - c) Habitat – no comments.
 - d) Environmental Quality – Quantification of environmental trends was not accomplished. Each area needs quantification then each factor normalized to determine if it is in fact contributing to the issue.
 - e) What has changed that impact the Salmon and Steelhead Runs – inadequately addressed. There should have been qualitative data analysis of all contributing factors to rule out factors that have no impact.
 - f) Data quality – data uncertainty factors were not quantified nor evaluated.

2 – What are the Impacts of the alternatives?

- a) Costs – Not addressed by the EIS/EIR by quantifying.
- b) Reliability - Not addressed by the EIS/EIR on a quantitative basis.
- c) Environmental –clean vs CO2 emissions – inadequately addressed. Not quantified over the short term, over the term of the removal, nor over the long term and out years.

d) Security – Local power vs import from out of area. Not addressed. What happens in the event of a power grid collapse? What happens in the event of war?

e) Security – Trade Deficit/Dependence on foreign oil. – no analysis of the impact of the requirement to export dollars to pay for the replacement of a clean source of power originating here. At minimum it represents the inability to decrease our dependence on foreign energy sources. Dependence on foreign energy sources is presently our single largest security threat.

The above all require quantification to determine where effort is to be applied.

The 5% solution yields 95% of the desired goal.

1a – Pinniped impact on fish populations

California Sea Lion Census 2007 – 238,000 Estimate by NOAA National Marine Fisheries

Current Population estimate extrapolated at 6%/yr. 1978 Census was 11,000 when the Marine Mammals Protection Act was established.

2007	238,000
2008	252,280
2009	267,417
2010	283,462
2011	300,470
2012	318,498

California Seal Population Census 2004 by NOAA National Marine Fisheries estimated West Coast Population at 31,000. Population growth per census appears to be starting to level. Assume declining growth rates at 1% per year from 2004 for extrapolation. Growth rate provided by Census was 9%/year

Year	Harbor Seal Population
1978	6,000
2004	31,000
2005	33,480
2006	35,824
2007	37,973
2008	39,872
2009	41,467
2010	42,711

Sea Lion/harbor seal Daily Food requirement ~ 16 kg (35 lb)/day equates to 3 ½ 10 lb fish per day = 35 lb x 365 = 12,775 lbs Estimated West coast population of pinnipeds as of 2010 is approx 325,700 harbor seals and sea lions - equating to a food requirement of 4 billion lbs (2 million tons) of fish or 400 million 10lb sized fish.

Seal Pop	Pinniped Pop	Food Rqmt (lbs)	Food Rqmt(tons)	Number of 10# fish
6,000	17,000	211,225,000	105,613	21,122,500
42,700	325,700	4,046,822,500	2,023,411	404,682,250

Pinnipeds are smart – they go where they can find food. In particular they congregate at the mouth of the rivers when the salmon and steelhead runs take place and compete with the Indian Tribes for what fish return. They have moved into the Columbia River as far as the Grand Coulee Dam, have been found as far inland as Stockton, California. Recently with the collapse of the fish stocks in the San Francisco Bay Estuary the resident population of 1600+ sea lions in SF Bay relocated for better hunting grounds. With the collapse of both the Stripped Bass Population from the Pinnipeds there has been a resurgence of the delta smelt, long fin smelt and stripped bass fry.

1 b. Impact of Foreign Fish Trawlers and Fish Factories. Salmonoids range of migration is TransPacific in nature. Currently there is no management of take regarding populations originating from West Coast Spawning Areas. Drift net practices by Pacific Rim Countries result in a near complete take of Salmon Schools and steelhead when encountered by these fishing vessels. A quick look at total Pacific ocean take with National Marine Fisheries oversight indicates declining fish takes and collapses in fish stocks over the last 30 years. A rough estimate of current fish take all species by Commercial Fishing Trawlers is approximately 10% of that during the early 1970's. Current Data is not immediately available by web search. Best estimate based on trends is that the current take on the part of Commercial Fishing is similar to the impact on fish by marine mammals. The take in Alaskan

waters in 1988 was 700,000 metric tons in a study regarding incidental take of marine mammals by the National Marine Fisheries Service. Best estimate without direct input from NMFS is that this number will be on the order of 2 million tons of fish.

Environmental Quality Trends Regarding West Coast Watersheds

Establishment of the Clean Water Act has resulted in -

- 1) substantially increased clarity of rivers and streams
 - a. personal observation from having been diving in sections of the Klamath river below I-5 from 1970 to present, there is significantly less fine sedimentation and suspended clay fines. Summer visible distance has increased by several orders of magnitude. " inches to feet"
- 2) elimination of pesticides such as DDT
- 3) substantial reductions of pesticides entering the watershed
- 4) substantial reductions of phosphates entering the watershed
- 5) timber buffers on all streams/rivers prohibiting cutting w/in 50 to 100 ft – this has been in place since the early 1970's for private companies/individuals. Believe this has been extended to publicly owned lands regarding timber harvest.
- 6) Substantially reduced timber harvest activity – on the order of 90% of the 1970 numbers on an annual basis for Northern California.

We have seen the closure of

- a. Two mills in Mt. Shasta
- b. Two mills in Yreka
- c. 50%+Decrease in milling operations at Weed
- d. Two mills at Hilt
- e. Two mills in Dorris
- f. One mill in McCloud

Remaining Milling activity in Siskiyou Count of significant size

- a) 1 mill in Yreka
- b) 1 mill in Weed
- c) 1 mill in Dorris

Salmon Runs in the 1960's and Early 1970's – local fisher's were lining both sides of the Klamath River. Our family limited out routinely during both Chinook and Steelhead runs during the 60's.

Environmental Quality Trends – No quality trends provided over the span of time from 1900 to present

Annual Timber Harvest in the Klamath Basin from 1960 to present.

Annual Cattle production – not accomplished

Annual grain production – indicator of farming intensity/soils loss – not accomplished

Annual estimate salmon catch as far back as records go

accomplished - Various runs for both salmon and steelhead. – not
 Klamath River water quality indicators – trend lines
 - As far back as records go – not accomplished
 - TMDL records – into and out of the power plant system. – not
 accomplished
 - Temperature of water released from iron gate vs the pre-dam
 river temperature profiles prior to construction of the power plants. – not
 accomplished

What has been a constant through this period – The Power Generation Facilities on the Klamath River (Iron Gate, Copco, etc)

What has changed. – not presented.

- 1) Explosive growth of Sea Lion and Harbor Seal Populations - 20X based on National Marine Fisheries Data
- 2) Massively increased use of fishing trawlers and fish factories on the high seas by pacific rim countries from 1970 to present – 10X or greater.
- 3) Decreased environmental pressure on spawning stocks from human generated activity all across the North State. Reductions and quality indexes need to be generated to quantify. But these numbers are on the order of 90% or more from the mid 60's.

Economic Impact of the Change - not presented

Current Power Rates for Siskiyou, Jackson, Klamath Counties 0.07/KWH vs 0.11/KWH from Pacific Power due to the Klamath River Hydroelectric Facilities.

Current Residential Billed Rate - May 2010 at Lake Shastina

KWH	Cost	unit price
1152	135	0.117188

Customers will face both the cost of the facility removal as well as increased power rates.

Alternative Clean Power – Suitability and Cost were not presented.

Wind power – I all attempts to permit wind generation in Siskiyou County have been blocked to date on the basis of “Visual pollution”. Wind power although it has promise to contribute to the clean power in the county is only part of the solution to provide local energy security. Wind is not constant. There are a substantial number of days insufficient to generate power. The wind probability mapping for power suitability of wind generation indicates such installations are “marginal at best” Installed cost is \$5.2 million per 2.5Mw turbine. Cost to replace the Klamath river Power system is $160/2.5 \times 5.2 = \$322$ Million dollars for 64 each 2.5Mw turbines.

Solar power – present cost \$10,000/kW or higher. Replacement of power generated by the Klamath River Power by solar alone is
 160 Mw peak gen capacity = 160,000 Kw = > \$1.6 billion

Total annual Klamath river power generation =
 Peak Power Output = 160 MW
 Average Annual output = 80 MW to Siskiyou/Jackson/Klamath counties
 Power output = 80MW*24*365/1000= 700 million KWH

Power Cap	Hrs	Days	Conv	KWH	Cost/k wh	Cost	Revenue/k wh	Revenue
80,000,000	24	365	1,000	700,800,000	0.07	49,056,000	0.018	12,614,400

Customer cost @ \$0.07/KWH

Electric Generation from fossil fuel creates the following CO2 emissions.

955 g/kWh CO2 Coal
 893 g/kWh CO2 Oil
 599 g/kWh CO2 Natural gas

		lbs CO2/yr	ton CO2/yr	gallons/oil	Barrels/Oil	Import cost @ 93/Barrel	Import cost @ 150/barrel
2.101	lb/kWh Coal	1,472,380,800	736,190				
1.9646	lb/kWh Oil	1,376,791,680	688,396	62,581,440	1,862,543	\$173,216,486	\$279,381,429
1.3178	lb/kWh Nat Gas	923,514,240	461,757				
			49	100%			
			93	190%			
			279	569%			

Presently the cost of power produced by the Klamath river – assuming an average production of 80Mw

Is 49 million – local resource at \$0.07/kWH

Removal and replacement by either oil or natural gas will result in pricing at

173 Million/year + generation and distribution cost – assuming \$93/barrel of crude oil this is a 190% + increase over our current power

The bulk of this revenue will be exported overseas

279 million/year + generation and distribution cost – when prices return to \$150/barrel as we previously experienced. This is 569% increase in cost the customers served.

Again this money is exported overseas as this is a new demand on fossil fuel sources where the United States is increasingly dependent on international markets for energy.

At \$100/barrel over

\$180 million/yr

\$1.8 billion dollars over the next 10 years not indexing for inflation the cost

\$18 billion dollars over the next 100 years not indexing for inflation

2010 Population Estimates

Siskiyou County 49,000, Jackson County 201,000, Klamath County 68,000

Total Population Served ~ 338,000 – estimated number of households assuming average household size of 3 = 113,000 households.

This equates to an additional **household burden of ~**

\$1,000/household/year for \$100 barrel oil

\$2,000/household/year for \$150 barrel oil

Assuming that the change impacts the entire of each county if less that the entire then the burden proportionally increases.

1.8 billion – 0.49 billion = 1.31 billion => Cost/#households = 1.31 billion/113,000 = an increased cost of 12,000/household. ~ 1,000/household/year not indexed for inflation or likely energy cost increases for fossil fuels.

Existing Hyrdoelectric Power Plants Provide

1 – Clean Power

2 – Renewable resource

3 – Provides a power source locally

4 – Power is not subject to variability of weather or availability of the sun.

Available based on demand by households and business.

5 – Does not contribute to global warming (no CO2 Emissions)

6 – Did not contribute to the decline of the Salmon/Steel head populations as evidenced by:

- a. the explosive growth of the Pinnaped populations – establish a normalized trend line. Establish food demand trend line for population preying on salmonids at sea. DFG needs to present NMFS data on
 - Sea Lion Population monitoring in the area from Humbolt to Coos Bay.
 - Movements and behavior of the larger groups.
 - Behavior and estimated take from the Sea Lions.
- b. international fish trawler fish takes. – Establish trend lines
- c. US fisher fish take – establish trend lines
- c. improved water quality trends over the period of the decline
- c. no evidence of decline as a result of the power plant construction

7 – Provides local jobs in the maintenance and generation of power.

Need to cite # of jobs – direct and indirect – indefinitely

Vs

No jobs in county provided by the facility removals. County resident construction companies will be unable to bond the size of the project \$100+million. Outside companies will bring in their own workers.

Loss of the jobs currently provided.

8 – Provides an economical source of energy for local residents

Cost of power on the basis plants are maintained in current configurations. Including structural seismic upgrades if needed (No ladders)

Vs cost of power incorporating fish ladders

Vs cost of power with no power plants – note the cost of removal ultimately will be paid by the rate payers/tax payer – primarily the county residents of Siskiyou, Klamath, and Jackson Counties.

9 – Power security independent of fluctuations in the fossil fuel markets

Power security that is local not subject to

- Major seismic events outside Siskiyou County
- Winter weather interruption of power grid outside of Siskiyou County
- Local power source allows for repair locally.

10 – Not subject to international events.

11 – Keeps local money here at home, in the county, in the country – does not add to the balance of trade deficit

12 – Does not increase our dependence on foreign energy sources.

13 – Flood protection

Define current flood boundaries as a result of the presence of the power plants- not adequately addressed in EIS/EIR

Define the spring thaw snow melt flood event conditions – size and duration of flood event were characterized at 96 hrs vice 24 hrs.

Define areas subject to that flood event – historical research of flood events, flood crests that took place on the Klamath as a result of spring snow melt/rain events in the upper Klamath Basin

Define the damage estimate of an uncontrolled flood event.

Define who would be affected from Iron Gate to the Coast based on the largest known flood event prior to the Construction the Power System Complex.

All presently protected residences, businesses in the new flood plain band would be required to obtain flood insurance. Current FEMA policy is to pay off and not rebuild in the flood plain if a business or residence is destroyed. **Cost assessment was not performed regarding FEMA outlays.**

Conclusion based on sound analysis of the overall factors affecting fish populations.

- 1) **Predation** – Marine Mammals and Commercial Fisheries are the 95-99% portion of the equation affecting the Salmon and Pacific Fish Stock Populations. The **correlation** between Predation and fish stock collapse is **extremely strong**. Very strong impact versus rapid species decline.
- 2) **Habitat** – Environmental Quality has Steadily Improved for fish reproduction over the past 40 years. **Improving trends** across the board while there has been a collapse in fish stocks indicating that habitat has not been a contributing factor to the species collapse. All indicator trends run **counter to the fish stock collapse**.
- 3) **Power Facilities** are not the source of the fish stock collapse – they have been a **constant factor** in the Habitat since construction. **No correlation to any fish stock collapses**.

Recommendation –

(1) **Build fish ladders/or No Action Alternative:** The cost of construction of fish ladders at each of these facilities is far less expensive proposition to the 3 counties than the future cost of energy and is the overall least damaging environmental solution to our energy needs.

1) Cost 90-300 million versus 1.8 Billion in increased costs to the county and United States.

2) It maintains our source of clean, reliable, low cost energy

3) Restores salmon access to the upper Klamath basin.

4) Prevents the creation of

700,000 tons/year of CO₂,

7 million tons/next 10 years

70 million tons/next 100 years

5) Conserves fossil fuels oil or equivalent in coal/natural gas

62 million gallons/year

620 million gallons/next 10 years

6.2 billion gallons/next 100 years

6) Maintains the recreation resource provided by the associate lakes behind the power facilities.

(2) **Full quantification** should be required of the agencies producing their studies as was recommended by the National Science Foundation in the case of the Delta Smelt calling for the removal of the Power Plants. The ESA requires that economic factors be considered in actions to be taken as well as an estimate of the effectiveness of those proposed actions under the ESA. Does the proposed action really have a productive effect?

Known factors negatively contributing to species decline due to adverse fish management policy.

(1) Failure by NOAA/FWS to control take beyond the 200 mile limit by commercial fishers

(2) Adverse water releases from the Trinity reservoir triggering fish movement when movement is not a normal event due to weather/late summer temperatures.

(3) Fish kill by agencies of reproductive adult fish at the Iron Gate facility that would otherwise migrate back downriver to another stream to reproduce.

County Government is the responsible agency for the CEQA review as the construction permitting agency. As part of that review any or all of the NEPA accomplished by FERC can be called into question.

Security analysis

Energy analysis

Cost of alternatives

Economic impact on the 3 county area of Siskiyou, Jackson and Klamath
Environmental quality trend analysis
Population trend analysis
Predator trend analysis
Fish Take trend analysis by
 Commercial Fishers
 Tribes
 Recreational anglers