Coastal Conservancy

By U.S. Certified Mail, return receipt requested, and
Filed electronically to service list

September 22, 2006

Magalie Roman Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: FERC Docket P-2082: Klamath River Project reservoirs: Interim state-agency sediment study results critical to relicensing

Dear Ms. Salas:

By this letter, the California State Coastal Conservancy, an agency of the State of California, requests that the enclosed results of its recently conducted sediment study pertaining to the potential decommissioning of the Klamath River Project be evaluated in the environmental documents under preparation in connection with relicensing of the Klamath River Project, FERC Docket P-2082. These findings are presented in the attached memoranda from: Gathard Engineering Consulting (Exhibit 1), Shannon and Wilson, Inc., (Exhibit 2), and Stillwater Sciences (Exhibit 3).

Findings regarding sediment size and character demonstrate that dam removal is feasible and affordable under a variety of scenarios now under consideration by the Conservancy and its contractors. Collectively, the attached studies and summaries find that: 1) the toxicity of the sediment in the four lowermost reservoirs is very low, and will not affect the method or cost of dam decommissioning; 2) that ample information exists to accurately predict the amount of sediment that would erode downstream in the event of decommissioning, and; 3) sediment transport below Iron Gate, even under the most conservative estimates, would be unlikely to cause flooding. The study findings must be prominently considered in the environmental review process for license renewal--with respect both to determining feasible alternatives and to determining the environmental effects and costs of those alternatives.

This information is provided in response to questions and concerns raised by numerous interested parties currently involved in the relicensing of P-2082. In particular, the study seeks to address questions regarding future project operations and the possibility of decommissioning some or all of the dams in the project area. The Klamath Sediment Study is broadly supported (Exhibit 4), and was authorized by the Conservancy and by the California Ocean Protection Council in June, 2005.

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A complete and final report including a proposed decommissioning strategy will be provided to FERC and other interested parties later this year following further consultation with fishery management agencies.

As indicated in our March 24, 2006 filing, the Conservancy undertook a scientific and technical examination of sediment located behind the four lower reservoirs, including an investigation of the feasibility of decommissioning the four lowermost dams in the Klamath River Project area. We requested at that time that FERC consider the results of our investigation in the preparation of its environmental documents pertaining to the relicensing of P-2082. Although neither FERC staff nor its consultants have contacted the Conservancy to inquire about the results of the study, we provide these findings in the interest of a thorough examination of future project management alternatives.

These findings address sediment volume and grain size distribution, toxicity, and assumptions related to the potential for flooding downstream of the project area should sediment be released in the course of decommissioning. The final study will further examine these and other topics, and propose a preferred approach to decommissioning that is justified by expert advice and by the available body of information.

Commencement of the study was delayed nearly one year by PacifiCorp's prerequisites to allowing access to the site and to information possibly subject to CEII protections. Due to these delays, the final version of the study will be available later this year in advance of the release of the Environmental Impact Statement. However, **we are providing the attached preliminary results to this letter, and we ask FERC to consider them in the draft and final environmental documents.** We also expect FERC to consider the results of the final study in the final environmental documents.

The Conservancy believes that consideration of the attached new information from our study is essential to the preparation of a thorough environmental document consistent with the National Environmental Policy Act and its guidelines. We also believe that the final draft of the study, soon to be provided, will be vital to assessing the feasibility, costs, adverse effects, risks and benefits of decommissioning portions of the Klamath River Project.

Please contact my staff Project Manager, Michael Bowen, with any questions or comments at (510) 286-0720.

Sincerely,

Samuel Schuchat
Executive Officer

Cc:
Service List P-2082

Encl:
Exhibit 1 Gathard Engineering Consultants: *Memo Describing Preliminary Results...*
Exhibit 2 Shannon and Wilson, Inc. *Preliminary Review of Analytical Testing Data...*
Exhibit 3 Stillwater Sciences: *Reevaluation of Stillwater 2004 Preliminary Simulation...*
Exhibit 4 Letters of Support

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September 21, 2006

Michael Bowen
California State Coastal Conservancy
1330 Broadway, 11th Floor
Oakland, CA 94612

Re: Klamath River Sediment Study

Dear Michael,

At your request, I have compiled a brief summary of the preliminary results of the Klamath River sediment investigation. These results include the following: 1) a summary of the analysis of sediment volume, 2) a description of sediment grain size distribution, and 3) a preliminary estimate of the volume and type of sediment that would be eroded by dam removal. This information is based on 45 sediment samples taken at 26 locations by Shannon and Wilson, Inc. from Iron Gate, Copco I, and J.C. Boyle reservoirs during their 2006 field season, and under a contract with the Coastal Conservancy.

The results of our analysis of sediment volume indicate that the three reservoirs have trapped approximately 21 million cubic yards (mcy) of material. However, our preliminary analysis concludes that less than 4 mcy of this material would erode as a result of dam removal activities. Previously G&G Associates[1] investigated the feasibility of removing the four lower dams and allowing sediment behind the dams to erode downstream. Stillwater Sciences[2] analyzed the effects that eroding sediments would have downstream of Iron Gate Dam. The results of our analysis of the volume and grain size of eroded sediment compares well with assumptions made by Stillwater. We, therefore, believe that erosion is a feasible method of removing sediment in the river channel as discussed in the G&G Associates and Stillwater reports.

[1] *Klamath River Dam Removal Investigation, J.C. Boyle Dam Copco I Copco 2 Dam and Iron Gate Dam*, G&G Associates, July 2003

[2] *A Preliminary Evaluation of the Potential Downstream Sediment Deposition Following the Removal of Iron Gate, Copco, and J.C. Boyle Dams, Klamath River, CA*, Stillwater Sciences 2855 Telegraph Avenue Berkeley, CA 94705, May 2004

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Discussion of Results

Additional investigation of removal of the four lower dams on the Klamath River was conducted on behalf of the California State Coastal Conservancy and Ocean Protection Council. This investigation was prompted by questions regarding the feasibility of dam decommissioning as a future project management alternative. The current study includes collecting and analyzing sediment from the reservoirs of these dams to provide a basis for dam removal studies. Shannon and Wilson, Inc. utilized over water boring and grab sampling to collect sediment samples at 26 different locations in three of the reservoirs. One reservoir, Copco II, did not have sufficient sediment to allow sample collection. The location of the samples is discussed in *Sediment Sampling Plan Klamath River Sediment Study*, June 2006, Gathard Engineering Consultants (Appendix A, "Sampling Plan").

Estimated sediment thickness provided in the Sampling Plan was based on elevations shown on contour lines on predam and post dam reservoir surveys. Results of the borings provided a comparison of actual sediment thickness to sediment thickness calculated from survey information. Comparison of the estimated thickness, based on pre and post dam surveys, with the measured thickness based on borings did not always provide a high correlation. Table 1 shows both estimated and measured sediment thickness.

The difference between estimated and measured sediment thickness may result from numerous extrapolations of known information as discussed below.

- The accuracy of drill rig location was limited to the accuracy of the rig location system used. Slight variation in the location of the rig could result in large variation in sediment thickness, for instance at locations near or at predam canyon walls.
- The predam and post dam survey contour lines were based on extrapolation of spot elevation information. The accuracy of contour lines used to estimate sediment thickness was limited by the accuracy and amount of information used to create predam survey contour lines.
- Side slopes along the predam river were very steep. Contour lines of pre and post dam surveys were overlaid to estimate sediment thickness. Slight variations in the horizontal alignment of the surveys could result in large thickness estimate changes, and possible inaccuracies, in the estimated sediment thickness.
- Estimates in the Sampling Plan were conservative (towards larger thickness) to ensure that drill rig operators provided sufficient drilling equipment length to access the full depth of sediment. Extrapolation of sediment elevations from predam and post dam elevations was required. Accuracy of the information is limited by extrapolation from 10-foot interval contour lines.

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Table 1 Estimated and Measured Sediment Thickness

Copco I Reservoir		
Coring Location	Measured Sediment Thickness - feet	Estimated Sediment Thickness - feet
C-1	5.8	20
C-2	4.4	10
C-3	5.7	10
C-4	7.7	10
C-5	5.8	7
C-6	10	10
C-7	0.4	15
C-8	3.6	8
C-9	3.5	12
C-10	9.4	10
C-11	4	10
C-12	6	--
Iron Gate Reservoir		
Coring Location	Measured Sediment Thickness - feet	Estimated Sediment Thickness - feet
IG-1	7	15
IG-2	1.9	12
IG-3	2	10
IG-4	2.5	2
IG-5	0.5	2
IG-6	2	20
IG-7	5	20
IG-8	4.3	5
IG-9	6.5	10
J.C. Boyle Reservoir		
Coring Location	Measured Sediment Thickness - feet	Estimated Sediment Thickness - feet
J-1	13.2	15
J-2	0	2
J-3	0.5	2
J-4	0.3	2
J-5	0.3	2

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1. Sediment Volume

In April 2003 JC Headwaters, Inc. issued a report, conducted for PacifiCorp, investigating sediment characteristics in several reservoirs on the Klamath River. The report included bathymetric surveys, analysis of the trapped sediment volume in the reservoirs, and provided information on the nature and distribution of the sediments in the impoundments. Iron Gate, Copco I, and J.C. Boyle reservoirs were included in that investigation.

The report, entitled *Bathymetry and Sediment Classification of the Klamath Hydropower Project Impoundments*, J. M. Eilers and C.P Gubala, JC Headwaters, Inc., April 2003 (JC Headwaters Report), included figures showing bathymetric contour lines for the three reservoirs. PacifiCorp presented the results of the bathymetric survey by JC Headwaters as part of the dam licensing proceedings. Bathymetric contour lines provided in electronic format were received from PacifiCorp for predam and JC Headwaters surveys.

These files were used to compare the water volume of the predam and current reservoirs. Contour line information in a digital format compatible with AutoCAD software was taken from the data provided by PacifiCorp. AutoCAD was used to calculate the area contained inside each contour line. The volume of water contained in the reservoir, for both predam and the JC Headwaters surveys, was determined by multiplying the area inside each contour line by the difference in elevation between adjacent contour lines for all the contour lines in the reservoir. Volumes of the predam and JC Headwaters survey were calculated using identical water surface elevations. The estimated volume of sediment contained in the reservoir was calculated as the difference between the water volume of the predam and JC Headwaters surveys. Table 2 shows the sediment volumes calculated using this approach. It also provides volumes from the JC Headwaters Report.

To develop bathymetry the JC Headwaters investigation sampled water depths at cross section lines located at approximately 50-meter intervals. The method for developing predam contour lines is unknown but each approach involves extrapolation of information. The Copco I predam survey was particularly rough. On the south side of the reservoir some contour lines were not shown at all. Both Iron Gate and J.C. Boyle predam surveys appear to have been conducted after cofferdams, used to divert the river for dam construction, were in place. The lowest contour line for each was the elevation of the top of the cofferdam although other information shows lower river elevations. This discrepancy inherently limited the accuracy of sediment volume calculations.

Using the techniques described above, both Iron Gate and J.C. Boyle reservoirs appear to have significantly more sediment in them than the previous the JC Headwaters Report indicated. At this point in time no explanation for the large discrepancy in the volume of sediment in Iron Gate Reservoir is available. However, analyzing sediment volume involves comparing the difference between two very large numbers to determine the remaining sediment volume. Small errors in the survey can result in a large difference in the calculated volume of sediment

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and may be the reason for differences in calculated sediment volume. Comparison of bathymetry from the JC Headwaters Report to the predam survey at J.C. Boyle reservoir clearly shows a large volume of sediment near the dam that would account for most of the larger volume for the AutoCAD analysis shown in Table 2. Investigation of these issues is ongoing.

Table 2 Sediment Volume

Comparison of Reservoir Sediment Volume Cubic Yards of Sediment				
	J.C. Boyle	Copco1	Copco 2	Iron Gate
AutoCAD analysis	636,000	10,870,000	No sediment	8,767,000
JC Headwaters Report	22,222	9,629,00		4,818,000

2. Sediment Grain Size Analysis

The JC Headwaters Report also included an analysis of the sediment grain sizes and locations within the reservoirs. Hydroacoustic echo techniques were used to define bathymetry and grain size. JC Headwaters analysis of the sediment also included cores from the top four inches and visual observation of sediment using an under water camera.

These techniques provide only limited information regarding the grain size of reservoir sediments. Reservoir sediments tend to be layered with varying grain sizes. Analyzing sediment from only the top four inches does not provide a thorough analysis of sediment grain sizes. Accurate knowledge of grain size distribution is necessary to conduct analysis of sediment transport and erosion behavior.

To provide a more accurate determination of the distribution and location of sediment grain size, samples of reservoir sediment were extracted using boring techniques at 21 locations and 5 grab samples locations. Locations of sample extraction are described in the Sampling Plan (Appendix A). An additional boring was located in Copco between C1 and C7. From the 26 sample locations 45 individual grain size analyses were conducted. The grain size characteristics at boring locations were used to extrapolate the material size distribution and location for each reservoir. This information was used to develop an estimate of the grain size of sediment that would be eroded from the reservoir if dams were removed.

Table 3 shows the grain size distribution analysis results.

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Table 3 Grain Size Distribution

Material Size Analysis Results Cubic Yards			
Reservoir	Iron Gate	Copco I	J.C, Boyle
Clay and Silt	7,249,132	8,972,039	450,043
Sand	1,092,064	1,794,856	128,922
Gravel	425,808	102,462	25,765

3. Sediment Eroded past Iron Gate Dam

Sediment eroded from J.C. Boyle would be trapped in Copco I Reservoir. Copco I sediment would flow into and be partially trapped in Iron Gate Reservoir. Sediment eroded past Iron Gate Dam would eventually be transported to the Pacific Ocean. The method, sequence, and timing of breaching the reservoirs to erode sediment are still under investigation. The following erosion assessment assumes the minimum duration of downstream water quality impacts would occur by first removing Copco II dam followed by simultaneously breaching the three remaining dams.

Table 4 shows the estimated sediment volume eroded past Iron Gate Dam assuming simultaneous removal of J.C. Boyle, Copco I, and Iron Gate reservoirs. The volume of sediment eroded and released was based on the following conservative preliminary assumptions. Analysis of the sediment release is ongoing and may result in reduced estimates of sediment releases.

- The new eroded river channel would follow the pre dam river channel. The channel width would be 200 feet wide at the bottom with side slopes at 10 horizontal to 1 vertical through Iron Gate and Copco I reservoirs
- All material would be eroded simultaneously. No time lag for larger particles would occur.
- Material from J.C. Boyle would resettle in Copco I. That material would be eroded out of Copco I reservoir in the same proportion as Copco I sediments. The same process would occur in Iron Gate. Approximately 2.2 mcy of sediment in Copco I would erode

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into Iron Gate Reservoir, which includes 23% of the sediment eroded from J.C. Boyle and 23% of Copco I sediment.

- Sediment eroded from Copco I would be partially trapped in Iron Gate reservoir. Approximately 34% of the sediment arriving in Iron Gate Reservoir from Copco I would be eroded with Iron Gate sediment erosion.

Table 4 Sediment Eroded Past Iron Gate Dam (thousand cubic yards)

Condition	Gravel	Sand	Silt/Clay	Total
Sediment released to Iron Gate Reservoir from the removal of Copco I	98	419	1,717	2,234
Copco I sediment eroded past Iron Gate Dam following Iron Gate Dam removal (34% of Total Copco I sediment eroded)	33	142	584	759
Iron Gate Reservoir sediment only from Iron Gate Dam removal	220	451	2,340	3,011
Total sediment released downstream of Iron Gate Dam	**253**	**593**	**2,924**	**3,770**

The information presented in this memorandum represents preliminary results of analysis of sediment sampling activities. The ongoing work awaits final results from sediment boring activities. We anticipate that some of the data and results presented may be revised when analysis and reports are complete.

Sincerely,

Dennis Gathard, P.E.

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Appendix A

Sediment Sampling Plan

Klamath River Sediment Study

Sediment Sampling Plan

Klamath Sediment Study

June 2006

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Sediment Sampling Plan

An investigation of sediment characteristics will be conducted, as part of the feasibility level study of decommissioning the four lower dams on the Klamath River. Sediment characteristics will provide information regarding the spatial distribution of sediment particles and chemistry of sediment particles trapped in the reservoirs.

Objective

The objective of sediment sampling is to collect sufficient sediment samples to accurately characterize the physical and chemical properties of the sediment trapped in the reservoirs. The objective of the activities in this initial round of testing is to provide preliminary information regarding sediment characteristics. The information developed will be used as a basis for analysis of sediment management approaches relating to the assessment of the feasibility of decommissioning and removing the four lower Klamath River Dams.

Sample results will provide information that will help determine the behavior and impacts of sediment released from the reservoirs following dam removal. PacifiCorp, the project owner, conducted very preliminary sediment volume and size analysis in previous work. That sediment size analysis did not include physical testing of sediment samples for grain size characteristics or chemical constituents. Sampling conducted in this process will provide sufficient information regarding the size and location of sediment particles to allow analysis of sediment erosion and deposition behavior, as the dams are demolished. Chemical analysis will help assess the feasibility of releasing sediment through erosion by identifying possible contamination and determining if further testing is necessary.

Methodology

Hydroelectric dam decommissioning activities can result in the release of large quantities of natural river sediments. No codified method of determining the suitability of release of these sediments has been established. The proposed method of evaluating the characteristics of the released sediment involves reviewing the watershed conditions that contribute sediment to the reservoirs and sediment sampling and testing activities.

The first phase of the process involves an analysis of potential sources of contamination in the watershed The Phase 1 study, entitled Upland Contaminant Source Study conducted by Shannon and Wilson, Inc. (Upland Study) is similar to a Puget Sound Dredged Disposal Analysis (PSDDA) Tier 1 analysis. This phase was conducted to identify general and specific potential sources of contamination to help guide decisions regarding testing for specific chemicals and use of testing methods.

Two methodologies for sediment testing were reviewed and considered. Both address issues similar to those involved in this decommissioning study. Both test are similar. The method not selected is presented in the Inland Testing Manual, developed jointly by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency to

assess dredged material. Guidelines used are those developed to implement the Clean Water Act. These guidelines and associated screening levels are those adopted for use in the Dredge Material Evaluation Framework for the Lower Columbia River Management Area, November 1998 (DMEF).

Another similar set of sediment testing protocols used in protocols Washington State's Puget Sound region are the Puget Sound Dredged Disposal Analysis (PSDDA) guidelines. These sediment testing guidelines have been established for deposition of dredged materials in the marine environment within the Sound and have been in use since the 1980's. PSDDA guidelines have been used to perform sediment analysis on similar decommissioning projects including the Elwha River Restoration project, The Matilija Dam Removal project, and the Condit Dam Removal Project

PSDDA involves several related levels (Tiers) of testing. Tier 2 laboratory testing is guided by the Tier 1 results (Upland Study). Tier 2 PSDDA analysis involves laboratory chemical tests on samples extracted from sediment.

The objective of the PSDDA sampling and testing activities is to determine whether dredged materials are suitable for deposition in marine environments without adverse impacts from the dredged materials. Since the PSDDA protocols were used so extensively on dredging projects and other dam decommissioning projects they were chosen for this project.

The PSDDA methodology sets screening levels for contaminant concentrations. Test results below screening levels indicate that the sediment contamination can be ranked as low and contamination is not significant. Concentrations of contaminants above screening levels require further sediment testing.

Sample Collection

To collect samples a geotechnical engineering firm will supervise a drilling contractor as the contractor drills into the sediment at 25 over the water locations and collects samples from Iron Gate, Copco I, Copco II, and J. C. Boyle reservoirs. Sediment samples will be taken from cores 3 inches in diameter at intervals of 30 inches No fewer than 40 select sediment samples shall be taken for the purpose of physical and chemical testing.

The total number of samples will be based on conditions encountered during sample drilling and retrieval activities. The number of drill sites in each reservoir is based on the relative volume of sediment in each reservoir. Current estimates of sediment volume in the three reservoirs will be used to distribute the location of the samples. Sediment depth has been analyzed using predam topographic survey information compared to bathymetric survey work conducted by PacifiCorp in 2003. Current estimates of sediment volume are shown in Table 1.

Table 1 Sediment Volume and Sampling Sites

Reservoir	Volume Cubic Yards	Number of Drill Sites
Iron Gate Reservoir	8,860,000	9
Copco 2 Reservoir	<200,000	1 Grab Samples
Copco 1 Reservoir	11,000,000	11
J. C. Boyle Reservoir	1,000,000	5 Grab Samples

PSDDA sampling frequency criteria is based on the suspected degree of sediment contamination and volume of sediment to be dredged. PSDDA procedures provide two levels of sediment characterization, full and partial characterization. Full characterization is usually conducted on sediment of known high contamination levels. The frequency of testing is based on contamination level and volume of sediment.

Because this investigation is a feasibility level analysis and not an attempt to conduct a final characterization for sediment disposal, and because the Upland Study suggests that the sediment is not suspected to be highly contaminated, PSDDA testing frequency guidelines as designated for full characterization were not used. Partial characterization does not specify exact frequency of testing. Sediment sampling frequency will be adequate for feasibility level analysis.

Several issues were considered when determining testing sites, including 1) the volume and thickness of sediment in a sediment sample area, 2) possible sources of upland contamination, and 3) the history of the particular reservoir.

Copco 1 reservoir was constructed in 1918 at approximately the same time as the Link River dam (1920). Therefore, most sediment traveling downstream between Link River and Copco 1 deposited in Copco 1 reservoir before 1959 when Big Bend Dam (now J. C. Boyle dam) was built. Consequently, the largest number of samples will be taken in Copco 1 since it has the largest volume of sediment retained in it and has the highest historical exposure to possible contaminants, especially those from upstream agricultural activities.

Analysis

Analysis will be conducted on the standard suite of PSDDA analytes with the exception of Tributyltins, which are specifically associated with painting marine vessels. Since this type of activity would not be expected in the watershed this test is not considered to be appropriate. The list of chemicals to be tested is provided in Table 2

While dioxins are not included in the standard list of chemicals, PSDDA requires testing for dioxins if a paper mill is in close proximity to the tested material. No paper mills were found within 20 miles of the reservoirs.

Furthermore, though toxic, dioxins are ubiquitous in the environment. Dioxins are formed as a result of combustion processes such as commercial or municipal waste incineration and from burning fuels (such as wood, coal or oil), can also be formed when household trash is burned, and as a result of natural processes such as forest fires. Chlorine bleaching of pulp and paper, certain types of chemical manufacturing and processing, and other industrial processes all can create small quantities of dioxins.

Screening levels for dioxins are extremely low so dioxins from sources other than paper mills would most likely show in chemical tests. Because no mills were found in the vicinity of the reservoirs and testing would not be likely to add information to our knowledge of the sediment contamination, dioxins were not included in the proposed suite of tests.

Samples will be taken at 2 ½ foot intervals. These samples will be inspected on site for variation between samples. Any sample that appears unusual or displays a reason for suspecting a high probability of contamination to the geotechnical engineer on site will tested separately. Otherwise, all material in a bore hole less than 15 feet deep will be mixed together (composited) and tested. Holes deeper than 15 feet will be split equally into two samples and each sample will be tested separately. This procedure should result in testing of approximately 26 samples.

EPA Region 9 uses PSDDA procedures as guidelines for dredging activities in that region since specific guidelines have not been established for the region. This type of testing, performed after Tier 1 evaluation but not to full characterization guidelines, is termed confirmatory testing by Region 9 personnel. It is not intended to establish the exact location of specific contaminants but to confirm the results of the Tier 1 analysis.

Table 2 RECOMMENDED ANALYSES

Parameter for All Samples	
Grain size distribution	
Parameters for Frequent Samples	**Parameters for Selected (Infrequent) Samples**
Percent solids	Organochlorine pesticides:
Total volatile solids (TVS)	Total DDTs (p,p) Gamma-HCH (lindane) Heptachlor Chlorpyrifos (Lorsban) Alpha-Chlordane Iprodione (Rovral) Aldrin PCNB (Blocker) Dieldrin & Others
Total organic carbon (TOC)	
Total sulfides	
Acid volatile sulfides	Organophosphorus pesticides:
pH	Dimethoate Ronnel Diazinon Parathion – Methyl Atrazine Malathion Simazine & Others
Calcium carbonate	
Ammonia	Chlorinated acid herbicides
PCBs	
Metals: Antimony Manganese Arsenic Mercury Cadmium Nickel Chromium Selenium Copper Silver Lead Zinc	Volatile Organic Compounds (VOCs): Trichloroethene (TCE) 1,1-Dichloroethene Tetrachloroethene (PCE) Vinyl chloride Ethylbenzene Toluene Total xylenes Trans-1,2-dichloroethylene Benzene 1,1,1-Trichloroethane (1,1,1-TCA) MTBE Chloroform
	Semivolatile Organic Compounds (SVOCs):* Phenols Low molecular weight aromatic hydrocarbons (LPAH) High molecular weight aromatic hydrocarbons (HPAH) Chlorinated aromatic hydrocarbons Chlorinated aliphatic hydrocarbons Phthalate esters Miscellaneous oxygenated compounds Organonitrogen compounds

Upland Contaminant Source Study Results

A upland study, similar to a PSDDA Tier 1 study, was conducted to better understand potential contaminant sources and help inform the frequency and location of sediment sampling. The results of the study suggest that PSDDA sampling protocols would be appropriate for detection of possible contaminants in the watershed. The study also found that in addition to the PSDDA suite of analytes, guaiacols should also be investigated. Figure 1 shows the results for potential point source contaminants found in the study. The study also found that land in the watershed had been used for agriculture, forestry, wood products manufacturing, and transportation of products by railroads. No major mining activities were found in the watershed area.

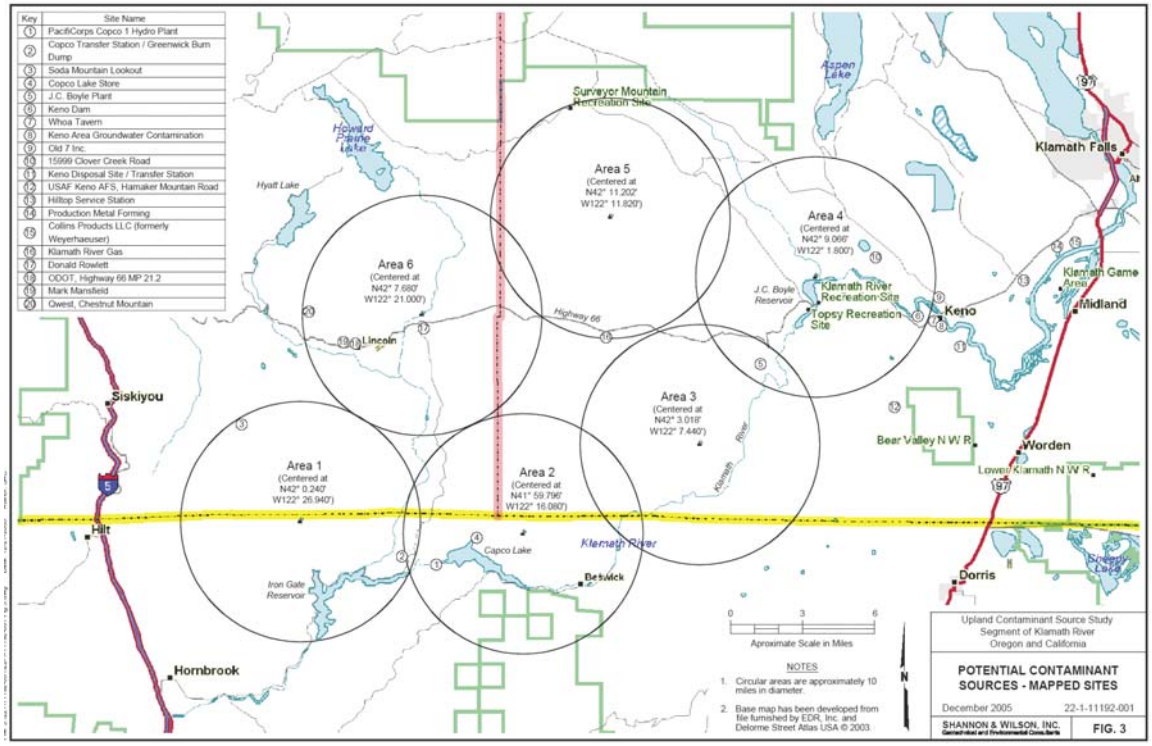

Figure 1 Potential Contaminant Point Source Sites

OTHER UPSTREAM POTENTIAL CONTAMINANT SOURCES

Site Name and Address	Closest EDR Area	Fig. 3 ID	List(s)	Notes	Potential Contaminants	Relevant Sediment Analyses/EPA Method
Keno Disposal Site/ Transfer Station, OR	Area 4, orphan	11	ECSI	Added to database for tracking as a former solid waste disposal site.	TPH Metals Pesticides	SVOCs/8270C/SIM Metals/6010/7471 Pesticides/8081
Whoa Tavern and Keno Area Groundwater Contamination, OR	Area 4, orphans	7, 8	ECSI, LUST	**Benzene** in well water up to 350 µg/L; **MTBE** in Keno Elementary School drinking water up to 185 µg/L. Five wellhead treatment systems installed. Klamath River about 500 feet northeast.	VOCs	VOCs/8260
USAF Keno AFS Peak end of Hamaker Mountain Road, OR	Areas 3 and 4, orphan	12	LUST, CERC-NFRAP, RCRA-SQG	**Diesel** in soil discovered in soil during UST decommissioning; cleanup completed.	TPH	SVOCs/8270C/SIM
Collins Products, LLC (formerly Weyerhaeuser) 6410 Highway 66, Klamath Falls, OR	Area 4, orphan	15	LUST, ECSI, UST, OR HAZMAT	Sawmill, planing, pressed-wood plant. Areas of concern: 1) old landfill, 2) **storm-water outfall**, 3) sawmill and powerhouse, and 4) **sediment**. Contaminants detected at 1) include **metals** (lead, chromium, manganese, nickel, copper, selenium, and zinc) in soil and GW. **Oily sheen has been**	TPH, PAHs Metals VOCs	SVOCs/8270C/SIM Metals/6010/7471 VOCs/8260

Site Name and Address	Closest EDR Area	Fig. 3 ID	List(s)	Notes	Potential Contaminants	Relevant Sediment Analyses/EPA Method
				observed on 2). At 3), soil samples from TPs had TPH concen-trations up to 26,400 mg/kg; **free product on groundwater**; some soil removed, but confirmation samples showed **chromium** in soil between residential and industrial PRGs. Six MWs sampled/tested in 1995 for VOCs, SVOCs, and metals; **1,1-dichloroethene, TCE, PCE, vinyl chloride, Bis(2-ethyl-hexyl)phthalate,** and **arsenic** exceeded PRGs. 4) **sediments** sampled in 1995 and 1996: **bioassays indicated toxic effects**. Samples analyzed for TPH, SVOCs, and metals; all had **TPH** greater than 500 ppm. **Arsenic, chromium, copper, mercury, total PAHs,** and four individual **PAHs** exceeded PSQG.		
Unocal Bulk Plant	Area 4, DEQ		ESCI, LUST	Cleanup in progress;	TPH	SVOCs/8270C/SIM

Site Name and Address	Closest EDR Area	Fig. 3 ID	List(s)	Notes	Potential Contaminants	Relevant Sediment Analyses/EPA Method
Plant 1459 S 6th Street, Klamath Falls, OR	Profiler		LUST	contaminated GW (**benzene** 2,300 mg/L and **ethylbenzene** 1,200 mg/L) soil **TPH** up to 28,000 mg/kg.	VOCs	VOCs/8260
Columbia Plywood Corp., Hwy 97 South, Klamath Falls, OR	Area 4, orphan		ECSI, LUST	2002 compliance audit (DEQ) noted two surface spills; **hydraulic fluid** likely to enter Klamath River (located within 20 feet of river). 2003 sampling indicated GW collected immediately adjacent to the river had **toluene** and several **PAHs** exceeding ecological risk screening levels. Heating oil LUST; cleanup completed.	TPH, PAHs VOCs	SVOCs/8270C/SIM VOCs/8260
Hilltop Service Station, 14413 Highway 66, Klamath Falls, OR	Area 4, DEQ Profiler	13	LUST	Gasoline release to soil discovered during tank decommissioning; cleanup completed.	TPH Lead	SVOCs/8270C/SIM Lead/6010
Production Metal Forming 8888 Highway 66, Klamath Falls, OR	Area 4, DEQ Profiler	14	HW Gen	Waste material: spent acid with metals.	Metals	Metals/6010/7471
Union Pacific Railroad Co. 1585 Oak Ave., Klamath	Area 4, DEQ Profiler		ECSI	**Diesel** spill (about 1,800 gal. of 2,000 gal. spill recovered). Product reached	TPH, PAHs VOCs	SVOCs/8270C/SIM VOCs/8260

Site Name and Address	Closest EDR Area	Fig. 3 ID	List(s)	Notes	Potential Contaminants	Relevant Sediment Analyses/EPA Method
Falls, OR				Product reached GW. Hazardous materials include **PCE, benzene, petroleum,** and **VOCs.**		
Timbermill Shores (former Modoc Lumber) 404 S. 4th Street, Klamath Falls, OR	Area 4, orphan		ECSI	Former lumber mill operated under different owners since the early 1900s; contaminants: **PAHs** and **hydraulic oil**. Institutional controls following remediation include no use of shallow GW, no excavations, and no residential or agricultural uses.	TPH, PAHs	SVOCs/8270C/SIM
Ewauna Box Co. (former) 1516 S. 6th Street, Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	Suspect site requiring further investigation; suspected contaminants **TPH, PCBs,** and **dioxins**. Located on the east shore of Lake Ewauna.	TPH PCBs Dioxins	SVOCs/8270C/SIM PCBs/8082 Dioxins/1613
Big Lakes Box Co., 1580 S. 6th Street, Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	Suspect site requiring further investigation; located on shore of Lake Ewauna; suspected contaminants **woodtreating chemicals, pesticides,** and **solvents**.	SVOCs Pesticides VOCs	SVOCs/8270C/SIM Pesticides/8081 VOCs/8260
Prime Equipment,	Area 4, DEQ		ECSI	**Gasoline** and **MTBE** detected	TPH VOCs	SVOCs/8270C/SIM

Site Name and Address	Closest EDR Area	Fig. 3 ID	List(s)	Notes	Potential Contaminants	Relevant Sediment Analyses/EPA Method
3344 Washburn Way, Klamath Falls, OR	Profiler			in GW.		VOCs/8260
PacifiCorp 1950 Mallard Lane, Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	**PCB** capacitor spill on 4/27/88; 2.5 gallons spilled onto gravel surface; gravel, soil and buffer area excavated; soil disposed of in Idaho or Arkansas.	PCBs	PCBs/8082
Klamath Veneer 4605 Lakeport Blvd., Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	**Diesel fuel** spill in 1985 entered Klamath Lake.	TPH	SVOCs/8270C/SIM
Fashion Cleaners (former) 623 Klamath Ave., Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	**PCE** detected in GW and soil (other contam-inants include **TCE, trans-1,2-dichloro-ethylene, 1,1,1-TCA, chloro-form**). Soil removed and GW treated in 1995; 1999 RI/FS concluded that natural attenuation may be sufficient to reduce remaining contaminant concentrations.	VOCs	VOCs/8260
May-Slade Oil Co. 865 and 953 S. Spring Street, Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	Active bulk plant; voluntary cleanup site. Contaminants **TPH** (gasoline, diesel fuel,	TPH VOCs	SVOCs/8270C/SIM VOCs/8260

Site Name and Address	Closest EDR Area	Fig. 3 ID	List(s)	Notes	Potential Contaminants	Relevant Sediment Analyses/EPA Method
OR				heating oils, and lube oils). Large gasoline spill occurred in 1999. Free product on GW and dissolved-phase plume (**benzene**) has migrated off site; shallow GW within 3 feet of ground surface.		
Klamath Falls Street Dept. (former Mew Data Arms [MDA]), 1199 S. Spring Street, Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	MDA formerly discharged spent plating bath solutions to a floor drain that discharged to a ditch. Primary contaminant: **chromium**; **cyanide** and **VOCs** also detected in GW. Contaminated soil excavated in 1991, but cleanup not completed; potential for off-site contamination not addressed.	Metals VOCs	Metals/6010/7471 VOCs/8260
Burlington Northern Santa Fe 1800 Laverne Ave., Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	Widespread petroleum contamination (mainly **bunker fuel and diesel**) identified in 1989, including free product on GW. Soil removal conducted; passive recovery system installed in 1996. GW impacted by	TPH, PAHs VOCs	SVOCs/8270C/SIM VOCs/8260

Site Name and Address	Closest EDR Area	Fig. 3 ID	List(s)	Notes	Potential Contaminants	Relevant Sediment Analyses/EPA Method
				benzene and **PAHs**.		
Clough Oil Company 977 S. Spring Street, Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	Diesel spilled in 1987 when driver overfilled a storage tank; excavated soil and gravel disposed at Klamath County Landfill. Elevated **benzene, gasoline,** and **xylenes** in GW.	TPH VOCs	SVOCs/8270C/SIM VOCs/8260
General Petroleum Corp. (former) 709 S. Riverside Street Klamath Falls, OR	Area 4, DEQ Profiler		ESCI	Added to database for tracking as a former bulk plant (dates back to at least 1931); located near west shore of Lake Ewauna.	TPH Lead	SVOCs/8270C/SIM Lead/6010
Jeld-Wen (and Pelican Bay), 3303 Lakeport Blvd., Klamath Falls, OR	Area 4, DEQ Profiler		ECSI	Sawmills have operated at this complex since 1860. **PCP** spill in 1986 impacted GW. Treatment system operated until 1995, recovered 13,150 gallons of product; signif-icant levels of dissolved PCP still present in GW. USTs removed from Pelican Bay site in 1992; **TPH** and **PCP** found in soil and GW. Risk assessment (2001) indicated unacceptable	TPH Dioxins	SVOCs/8270C/SIM Dioxins/1613

Site Name and Address	Closest EDR Area	Fig. 3 ID	List(s)	Notes	Potential Contaminants	Relevant Sediment Analyses/EPA Method
				risks (**dioxin** and **PCP**). Pilot-scale study on-going since 2001.		

CERC-NFRAP Comprehensive Environmental Response, Compensation, and Liability Act – no further remedial action planned (USEPA)

ECSIEnvironmental Cleanup Site Information System (DEQ)

GW Groundwater

HW GenHazardous Waste Generator (DEQ)

LUSTLeaking UST List (DEQ or SWRCB)

mg/kg milligrams per kilogram

mg/L milligrams per liter

µg/L micrograms per liter

MTBE Methyl tertiary butyl ether

MW Monitoring well

OR HAZMATHazardous materials incidents (Oregon State Fire Marshal's Office)

PAHs Polynuclear aromatic hydrocarbons

PCBs Polychlorinated biphenyls

PCE Tetrachloroethylene (perchloroethylene)

PCP Pentachlorophenol

PRGs USEPA's Preliminary Remediation Goals

PSQG Provincial Sediment Quality Guidelines

RCRA-SQGResource Conservation and Recovery Act – Small Quantity Generator (USEPA)

RI/FSRemedial Investigation/Feasibility Study

SVOCs Semivolatile organic compounds

SIM Selective ion monitoring

TCA Trichloroethane

TCE Trichloroethylene

TP Test pit

TPH Total petroleum hydrocarbons

UST Registered Underground Storage Tank List (DEQ or SWRCB)

VOCs Volatile organic compounds

Copco 1 Sediment Drilling Locations

1 Using digitized bathymetric contours from PacifiCorp maps for both original topography and current bathymetry, calculations of sediment volume indicate that Copco 1 Reservoir contains approximately 11 million cubic yards of sediment.

1 Predam survey was of poor quality. Contours at the upper end of the reservoir are not discernable. The accuracy of quantity estimates and sediment locations is limited by the accuracy of the original survey information.

1 Sediment accumulation appears to be fairly even along the length of the reservoir.

1 Maximum sediment thickness appears to be less than 20 feet. Most locations have sediment depths less than 15 feet.

Table 3 Drilling Location Details for Copco 1 Reservoir

Hole #	Sediment Elevation Feet	Distance from Dam along River Alignment Feet	Sediment Thickness Feet	Water Depth Feet	Anticipated Type of Sediment
1	2592	27000	15	14	Granular
2	2585	23500	10	21	Silt
3	2582	16500	10	24	Sand/Silt
4	2552	14000	10	54	silt/clay
5	2552	9500	7	54	silt/clay
6	2533	8500	10	73	clay
7	2600	29000	20	6	Granular
8	2568	19500	8	38	silt/clay
9	2542	12500	12	64	silt/clay
10	2520	5000	10	86	silt/clay
11	2575	5000	10	31	Sand/Silt

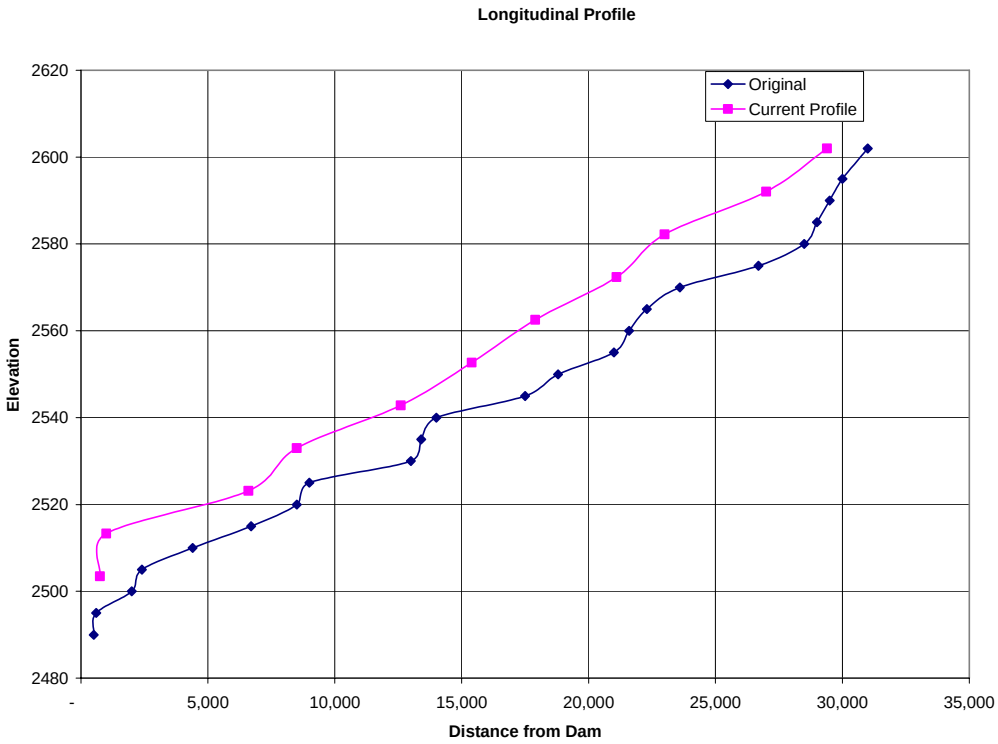

Figure 2 Center Line Profile Copco 1 Reservoir

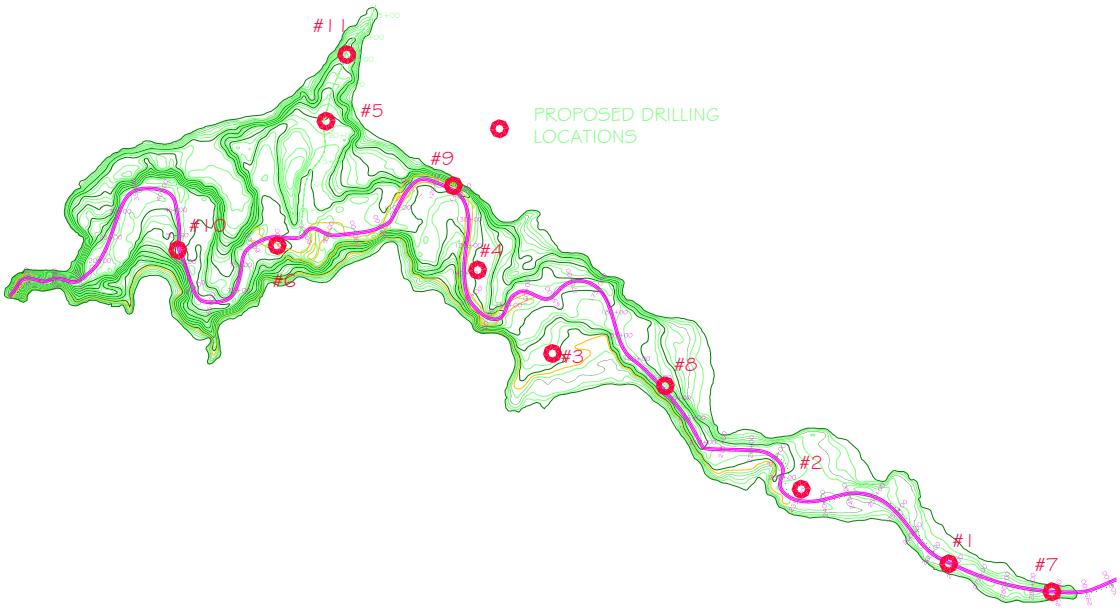

Figure 3 Proposed Drilling Locations - Copco 1 Reservoir

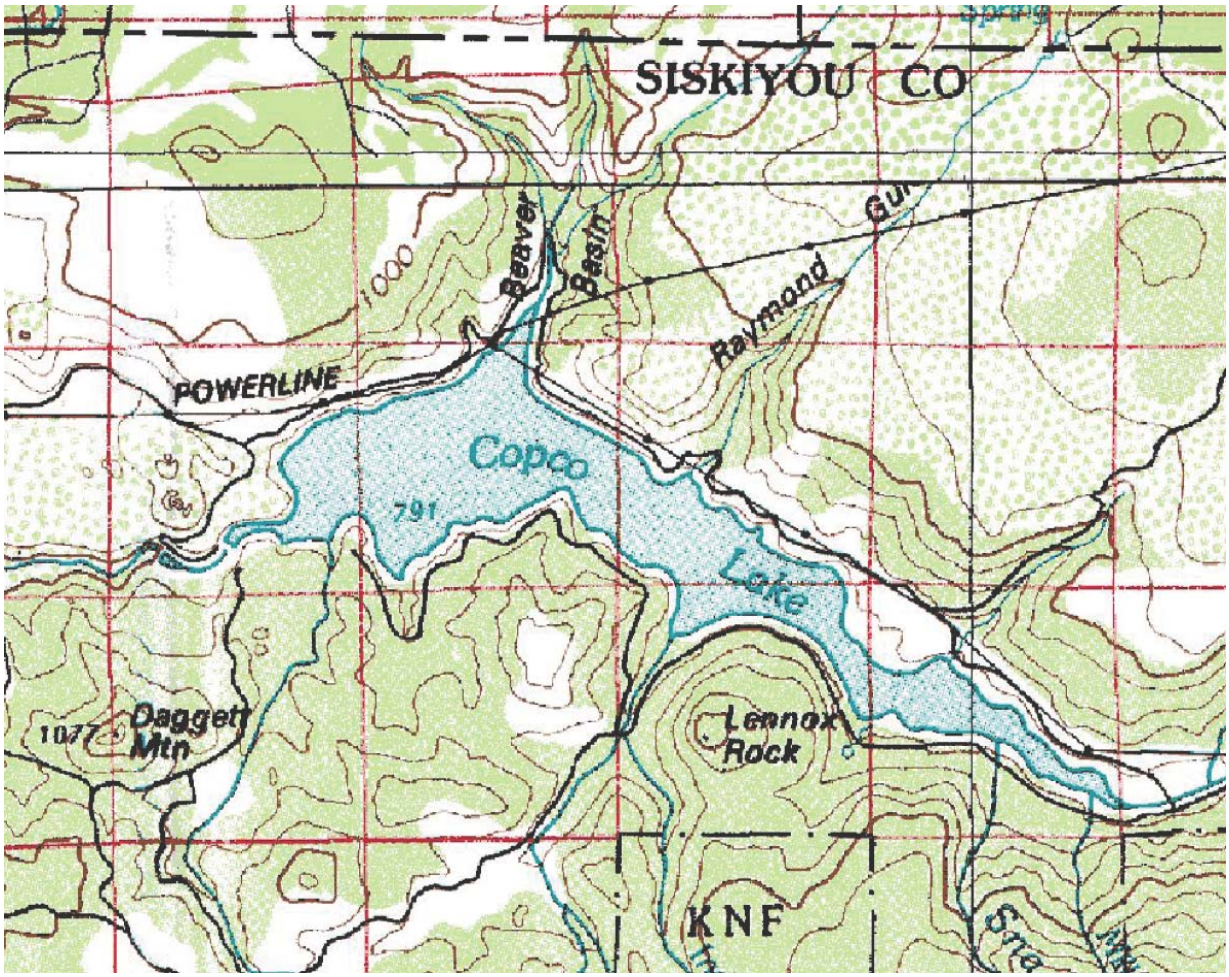

Figure 4 Tributaries to Copco 1 Reservoir

Iron Gate Drilling Locations

1. Using digitized bathymetric contours from PacifiCorp maps for both original topography and current bathymetry, calculations of sediment volume indicate that Iron Gate Reservoir contains approximately 8 million cubic yards of sediment.
2. Virtually no sediment accumulation upstream of 25,000 feet upstream of the dam. (7,600 Meters). This location is just slightly upstream of Jenny Creek
3. Fall Creek meets IG reservoir just upstream of a bridge across the reservoir. There is no apparent sediment deposition at this location, which is about 6 miles upstream of the dam.
4. Sediment appears to be mostly from Jenny Creek.
5. Jenny Creek is the longest tributary to the reservoir and has the largest capture area.
6. The maximum sediment depth is approximately 20 feet.

Table 4 Proposed Drilling Location Details

Hole #	Sediment Elevation Feet	Distance from Dam along River Alignment Feet	Sediment Thickness Feet	Water Depth Feet	Anticipated Type of Sediment
1	2306	21300	15	18	Granular
2	2256	9800	12	68	Silt
3	2217	12000	10	107	Silt
4	2226	4000	2	98	clay
5	2306	9500	2	18	Granular
6	2295	9800	20	29	Granular
7	2246	16500	20	78	silt/clay
8	2197	7000	5	127	silt/clay
9	2276	21000	10	48	silt/clay

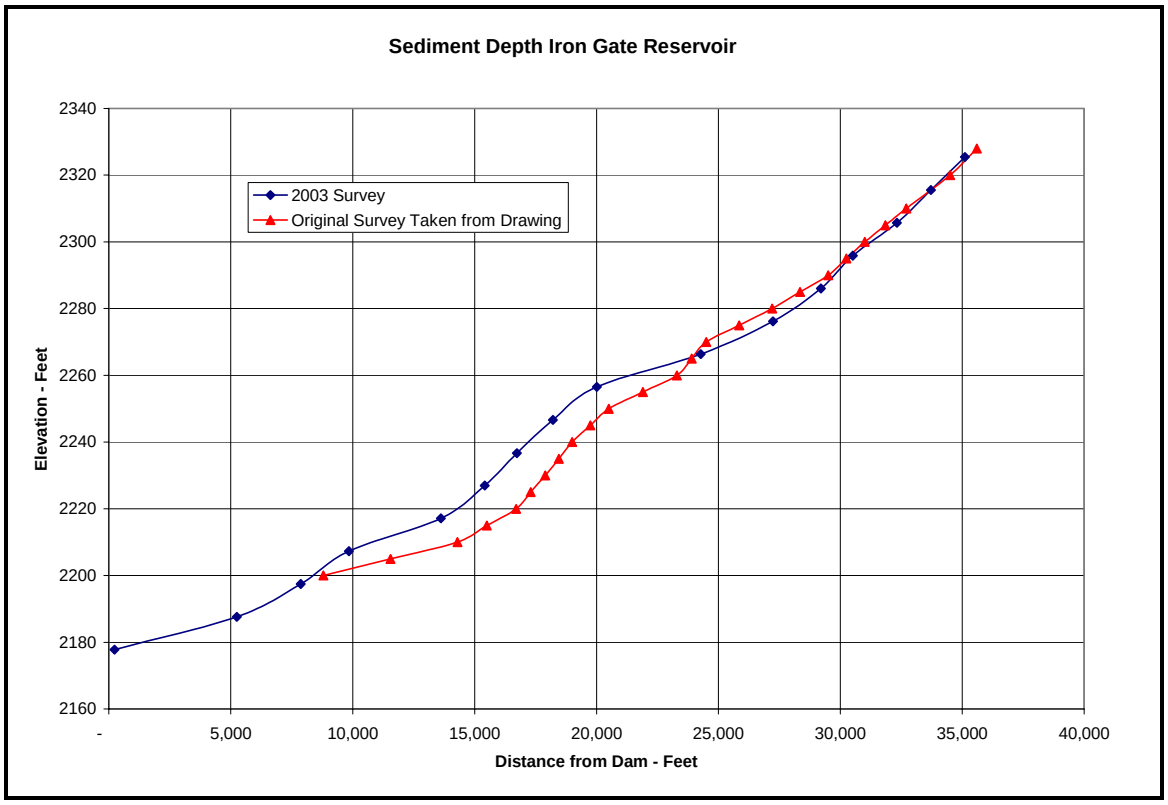

Figure 5 Sediment Depth - Iron Gate Reservoir

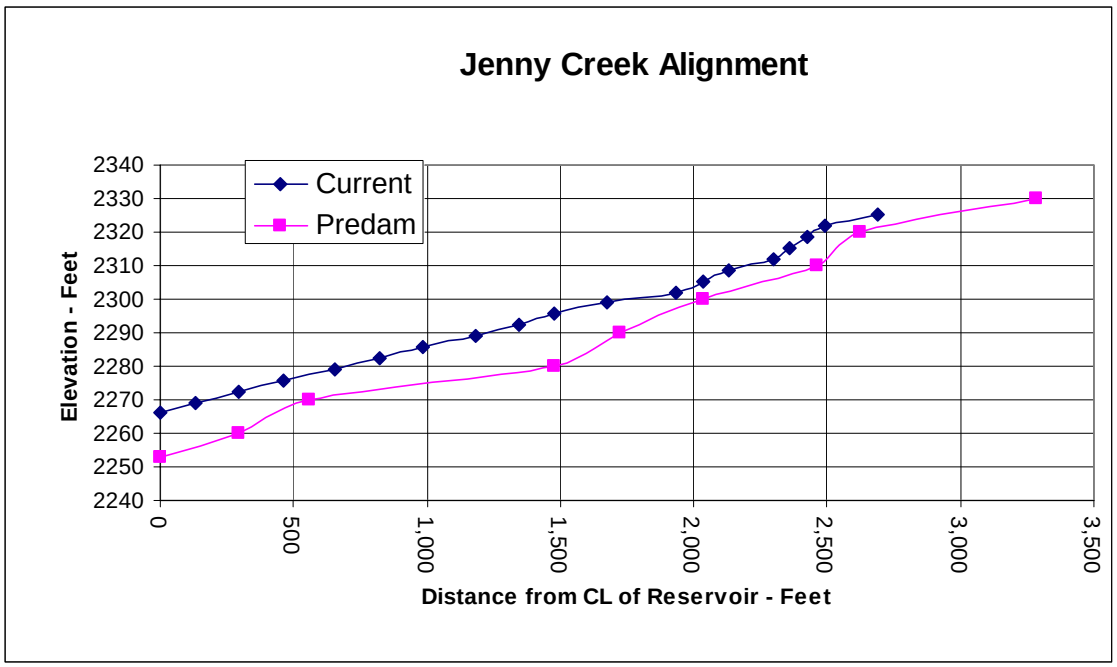

Figure 6 Sediment Depth at Jenny Creek

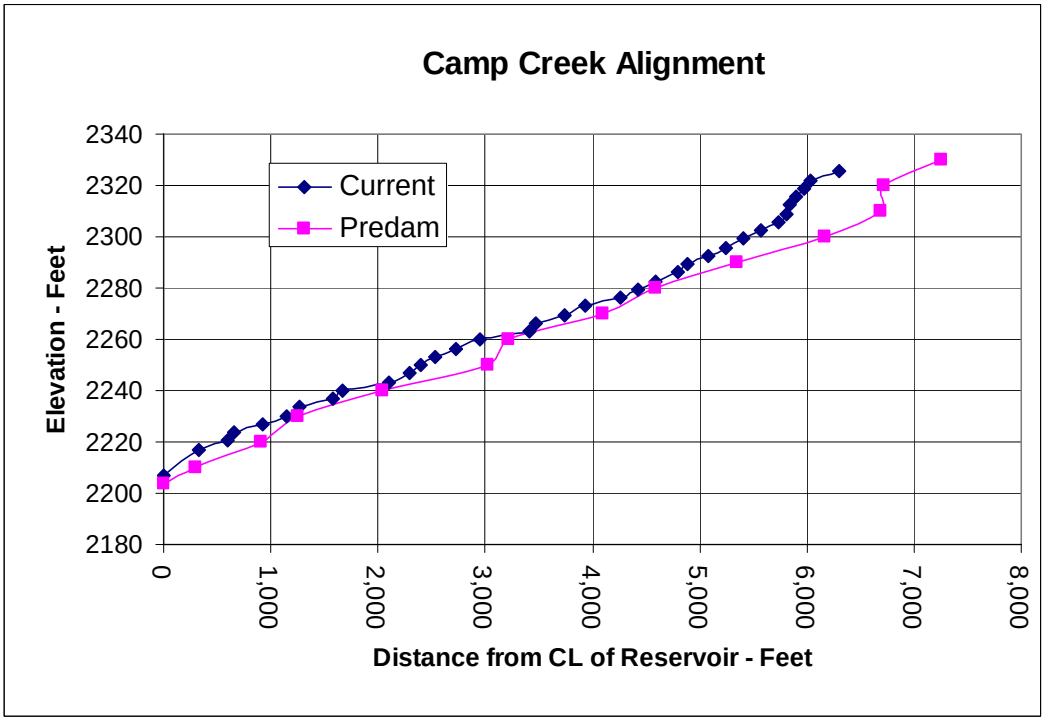

Figure 7 Sediment Depth at Camp Creek

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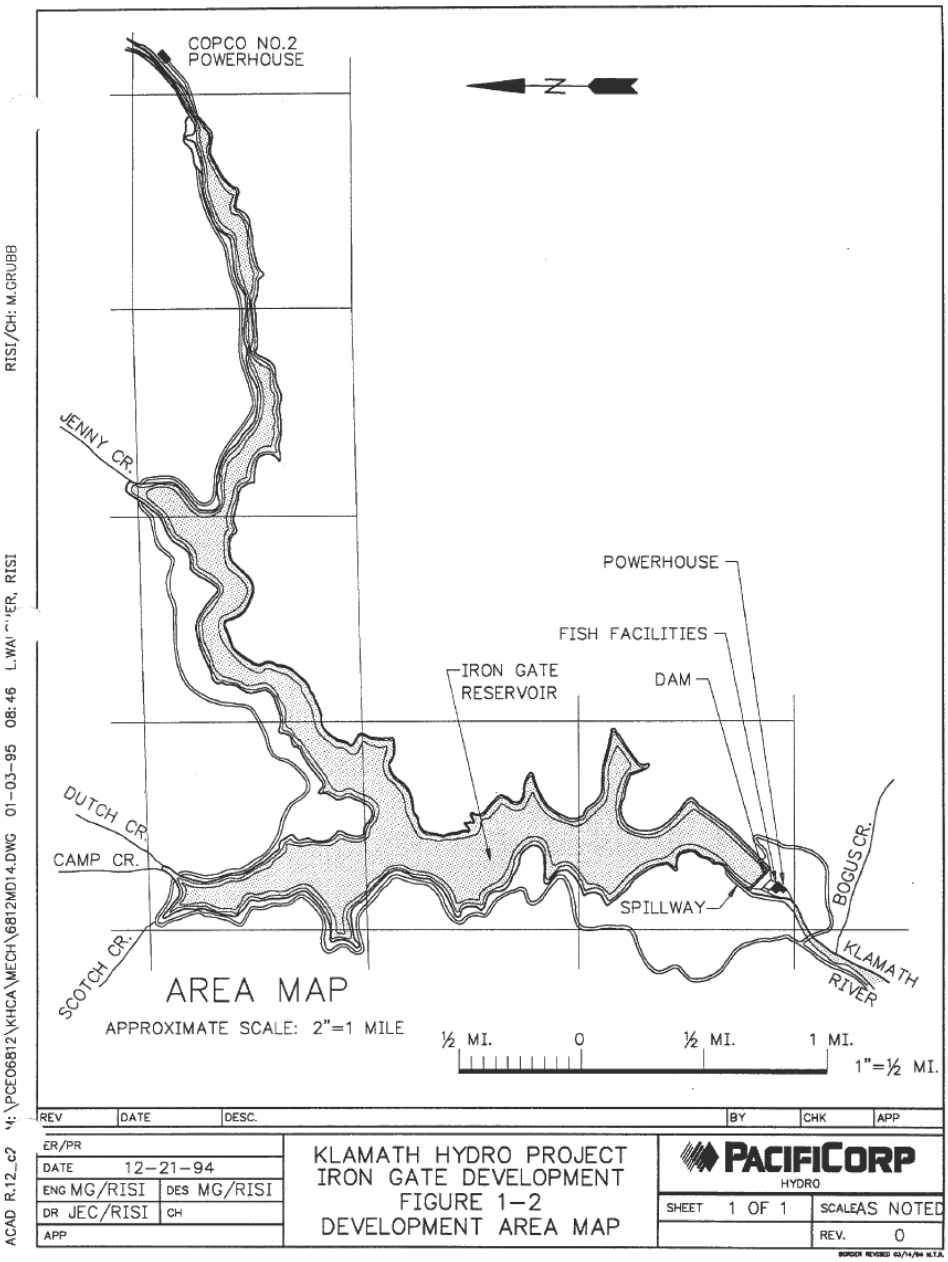

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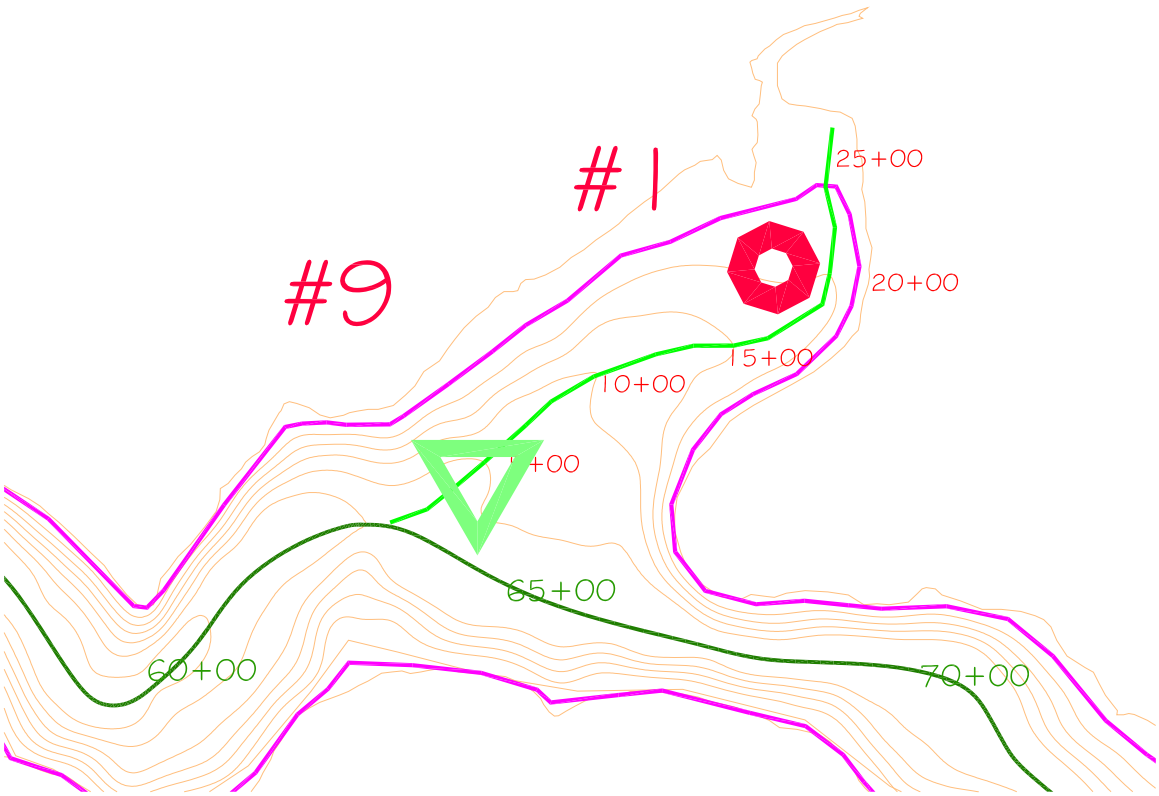


Figure 8 Bathymetry of Jenny Creek in Iron Gate Reservoir

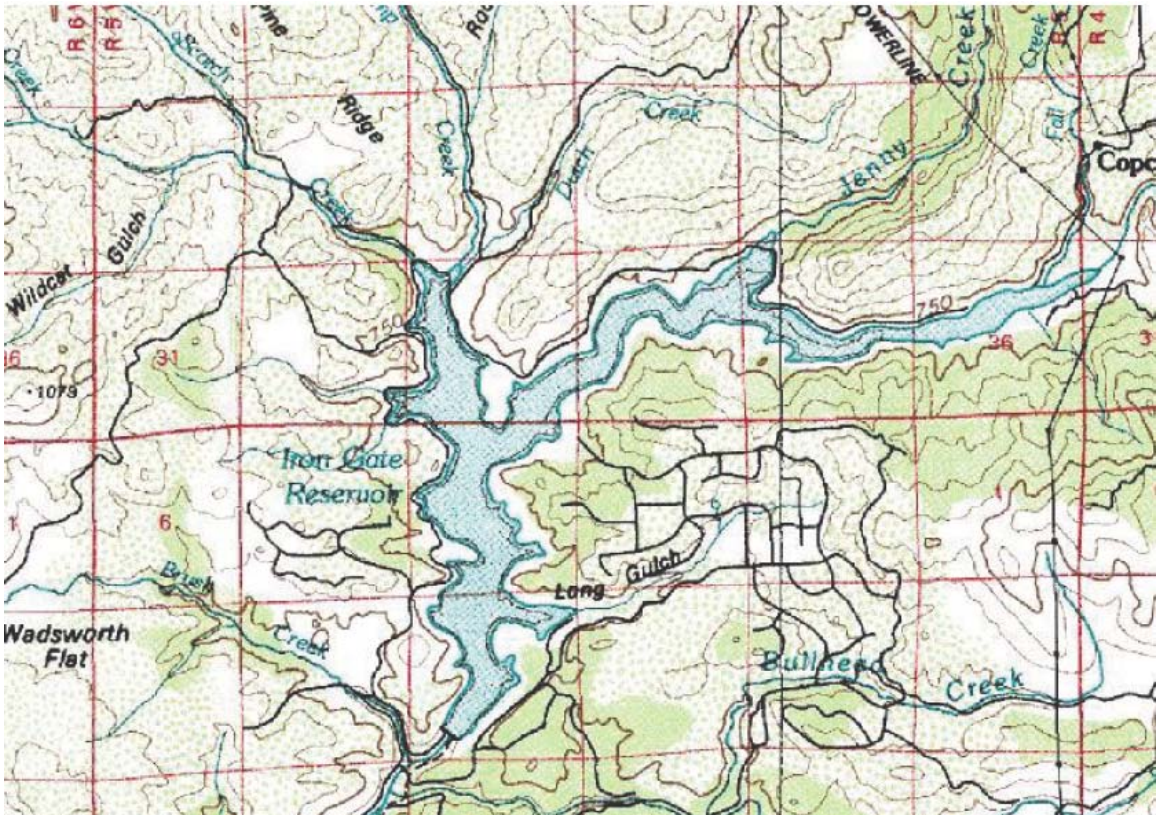


Figure 9 Iron Gate Reservoir and Tributaries

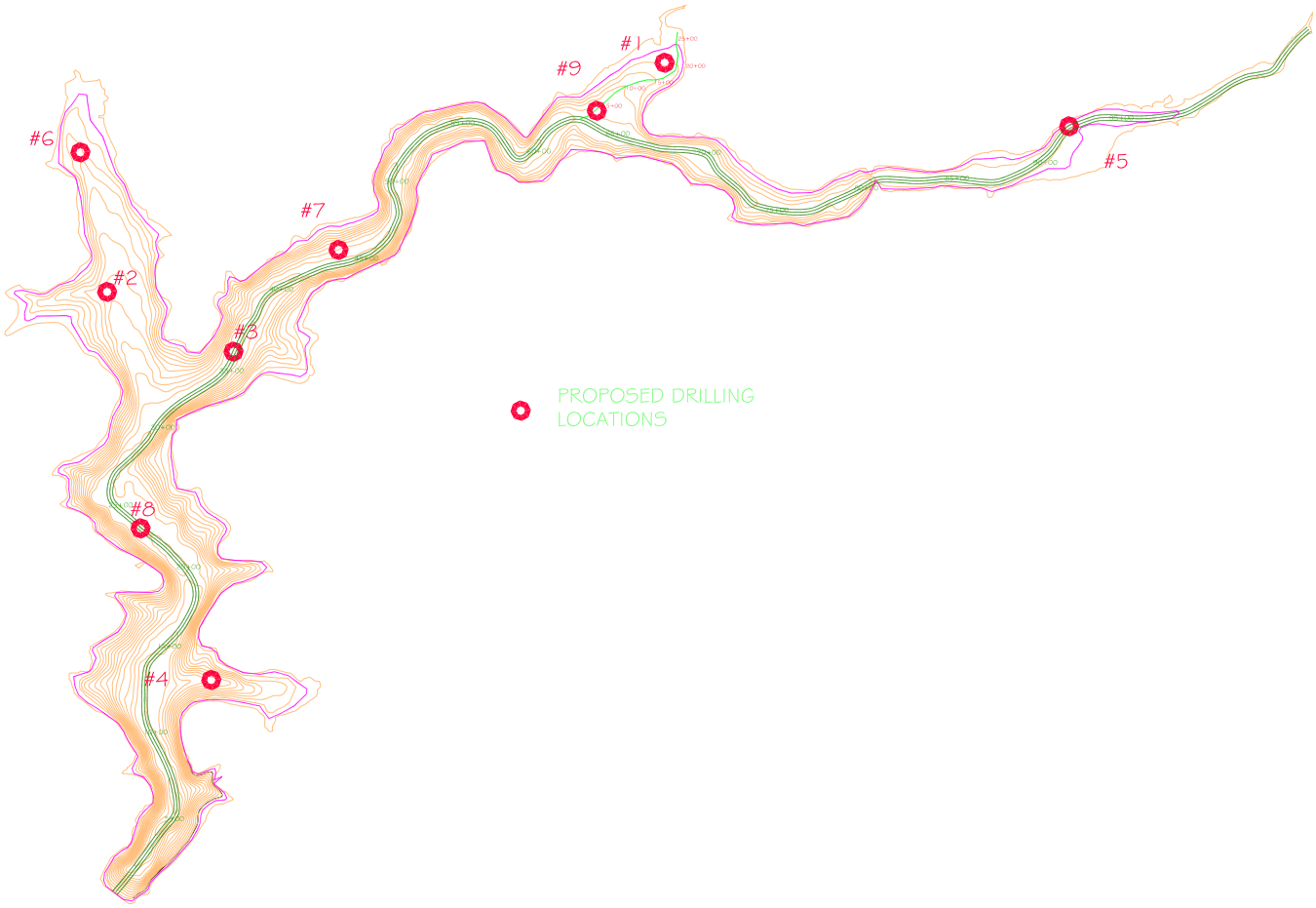


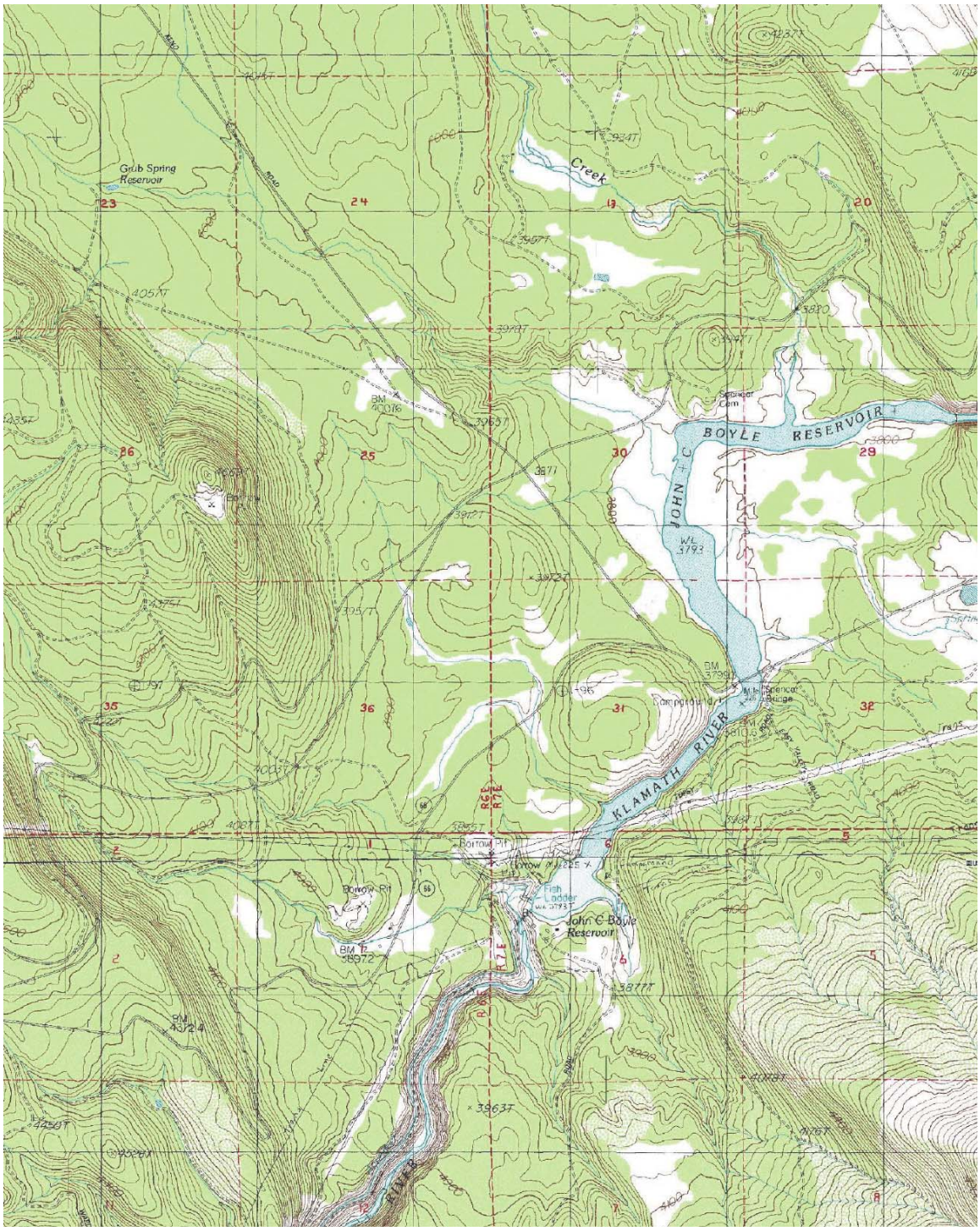
Figure 10 Proposed Drilling Locations

J. C. Boyle Drilling Locations

1. Original J. C. Boyle survey was conducted in 1959 prior to dam construction. The survey shows only water surface elevations. Original survey did not include river bathymetry. The current survey show deep pools in the river at the time of the original survey would have existed. These pools limit the knowledge of original river bathymetry.
2. Dams upstream of J. C. Boyle dam have trapped most of the sediment moving downstream into the reservoir.
3. Using PacfiCorp digitized maps, analysis indicates that approximately 1,000,000 million cubic yards of sediment is trapped in the reservoir.
4. Sediment thickness for most of the reservoir cannot be estimated because the current sediment elevation is below the predam river elevation.
5. Near the dam sediment thickness can be estimated.

Table 5 J. C. Boyle Drilling Location Details

Hole #	Sediment Elevation	Distance form Dam along River Alignment	Sediment Thickness	Water Depth	Anticipated Type of Sediment
1	3755	1000	15	38	Silt/sand
2	3786	14000	2	7	Silt
3	3780	6000	2	13	clay
4	3775	12500	2	18	clay
5	3780	10500	2	13	clay



1.

Figure 11 J. C. Byle Reservoir and Tributaries

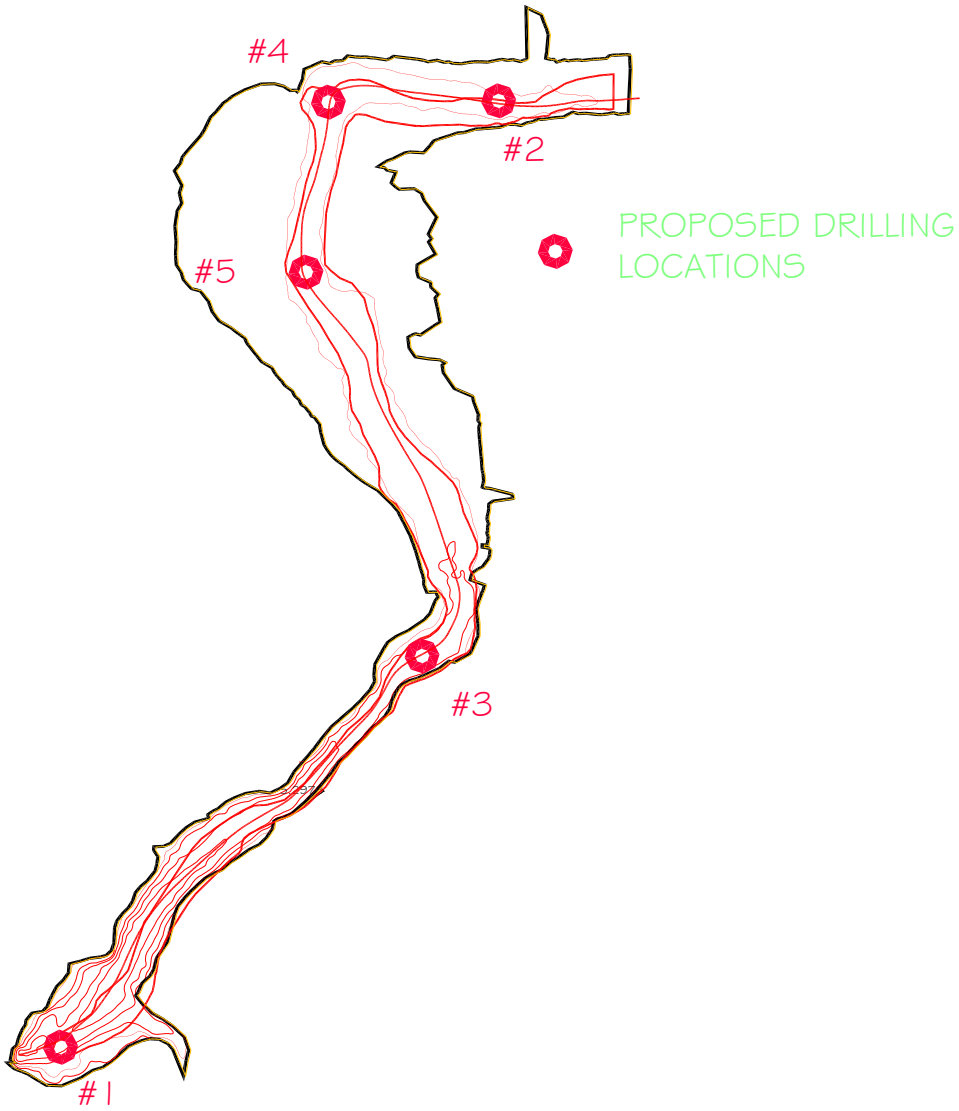


Figure 12 Proposed Drilling Locations in J. C. Boyle Reservoir

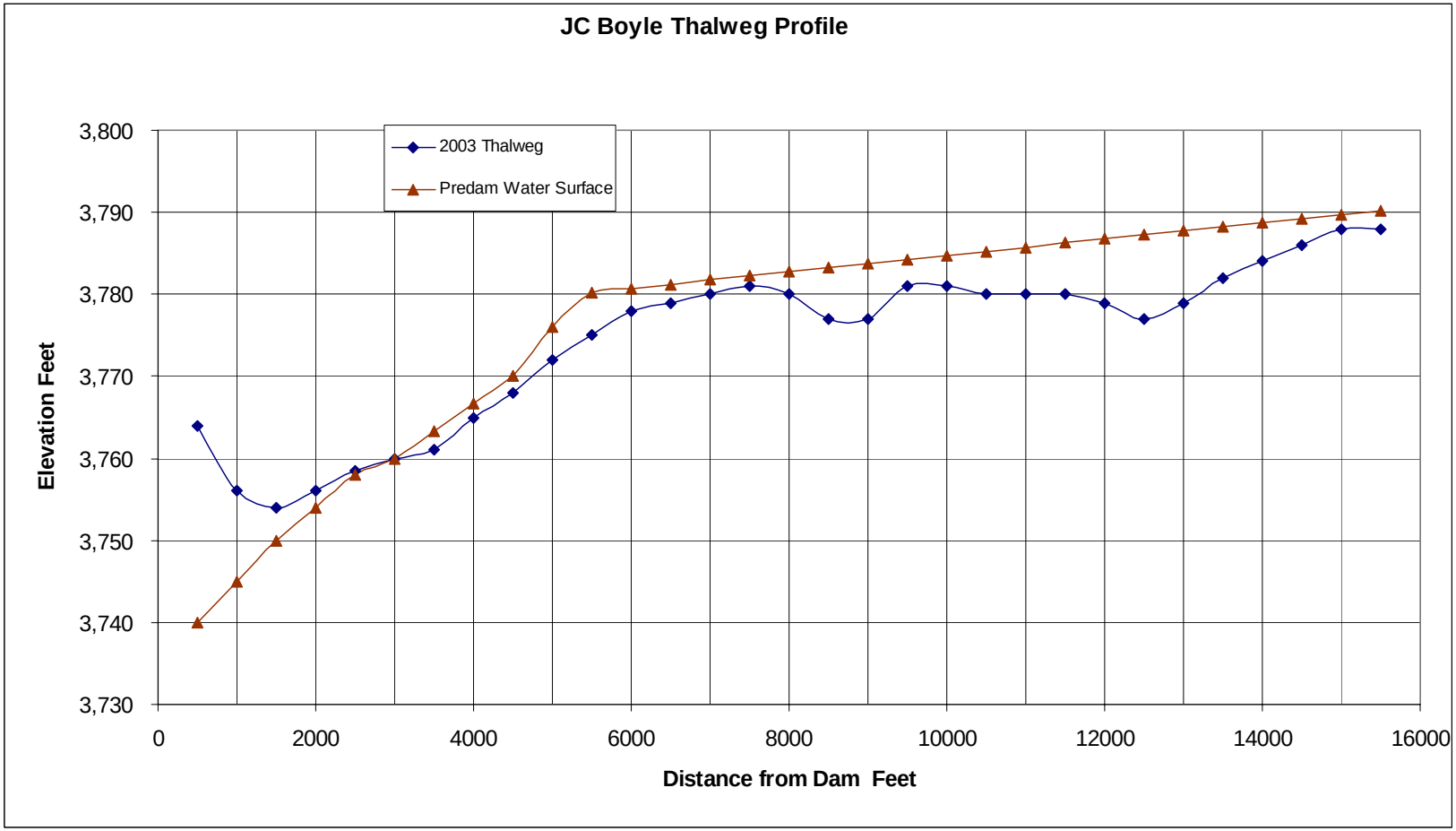


Figure 13 Longitudinal Profile of J. C. Boyle Reservoir

Preliminary Review of 2006 Analytical Testing Data From Sediment Sampling Conducted at Iron Gate, Copco 1, and JC Boyle Reservoirs Klamath River, Oregon and California

September 22, 2006

Submitted To:
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ALASKA
COLORADO
FLORIDA
MISSOURI
OREGON
WASHINGTON

September 22, 2006

Mr. Michael Bowen
California State Coastal Conservancy
1330 Broadway, 11th Floor
Oakland, CA 94612-2530

RE: PRELIMINARY REVIEW OF 2006 ANALYTICAL TESTING DATA FROM SEDIMENT SAMPLING CONDUCTED AT IRON GATE, COPCO 1, AND JC BOYLE RESERVOIRS, KLAMATH RIVER, OREGON AND CALIFORNIA

Dear Mr. Bowen:

This letter report briefly summarizes the results of our preliminary review of the analytical testing data obtained during sampling conducted in June and July 2006 at the above-referenced reservoirs. We understand this report will be incorporated into an initial filing to the Federal Energy Regulatory Commission. This discussion will also be incorporated into our draft report summarizing sediment sampling, to be provided separately.

Our work is in support of Gathard Engineering Consulting (GEC), who is performing a screening level feasibility study related to the decommissioning and removal of the four dams.

BACKGROUND

Based on our discussions with GEC, we learned that previous studies of preliminary sediment volume and size analysis were conducted. However, the analysis did not include physical testing of sediment samples for grain size characteristics or chemical constituents. Therefore, to evaluate sediment erosion and deposition behavior as the dams are demolished, sampling would be needed to estimate the size and distribution of sediment particles. Chemical analysis would also be needed to identify potential contamination in sediment that may be mobilized following demolition, and to determine if further testing would be necessary.

As an initial step, in August 2006, Shannon & Wilson, Inc. completed an *Upland Contaminant Source Study* for GEC. In this 'Phase 1" study, which included a review of records and files

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and a limited site reconnaissance, several properties along and up-river of the reservoirs were identified as having the potential to contaminate trapped sediment behind the dams. Based on discussion with GEC, the Puget Sound Dredge Disposal Analysis (PSDDA) testing suite (PTI Environmental Services, 2003) and sampling methodology were selected for application at the reservoir sites. Additional test methods were included outside of the PSDDA suite, based on potential contaminants and comments to the *Sediment Sampling Plan* (GEC, 2006). Recommended analytical testing included:

- Conventional parameters (including pH, acid volatile sulfides, calcium carbonate)
- Metals
- Pesticides (organochlorine pesticides and organophosphorus pesticides)
- Chlorinated acid herbicides
- Polychlorinated biphenyls (PCBs)
- Volatile organic compounds (VOCs)
- Semi-volatile organic compounds (SVOCs)
- Nitrogen, phosphorus, and cyanide
- Dioxins

Based on estimated sediment volumes in each reservoir, the location of tributaries, locations where GEC required additional soils information for analysis, and the preliminary results of the *Upland Contaminant Source Study*, 25 boring locations were selected, per discussion between GEC and the California State Coastal Conservancy (Conservancy).

SEDIMENT SAMPLING AND ANALYSIS

Field Activities

Between June 23 and July 12, 2006, under contract to the Conservancy, Shannon & Wilson, Inc. observed and sampled sediment from 26 boring locations. (An additional location was added during the drilling program to further evaluate the vertical extent of granular sediments observed.) Twenty-seven sediment samples were submitted to Analytical Resources, Inc. (ARI), Tukwila, Washington, for analytical testing. All of the samples were submitted for grain size analysis. The majority of the samples were submitted for conventional analysis, VOCs, SVOCs, metals, pesticides, and herbicides. Select samples were further analyzed for

organophosphorus pesticides, nitrogen, phosphorus, cyanide, and dioxins. Analytical testing methods performed on each sample are summarized in Table 1.

Analytical Test Results

ARI completed the testing outlined above, under subcontract to GEC. Detected analytes, with the exception of dioxins, are shown in Table 2, which includes PSDDA screening levels, where available. Review of the data with respect to potential contaminants of concern was performed. For this screening level study, no conventional parameter data were evaluated, and no data quality assessment (data validation) was completed. With the exception of dioxins and cyanide (discussed in separate sections below), a summary of the review found:

- One pesticide was detected in one sample, 4,4'-DDE at C3-S1 at 2.2 micrograms per kilogram (µg/kg) below PSDDA criteria; neither 4,4'-DDD nor 4,4'-DDT were detected. The PSDDA screening level for total DDT (the sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT) is 6.9 µg/kg.
- No herbicides were detected.
- No PCBs were detected in any sample.

- Arsenic was detected in three samples: C-1, S-1, 1G9-S1, and J-3, S-1. All of the detections were below PSDDA screening levels.
- Chromium, copper, nickel, and zinc were detected in all 25 samples, below available PSDDA criteria.
- Mercury was found in one sample (C-7, S-1) at 0.05 milligram per kilogram (mg/kg), below its PSDDA criterion of 0.41 mg/kg.
- Several SVOCs were detected below PSDDA (where available), including 4-methyphenol, benzoic acid, bis(2-ethylhexyl)phthalate, diethylphthalate, di-n-butylphthalate, fluoranthene, naphthalene, phenanthrene, and pyrene.
- Four VOCs were detected, including ethylbenzene, toluene, total xylenes, and vinyl chloride. Ethylbenzene was detected at 43 µg/kg, above its PSDDA screening level of 10 µg/kg, at C-2, S-1. Total xylenes were detected at 220 µg/kg, above its PSDDA screening level of 40 µg/kg in C-2, S-1.

Two analytes (ethylbenzene and total xylenes) were detected above PSDDA screening criteria. These two analytes, along with the other detected SVOCs and VOCs, which would be expected

to volatilize, is likely present because they are bound to the organics in the sediment. Because all of the reservoirs are used for recreational use, a potential source for the low detections could be minor spills from boats or recreational vehicles. Other potential sources and contaminants identified in the *Upland Contaminant Source Study* do not appear to pose a concern, based on this limited testing.

Dioxins

Three samples were submitted for dioxin analysis. The results are summarized in Table 3.

Dioxin concentrations were evaluated by utilizing PSDDA guidelines. Polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) meet several requirements for listing as chemicals of concern in dredged material. These compounds are documented to be highly toxic, are persistent in the environment, may bioaccumlate in animal tissues, and are listed as human teratogens and carcinogens. A bulk sediment 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) concentration of 5 picograms per gram (pg/g), or a total toxic equivalent concentration (TEC) of 15 pg/g will trigger the requirement to perform bioaccumulation testing.

The TEC for each individual dioxin/furan concentration is calculated by multiplying each individual concentration by its respective toxicity equivalency factors (TEFs), which adjust the individual dioxin/furan concentration to the relative toxicity of TCDD, the most studied and most toxic dioxin. Once the TEC for each dioxin/furan is calculated, the total TEC is calculated by adding the individually adjusted concentrations. For undetected dioxin/furan compounds, detection limits will be divided by two and used in the calculations.

For the three samples collected from the selected Klamath River reservoirs and submitted for dioxin testing (Table 3), the total TECs are:

- C-4, S-1: TECs = 4.83 pg/g
- IG7-S1: TECs = 2.48 pg/g
- J4, S1: TECs = 4.13 pg/g

The United States does not have a sediment quality guideline for dioxin. However, examples of frequently cited benchmark criteria include:

- Proposed freshwater sediment Apparent Effects Threshold for benthic fauna: 8.8 pg/g (as cited in Blakely and Norton, 2005)
- U.S. Army Corps of Engineers: 1,000 pg/g (as cited in Church, et al., 2005)
- U.S. EPA, Region 10 Dredge Spoils Disposal Guideline: 4 pg/g (as cited in Church, et al., 2005)
- U.S. EPA Fish and Wildlife (bird and mammal guidelines): 2.5 – 210 pg/g (as cited in Church, et al., 2005)
- PSDDA bioaccumulation trigger: 15 pg/g

The TECs of the sediments evaluated are generally less than all of the criteria listed above, and at least one-third less than the PSDDA bioaccumulation trigger.

Cyanide

Total cyanide was detected at 1.41 and 2.01 mg/kg in two of the three samples submitted for analysis. No PSDDA screening criterion is available. Cyanide as measured and reported as total cyanides in sediments can include hydrogen cyanide (HCN), cyanide ion (CN-), simple cyanides, and metallo- and organo-cyanide complexes. HCN and CN- are grouped as free cyanides and are the most toxic forms of cyanide and the forms of concern. Most complexed cyanides are relatively nontoxic and total cyanide determinations are not typically complete measures of either water or sediment quality. Factors that affect the release or dissociation of free cyanides from complexed cyanide forms include pH, redox potential, photodecomposition of the complex and release of free cyanide, relative strength of the metallo- and organo-cyanide complexes, and possible presence of bacteria responsible for degradation of ferrocyanide complexes.

In sediments, the cyanide in the free form present in the pore water is more relatable to toxicity to benthic organisms than the total cyanide measured in the solid phase. However, given the above factors, it is difficult to predict or model the dissociation and release of the free toxic forms of cyanide to the pore water from the less toxic total cyanide form associated with and

normally measured in the solid phase sediments. A general idea of the concentrations of free cyanide in pore water that would be toxic to benthic invertebrates can be drawn from the acute and chronic toxicity criteria for free cyanides in surface waters classified as supporting Warm Water Sport Fish (NR 105, Wis. Admin. Code), which are 45.8 µg/L and 11.47 µg/L, respectively.

Free cyanides as HCN, in general, are not very persistent in the environment due to their volatility, have low adsorption to sediment particles, high water solubility, and inability to substantially bioaccumulate. Where any significant levels of total cyanide are detected in sediments, additional analysis may need to be done to also determine what fractions of the total cyanide are in dissociable forms (amenable to chlorination or weak acid dissociable forms) to give an indication of the potential to release free cyanide with its attendant toxicity.

CONCLUSIONS

Of the 27 sediment samples submitted, only one sample contained concentrations exceeding PSDDA screening criteria. Specifically, ethylbenzenes and total xylenes were detected about 4 to 5 times greater than their respective PSDDA screening criterion. These two analytes are typically volatile and are likely present because of the recreational use of the reservoirs, and the organic-rich nature of the sediment. Given their volatile nature and the apparently limited extent of the detection, it is expected that these compounds will become volatilized during erosion, and/or their concentration will become reduced as mixing occurs. No further action with respect to analytical testing appears warranted for this screening level evaluation.

Calculated dioxin TEC concentrations are less than the PSDDA bioaccumulation trigger and within the range of frequently cited benchmark criteria. Therefore, the detected dioxins are not expected to have a significant impact to biota. Further evaluation will be conducted to evaluate if an appropriate screening level is applicable for project use.

Cyanide was detected in two of three samples. Where any significant levels of total cyanide are detected in sediments, additional analysis may need to be done to also determine what fractions of the total cyanide are in dissociable forms (amenable to chlorination or weak acid

dissociable forms) to give an indication of the potential to release free cyanide with its attendant toxicity.

CLOSURE

Within the limitation of scope, schedule, and budget, Shannon & Wilson has prepared this report in a professional manner, using that level of skill and care normally exercised for similar projects under similar conditions by reputable and competent environmental consultants currently practicing in this area.

The scope of work was intended to address only those environmental concerns with significant potential to result in contamination to the subject property. The sampling effort was considered limited in extent and served as a screening effort only. It was not intended to absolutely define the lateral extent of soil and/or groundwater contamination, if any.

The data presented in this report are based on limited research and sampling at the site, and should be considered representative at the time of our observations. Other areas of

contamination that were not observed during our site work could be present at the site. Shannon & Wilson is not responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the report was prepared. We also note that the facts and conditions referenced in this report may change over time, and that the data set forth here are applicable to the facts and conditions as described only at the time of this report. We believe that the conclusions stated here are factual, but no guarantee is made or implied.

This report was prepared for the exclusive use of the Conservancy and their respective representatives, and in no way guarantees that any agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. Shannon & Wilson has prepared the enclosed "Important Information About Your Environmental Report" to help you and others in understanding our reports.

If you have any questions regarding the findings presented herein, please call Agnes Tirao at (206) 695-6881 or me at (206) 695-6893.

Sincerely,

SHANNON & WILSON, INC.

Scott W. Gaulke, P.E., L.H.G.
Vice President

ACT:SWG/act

Enclosures: References
Table 1 – Sampling Summary
Table 2 – Analytical Laboratory Testing – 2006 (7 pages)
Table 3 – Dioxin Toxicity Equivalency Factor-Adjusted Concentrations (2 pages)
Important Information About Your Environmental Report

REFERENCES

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TABLE 1
SAMPLING SUMMARY
KLAMATH RIVER SEDIMENT SAMPLING

Boring No.	Sample Number	Depth (Composite)	Additional Geotech Sample Depth	VOCs	Total Sulfides	Metals[1]	Conventionals[2]	PCBs	Pesticides	Herbicides	SVOCs	Dioxins	OP Pesticides	N	P	Cyanide
Iron Gate Reservoir																
IG-1	IG1-S1	0 - 7 feet		X	X	X	X	X	X	X	X					
IG-2	IG2-S1	0 - 1.9 feet		X	X	X	X	X	X	X	X					
IG-3	IG3-S1	0 - 2 feet		X	X	X	X	X	X	X	X					
IG-4	IG4-S1	0.2 - 2.2 feet	0.2 - 2.2 feet	X	X	X	X	X	X	X	X					
IG-5	IG5-S1	0 - 0.7 feet		X	X	X	X	X	X	X	X					
IG-6	IG6-S1	0 - 1.3 feet		X	X	X	X	X	X	X	X					
	IG6-S2	1.6 - 2.2 feet														
IG-7	IG7-S1	0 - 5 feet		X	X	X	X	X	X	X	X	X	X	X	X	X
	IG7-S4	4.6 - 5 feet														
IG-8	IG8-S1	0-4.3 feet		X	X	X	X	X	X	X	X					
IG-9	IG9-S1	0 - 6.5 feet		X	X	X	X	X	X	X	X					
Copco 1 Reservoir																
C-1	C-1, S-1	0 - 0.4 feet		X	X	X	X	X	X	X	X					
	C-1, S-2	0.4 - 1.5 feet														
C-2	C-2, S-1	0 - 4.4 feet		X	X	X	X	X	X	X	X		X			
C-3	C-3, S-1	0 - 5.6 feet		X	X	X	X	X	X	X	X		X			
C-4	C-4, S-1	0 - 7.7 feet		X	X	X	X	X	X	X	X	X		X	X	X
C-5	C-5, S-1	0 - 5.8 feet		X	X	X	X	X	X	X	X		X			
C-6	C-6, S-1	0 - 9.4 feet		X	X	X	X	X	X	X	X					
C-7	C-7, S-1	0 - 5.8 feet		X	X	X	X	X	X	X	X					
C-8	C-8, S-1	0 - 3.6 feet		X	X	X	X	X	X	X	X					
C-9	C-9, S-1	0 - 3.5 feet	0 - 2 feet	X	X	X	X	X	X	X	X					
C-10	C-10, S-1	0 - 9.4 feet	0 - 2 feet	X	X	X	X	X	X	X	X					
C-11	C-11, S-1	0 - 3.9 feet		X	X	X	X	X	X	X	X					
	C-12, S-2C/3C	2.7 - 5.8 feet		X	X	X	X	X	X	X	X					
JC Boyle Reservoir																
J-1	J-1, S-1	0 - 13.2 feet		X	X	X	X	X	X	X	X		X			
J-3	J-3, S-1	0 - 0.4/0.5 feet	0.4 - 0.8 feet	X	X	X	X	X	X	X	X					
J-4	J-4, S-1	0 - 0.3 feet	0 - 0.3 feet	X	X	X	X	X	X	X	X	X		X	X	X
J-5	J-5, S-1	0 - 0.3 feet	0 - 0.3 feet	X	X	X	X	X	X	X	X					

Notes:
[1]Metals = antimony, arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, zinc
[2]Conventionals = pH, TOC, TVS, ammonia, % solids, CaCO3
N = nitrogen
OP Pesticides = Organochlorine pesticides = Iprodione and PCNB
P = phosphorus
PCBs = polychlorinated biphenyls
SVOCs = semivolatile organic compounds
TOC = total organic carbon
TVS = total volatile solids
VOCs = volatile organic compounds

TABLE 2
ANALYTICAL LABORATORY TESTING - 2006
KLAMATH RIVER SEDIMENT SAMPLING

ARI ID	Client ID	Compound	Value	Screening Level	Units	% of SL
06-11771-JO60A	C3-S1	4,4'-DDE	2.2	0.01	ug/kg	
06-12051-JP06A	C-10,S-1	4-Methylphenol	33	670	ug/kg	5%
06-12041-JP03C	C-2,S-1	4-Methylphenol	91	670	ug/kg	14%
06-11771-JO60A	C3-S1	4-Methylphenol	48	670	ug/kg	7%
06-12110-JP12D	C-4,S-1	4-Methylphenol	96	670	ug/kg	14%
06-12052-JP06B	C-5,S-1	4-Methylphenol	22	670	ug/kg	3%
06-12380-JP58D	C-6,S-1	4-Methylphenol	21	670	ug/kg	3%
06-12092-JP11E	C-7,S-1	4-Methylphenol	71	670	ug/kg	11%
06-12109-JP12C	C-8,S-1	4-Methylphenol	220	670	ug/kg	33%
06-12040-JP03B	C-9,S-1	4-Methylphenol	58	670	ug/kg	9%
06-11677-JO43B	IG8-S1	4-Methylphenol	23	670	ug/kg	3%
06-12485-JP75B	J-1,S-1	4-Methylphenol	310	670	ug/kg	46%
06-12486-JP75C	J-3,S-1	4-Methylphenol	220	670	ug/kg	33%
06-12488-JP75E	J-4,S-1	4-Methylphenol	130	670	ug/kg	19%
06-12487-JP75D	J-5,S-1	4-Methylphenol	270	670	ug/kg	40%
06-12093-JP11F	C-1,S-1	Acid Volatile Sulfide	47.9	0.01	mg/kg	
06-12051-JP06A	C-10,S-1	Acid Volatile Sulfide	1830	0.01	mg/kg	
06-12094-JP11G	C-11,S-1	Acid Volatile Sulfide	189	0.01	mg/kg	
06-12379-JP58C	C-12,S-2C/3C	Acid Volatile Sulfide	656	0.01	mg/kg	
06-12041-JP03C	C-2,S-1	Acid Volatile Sulfide	379	0.01	mg/kg	
06-12110-JP12D	C-4,S-1	Acid Volatile Sulfide	324	0.01	mg/kg	
06-12052-JP06B	C-5,S-1	Acid Volatile Sulfide	177	0.01	mg/kg	
06-12380-JP58D	C-6,S-1	Acid Volatile Sulfide	1990	0.01	mg/kg	
06-12092-JP11E	C-7,S-1	Acid Volatile Sulfide	311	0.01	mg/kg	
06-12109-JP12C	C-8,S-1	Acid Volatile Sulfide	458	0.01	mg/kg	
06-12040-JP03B	C-9,S-1	Acid Volatile Sulfide	98	0.01	mg/kg	
06-11570-JO18A	IG1-S1	Acid Volatile Sulfide	52.8	0.01	mg/kg	
06-11567-JO17A	IG2-S1	Acid Volatile Sulfide	957	0.01	mg/kg	
06-11676-JO43A	IG3-S1	Acid Volatile Sulfide	1560	0.01	mg/kg	
06-11678-JO43C	IG4-S1	Acid Volatile Sulfide	1770	0.01	mg/kg	
06-11362-JN72A	IG5-S1	Acid Volatile Sulfide	136	0.01	mg/kg	
06-11363-JN72B	IG6-S1	Acid Volatile Sulfide	201	0.01	mg/kg	
06-11572-JO18C	IG7-S1	Acid Volatile Sulfide	1410	0.01	mg/kg	
06-11677-JO43B	IG8-S1	Acid Volatile Sulfide	1560	0.01	mg/kg	
06-11571-JO18B	IG9-S1	Acid Volatile Sulfide	160	0.01	mg/kg	
06-12485-JP75B	J-1,S-1	Acid Volatile Sulfide	656	0.01	mg/kg	
06-12486-JP75C	J-3,S-1	Acid Volatile Sulfide	68.1	0.01	mg/kg	
06-12488-JP75E	J-4,S-1	Acid Volatile Sulfide	464	0.01	mg/kg	
06-12487-JP75D	J-5,S-1	Acid Volatile Sulfide	271	0.01	mg/kg	
06-12093-JP11F	C-1,S-1	Alkalinity	51.1	0.01	mgCaCO3/kg	
06-12051-JP06A	C-10,S-1	Alkalinity	1730	0.01	mgCaCO3/kg	
06-12094-JP11G	C-11,S-1	Alkalinity	546	0.01	mgCaCO3/kg	
06-12379-JP58C	C-12,S-2C/3C	Alkalinity	401	0.01	mgCaCO3/kg	
06-12041-JP03C	C-2,S-1	Alkalinity	981	0.01	mgCaCO3/kg	
06-11771-JO60A	C3-S1	Alkalinity	1440	0.01	mgCaCO3/kg	
06-12110-JP12D	C-4,S-1	Alkalinity	1890	0.01	mgCaCO3/kg	
06-12052-JP06B	C-5,S-1	Alkalinity	1500	0.01	mgCaCO3/kg	
06-12380-JP58D	C-6,S-1	Alkalinity	2450	0.01	mgCaCO3/kg	
06-12092-JP11E	C-7,S-1	Alkalinity	111	0.01	mgCaCO3/kg	
06-12109-JP12C	C-8,S-1	Alkalinity	1350	0.01	mgCaCO3/kg	

TABLE 2
ANALYTICAL LABORATORY TESTING - 2006
KLAMATH RIVER SEDIMENT SAMPLING

ARI ID	Client ID	Compound	Value	Screening Level	Units	% of SL
06-12040-JP03B	C-9,S-1	Alkalinity	1000	0.01	mgCaCO3/kg	
06-11570-JO18A	IG1-S1	Alkalinity	243	0.01	mgCaCO3/kg	
06-11567-JO17A	IG2-S1	Alkalinity	649	0.01	mgCaCO3/kg	
06-11676-JO43A	IG3-S1	Alkalinity	1230	0.01	mgCaCO3/kg	
06-11678-JO43C	IG4-S1	Alkalinity	1700	0.01	mgCaCO3/kg	
06-11362-JN72A	IG5-S1	Alkalinity	312	0.01	mgCaCO3/kg	
06-11363-JN72B	IG6-S1	Alkalinity	875	0.01	mgCaCO3/kg	
06-11572-JO18C	IG7-S1	Alkalinity	709	0.01	mgCaCO3/kg	
06-11677-JO43B	IG8-S1	Alkalinity	1400	0.01	mgCaCO3/kg	
06-11571-JO18B	IG9-S1	Alkalinity	463	0.01	mgCaCO3/kg	
06-12485-JP75B	J-1,S-1	Alkalinity	1040	0.01	mgCaCO3/kg	
06-12486-JP75C	J-3,S-1	Alkalinity	164	0.01	mgCaCO3/kg	
06-12488-JP75E	J-4,S-1	Alkalinity	394	0.01	mgCaCO3/kg	
06-12487-JP75D	J-5,S-1	Alkalinity	354	0.01	mgCaCO3/kg	
06-12093-JP11F	C-1,S-1	Arsenic	8	57	mg/kg	14%
06-11571-JO18B	IG9-S1	Arsenic	10	57	mg/kg	18%
06-12486-JP75C	J-3,S-1	Arsenic	9	57	mg/kg	16%
06-12379-JP58C	C-12,S-2C/3C	Benzoic Acid	350	650	ug/kg	54%
06-12051-JP06A	C-10,S-1	bis(2-Ethylhexyl)phthalate	110	8,300	ug/kg	1%
06-12094-JP11G	C-11,S-1	bis(2-Ethylhexyl)phthalate	75	8,300	ug/kg	1%
06-12041-JP03C	C-2,S-1	bis(2-Ethylhexyl)phthalate	24	8,300	ug/kg	0%
06-11771-JO60A	C3-S1	bis(2-Ethylhexyl)phthalate	73	8,300	ug/kg	1%
06-12110-JP12D	C-4,S-1	bis(2-Ethylhexyl)phthalate	130	8,300	ug/kg	2%
06-12052-JP06B	C-5,S-1	bis(2-Ethylhexyl)phthalate	85	8,300	ug/kg	1%
06-12380-JP58D	C-6,S-1	bis(2-Ethylhexyl)phthalate	110	8,300	ug/kg	1%
06-12092-JP11E	C-7,S-1	bis(2-Ethylhexyl)phthalate	120	8,300	ug/kg	1%
06-11567-JO17A	IG2-S1	bis(2-Ethylhexyl)phthalate	160	8,300	ug/kg	2%
06-11676-JO43A	IG3-S1	bis(2-Ethylhexyl)phthalate	76	8,300	ug/kg	1%
06-11678-JO43C	IG4-S1	bis(2-Ethylhexyl)phthalate	55	8,300	ug/kg	1%
06-11363-JN72B	IG6-S1	bis(2-Ethylhexyl)phthalate	87	8,300	ug/kg	1%
06-11572-JO18C	IG7-S1	bis(2-Ethylhexyl)phthalate	77	8,300	ug/kg	1%
06-11677-JO43B	IG8-S1	bis(2-Ethylhexyl)phthalate	50	8,300	ug/kg	1%
06-11571-JO18B	IG9-S1	bis(2-Ethylhexyl)phthalate	39	8,300	ug/kg	0%
06-12485-JP75B	J-1,S-1	bis(2-Ethylhexyl)phthalate	100	8,300	ug/kg	1%
06-12488-JP75E	J-4,S-1	bis(2-Ethylhexyl)phthalate	80	8,300	ug/kg	1%
06-12487-JP75D	J-5,S-1	bis(2-Ethylhexyl)phthalate	100	8,300	ug/kg	1%
06-12093-JP11F	C-1,S-1	Calcium	8,780	0.01	mg/kg	
06-12051-JP06A	C-10,S-1	Calcium	4,660	0.01	mg/kg	
06-12094-JP11G	C-11,S-1	Calcium	7,480	0.01	mg/kg	
06-12379-JP58C	C-12,S-2C/3C	Calcium	8,870	0.01	mg/kg	
06-12041-JP03C	C-2,S-1	Calcium	7,670	0.01	mg/kg	
06-11771-JO60A	C3-S1	Calcium	5,590	0.01	mg/kg	
06-12110-JP12D	C-4,S-1	Calcium	5,630	0.01	mg/kg	
06-12052-JP06B	C-5,S-1	Calcium	5,340	0.01	mg/kg	
06-12380-JP58D	C-6,S-1	Calcium	4,330	0.01	mg/kg	
06-12092-JP11E	C-7,S-1	Calcium	9,080	0.01	mg/kg	
06-12109-JP12C	C-8,S-1	Calcium	7,190	0.01	mg/kg	
06-12040-JP03B	C-9,S-1	Calcium	6,930	0.01	mg/kg	
06-11570-JO18A	IG1-S1	Calcium	11,300	0.01	mg/kg	
06-11567-JO17A	IG2-S1	Calcium	8,300	0.01	mg/kg	

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ARI ID	Client ID	Compound	Value	Screening Level	Units	% of SL
06-11676-JO43A	IG3-S1	Calcium	6,040	0.01	mg/kg	
06-11678-JO43C	IG4-S1	Calcium	6,630	0.01	mg/kg	
06-11362-JN72A	IG5-S1	Calcium	11,400	0.01	mg/kg	
06-11363-JN72B	IG6-S1	Calcium	8,980	0.01	mg/kg	
06-11572-JO18C	IG7-S1	Calcium	6,790	0.01	mg/kg	
06-11677-JO43B	IG8-S1	Calcium	5,780	0.01	mg/kg	
06-11571-JO18B	IG9-S1	Calcium	9,260	0.01	mg/kg	
06-12485-JP75B	J-1,S-1	Calcium	5,600	0.01	mg/kg	
06-12486-JP75C	J-3,S-1	Calcium	11,600	0.01	mg/kg	
06-12488-JP75E	J-4,S-1	Calcium	8,670	0.01	mg/kg	
06-12487-JP75D	J-5,S-1	Calcium	9,890	0.01	mg/kg	
06-12093-JP11F	C-1,S-1	Chromium	17.2	267	mg/kg	6%
06-12051-JP06A	C-10,S-1	Chromium	30	267	mg/kg	11%
06-12094-JP11G	C-11,S-1	Chromium	38	267	mg/kg	14%
06-12379-JP58C	C-12,S-2C/3C	Chromium	29	267	mg/kg	11%
06-12041-JP03C	C-2,S-1	Chromium	36	267	mg/kg	13%
06-11771-JO60A	C3-S1	Chromium	31	267	mg/kg	12%
06-12110-JP12D	C-4,S-1	Chromium	32	267	mg/kg	12%
06-12052-JP06B	C-5,S-1	Chromium	32	267	mg/kg	12%
06-12380-JP58D	C-6,S-1	Chromium	28	267	mg/kg	10%
06-12092-JP11E	C-7,S-1	Chromium	24.2	267	mg/kg	9%
06-12109-JP12C	C-8,S-1	Chromium	34	267	mg/kg	13%
06-12040-JP03B	C-9,S-1	Chromium	32	267	mg/kg	12%
06-11570-JO18A	IG1-S1	Chromium	34.4	267	mg/kg	13%
06-11567-JO17A	IG2-S1	Chromium	25	267	mg/kg	9%
06-11675-JO43A	IG3-S1	Chromium	33	267	mg/kg	12%
06-11678-JO43C	IG4-S1	Chromium	30	267	mg/kg	11%
06-11362-JN72A	IG5-S1	Chromium	36	267	mg/kg	13%
06-11363-JN72B	IG6-S1	Chromium	26	267	mg/kg	10%
06-11572-JO18C	IG7-S1	Chromium	35	267	mg/kg	13%
06-11677-JO43B	IG8-S1	Chromium	32	267	mg/kg	12%
06-11571-JO18B	IG9-S1	Chromium	39	267	mg/kg	15%
06-12485-JP75B	J-1,S-1	Chromium	31	267	mg/kg	12%
06-12486-JP75C	J-3,S-1	Chromium	16.8	267	mg/kg	6%
06-12488-JP75E	J-4,S-1	Chromium	29	267	mg/kg	11%
06-12487-JP75D	J-5,S-1	Chromium	28	267	mg/kg	10%
06-12093-JP11F	C-1,S-1	Copper	25.3	390	mg/kg	6%
06-12051-JP06A	C-10,S-1	Copper	30.8	390	mg/kg	8%
06-12094-JP11G	C-11,S-1	Copper	37.7	390	mg/kg	10%
06-12379-JP58C	C-12,S-2C/3C	Copper	28.0	390	mg/kg	7%
06-12041-JP03C	C-2,S-1	Copper	39.3	390	mg/kg	10%
06-11771-JO60A	C3-S1	Copper	36.3	390	mg/kg	9%
06-12110-JP12D	C-4,S-1	Copper	37.1	390	mg/kg	10%
06-12052-JP06B	C-5,S-1	Copper	32.5	390	mg/kg	8%
06-12380-JP58D	C-6,S-1	Copper	29.6	390	mg/kg	8%
06-12092-JP11E	C-7,S-1	Copper	22.4	390	mg/kg	6%
06-12109-JP12C	C-8,S-1	Copper	36.5	390	mg/kg	9%
06-12040-JP03B	C-9,S-1	Copper	38.5	390	mg/kg	10%
06-11570-JO18A	IG1-S1	Copper	35.2	390	mg/kg	9%
06-11567-JO17A	IG2-S1	Copper	38.5	390	mg/kg	10%

TABLE 2
ANALYTICAL LABORATORY TESTING - 2006
KLAMATH RIVER SEDIMENT SAMPLING

ARI ID	Client ID	Compound	Value	Screening Level	Units	% of SL
06-11676-JO43A	IG3-S1	Copper	39.1	390	mg/kg	10%
06-11678-JO43C	IG4-S1	Copper	39.0	390	mg/kg	10%
06-11362-JN72A	IG5-S1	Copper	51.3	390	mg/kg	13%
06-11363-JN72B	IG6-S1	Copper	39.0	390	mg/kg	10%
06-11572-JO18C	IG7-S1	Copper	39.2	390	mg/kg	10%
06-11677-JO43B	IG8-S1	Copper	37.5	390	mg/kg	10%
06-11571-JO18B	IG9-S1	Copper	41.6	390	mg/kg	11%
06-12485-JP75B	J-1,S-1	Copper	38.6	390	mg/kg	10%
06-12486-JP75C	J-3,S-1	Copper	24.2	390	mg/kg	6%
06-12488-JP75E	J-4,S-1	Copper	27.0	390	mg/kg	7%
06-12487-JP75D	J-5,S-1	Copper	26.6	390	mg/kg	7%
06-12094-JP11G	C-11,S-1	Diethylphthalate	52	1,200	ug/kg	4%
06-11362-JN72A	IG5-S1	Diethylphthalate	150	1,200	ug/kg	13%
06-12485-JP75B	J-1,S-1	Di-n-Butylphthalate	20	5,100	ug/kg	0%
06-12041-JP03C	**C-2,S-1**	**Ethylbenzene**	**43**	**10**	**ug/kg**	**430%**
06-12041-JP03C	C-2,S-1	Fluoranthene	40	1,700	ug/kg	2%
06-11771-JO60A	C3-S1	Fluoranthene	24	1,700	ug/kg	1%
06-12110-JP12D	C-4,S-1	Fluoranthene	33	1,700	ug/kg	2%
06-12052-JP06B	C-5,S-1	Fluoranthene	21	1,700	ug/kg	1%
06-12485-JP75B	J-1,S-1	Fluoranthene	30	1,700	ug/kg	2%
06-12487-JP75D	J-5,S-1	Fluoranthene	20	1,700	ug/kg	1%
06-12093-JP11F	C-1,S-1	Lead	2	450	mg/kg	0%
06-12051-JP06A	C-10,S-1	Lead	9	450	mg/kg	2%
06-12094-JP11G	C-11,S-1	Lead	6	450	mg/kg	1%
06-12379-JP58C	C-12,S-2C/3C	Lead	6	450	mg/kg	1%
06-12041-JP03C	C-2,S-1	Lead	8	450	mg/kg	2%
06-11771-JO60A	C3-S1	Lead	9	450	mg/kg	2%
06-12110-JP12D	C-4,S-1	Lead	9	450	mg/kg	2%
06-12052-JP06B	C-5,S-1	Lead	8	450	mg/kg	2%
06-12380-JP58D	C-6,S-1	Lead	9	450	mg/kg	2%
06-12092-JP11E	C-7,S-1	Lead	3	450	mg/kg	1%
06-12040-JP03B	C-9,S-1	Lead	10	450	mg/kg	2%
06-11570-JO18A	IG1-S1	Lead	5	450	mg/kg	1%
06-11567-JO17A	IG2-S1	Lead	8	450	mg/kg	2%
06-11676-JO43A	IG3-S1	Lead	9	450	mg/kg	2%
06-11678-JO43C	IG4-S1	Lead	10	450	mg/kg	2%
06-11363-JN72B	IG6-S1	Lead	9	450	mg/kg	2%
06-11572-JO18C	IG7-S1	Lead	8	450	mg/kg	2%
06-11677-JO43B	IG8-S1	Lead	9	450	mg/kg	2%
06-11571-JO18B	IG9-S1	Lead	6	450	mg/kg	1%
06-12485-JP75B	J-1,S-1	Lead	10	450	mg/kg	2%
06-12488-JP75E	J-4,S-1	Lead	6	450	mg/kg	1%
06-12487-JP75D	J-5,S-1	Lead	6	450	mg/kg	1%
06-12093-JP11F	C-1,S-1	Manganese	157	0.01	mg/kg	
06-12051-JP06A	C-10,S-1	Manganese	718	0.01	mg/kg	
06-12094-JP11G	C-11,S-1	Manganese	354	0.01	mg/kg	
06-12379-JP58C	C-12,S-2C/3C	Manganese	447	0.01	mg/kg	
06-12041-JP03C	C-2,S-1	Manganese	345	0.01	mg/kg	
06-11771-JO60A	C3-S1	Manganese	383	0.01	mg/kg	
06-12110-JP12D	C-4,S-1	Manganese	451	0.01	mg/kg	

TABLE 2
ANALYTICAL LABORATORY TESTING - 2006
KLAMATH RIVER SEDIMENT SAMPLING

ARI ID	Client ID	Compound	Value	Screening Level	Units	% of SL
06-12052-JP06B	C-5,S-1	Manganese	338	0.01	mg/kg	
06-12380-JP58D	C-6,S-1	Manganese	541	0.01	mg/kg	
06-12092-JP11E	C-7,S-1	Manganese	213	0.01	mg/kg	
06-12109-JP12C	C-8,S-1	Manganese	341	0.01	mg/kg	
06-12040-JP03B	C-9,S-1	Manganese	665	0.01	mg/kg	
06-11570-JO18A	IG1-S1	Manganese	503	0.01	mg/kg	
06-11567-JO17A	IG2-S1	Manganese	768	0.01	mg/kg	
06-11676-JO43A	IG3-S1	Manganese	939	0.01	mg/kg	
06-11678-JO43C	IG4-S1	Manganese	1,240	0.01	mg/kg	
06-11362-JN72A	IG5-S1	Manganese	665	0.01	mg/kg	
06-11363-JN72B	IG6-S1	Manganese	506	0.01	mg/kg	
06-11572-JO18C	IG7-S1	Manganese	876	0.01	mg/kg	
06-11677-JO43B	IG8-S1	Manganese	1,090	0.01	mg/kg	
06-11571-JO18B	IG9-S1	Manganese	666	0.01	mg/kg	
06-12485-JP75B	J-1,S-1	Manganese	358	0.01	mg/kg	
06-12486-JP75C	J-3,S-1	Manganese	172	0.01	mg/kg	
06-12488-JP75E	J-4,S-1	Manganese	240	0.01	mg/kg	
06-12487-JP75D	J-5,S-1	Manganese	259	0.01	mg/kg	
06-12092-JP11E	C-7,S-1	Mercury	0.05	0.41	mg/kg	12%
06-12093-JP11F	C-1,S-1	N-Ammonia	54.8	0.01	mg-N/kg	
06-12051-JP06A	C-10,S-1	N-Ammonia	1210	0.01	mg-N/kg	
06-12094-JP11G	C-11,S-1	N-Ammonia	307	0.01	mg-N/kg	
06-12379-JP58C	C-12,S-2C/3C	N-Ammonia	522	0.01	mg-N/kg	
06-12041-JP03C	C-2,S-1	N-Ammonia	650	0.01	mg-N/kg	
06-11771-JO60A	C3-S1	N-Ammonia	628	0.01	mg-N/kg	
06-12110-JP12D	C-4,S-1	N-Ammonia	124	0.01	mg-N/kg	
06-12052-JP06B	C-5,S-1	N-Ammonia	584	0.01	mg-N/kg	
06-12380-JP58D	C-6,S-1	N-Ammonia	1330	0.01	mg-N/kg	
06-12092-JP11E	C-7,S-1	N-Ammonia	141	0.01	mg-N/kg	
06-12109-JP12C	C-8,S-1	N-Ammonia	634	0.01	mg-N/kg	
06-12040-JP03B	C-9,S-1	N-Ammonia	219	0.01	mg-N/kg	
06-11570-JO18A	IG1-S1	N-Ammonia	292	0.01	mg-N/kg	
06-11567-JO17A	IG2-S1	N-Ammonia	347	0.01	mg-N/kg	
06-11676-JO43A	IG3-S1	N-Ammonia	759	0.01	mg-N/kg	
06-11678-JO43C	IG4-S1	N-Ammonia	663	0.01	mg-N/kg	
06-11362-JN72A	IG5-S1	N-Ammonia	58.9	0.01	mg-N/kg	
06-11363-JN72B	IG6-S1	N-Ammonia	129	0.01	mg-N/kg	
06-11572-JO18C	IG7-S1	N-Ammonia	717	0.01	mg-N/kg	
06-11677-JO43B	IG8-S1	N-Ammonia	816	0.01	mg-N/kg	
06-11571-JO18B	IG9-S1	N-Ammonia	365	0.01	mg-N/kg	
06-12485-JP75B	J-1,S-1	N-Ammonia	915	0.01	mg-N/kg	
06-12486-JP75C	J-3,S-1	N-Ammonia	54.6	0.01	mg-N/kg	
06-12488-JP75E	J-4,S-1	N-Ammonia	127	0.01	mg-N/kg	
06-12487-JP75D	J-5,S-1	N-Ammonia	43.6	0.01	mg-N/kg	
06-12041-JP03C	C-2,S-1	Naphthalene	43	2,100	ug/kg	2%
06-11771-JO60A	C3-S1	Naphthalene	22	2,100	ug/kg	1%
06-12110-JP12D	C-4,S-1	Naphthalene	38	2,100	ug/kg	2%
06-12040-JP03B	C-9,S-1	Naphthalene	23	2,100	ug/kg	1%
06-12485-JP75B	J-1,S-1	Naphthalene	34	2,100	ug/kg	2%
06-12487-JP75D	J-5,S-1	Naphthalene	22	2,100	ug/kg	1%

TABLE 2
ANALYTICAL LABORATORY TESTING - 2006
KLAMATH RIVER SEDIMENT SAMPLING

ARI ID	Client ID	Compound	Value	Screening Level	Units	% of SL
06-12093-JP11F	C-1,S-1	Nickel	16	140	mg/kg	11%
06-12051-JP06A	C-10,S-1	Nickel	25	140	mg/kg	18%
06-12094-JP11G	C-11,S-1	Nickel	32	140	mg/kg	23%
06-12379-JP58C	C-12,S-2C/3C	Nickel	26	140	mg/kg	19%
06-12041-JP03C	C-2,S-1	Nickel	32	140	mg/kg	23%
06-11771-JO60A	C3-S1	Nickel	27	140	mg/kg	19%
06-12110-JP12D	C-4,S-1	Nickel	28	140	mg/kg	20%
06-12052-JP06B	C-5,S-1	Nickel	27	140	mg/kg	19%
06-12380-JP58D	C-6,S-1	Nickel	23	140	mg/kg	16%
06-12092-JP11E	C-7,S-1	Nickel	21	140	mg/kg	15%
06-12109-JP12C	C-8,S-1	Nickel	30	140	mg/kg	21%
06-12040-JP03B	C-9,S-1	Nickel	28	140	mg/kg	20%
06-11570-JO18A	IG1-S1	Nickel	29	140	mg/kg	21%
06-11567-JO17A	IG2-S1	Nickel	21	140	mg/kg	15%
06-11676-JO43A	IG3-S1	Nickel	29	140	mg/kg	21%
06-11678-JO43C	IG4-S1	Nickel	26	140	mg/kg	19%
06-11362-JN72A	IG5-S1	Nickel	40	140	mg/kg	29%
06-11363-JN72B	IG6-S1	Nickel	21	140	mg/kg	15%
06-11572-JO18C	IG7-S1	Nickel	30	140	mg/kg	21%
06-11677-JO43B	IG8-S1	Nickel	29	140	mg/kg	21%
06-11571-JO18B	IG9-S1	Nickel	31	140	mg/kg	22%
06-12485-JP75B	J-1,S-1	Nickel	26	140	mg/kg	19%
06-12486-JP75C	J-3,S-1	Nickel	26	140	mg/kg	19%
06-12488-JP75E	J-4,S-1	Nickel	32	140	mg/kg	23%
06-12487-JP75D	J-5,S-1	Nickel	34	140	mg/kg	24%
06-12074-JP03C	C-2,S-1	Phenanthrene	36	1,500	ug/kg	2%
06-11771-JO60A	C3-S1	Phenanthrene	24	1,500	ug/kg	2%
06-12110-JP12D	C-4,S-1	Phenanthrene	32	1,500	ug/kg	2%
06-12485-JP75B	J-1,S-1	Phenanthrene	27	1,500	ug/kg	2%
06-12041-JP03C	C-2,S-1	Pyrene	32	2,600	ug/kg	1%
06-11771-JO60A	C3-S1	Pyrene	22	2,600	ug/kg	1%
06-12110-JP12D	C-4,S-1	Pyrene	25	2,600	ug/kg	1%
06-12485-JP75B	J-1,S-1	Pyrene	27	2,600	ug/kg	1%
06-12093-JP11F	C-1,S-1	Sulfide	42.6	0.01	mg/kg	
06-12051-JP06A	C-10,S-1	Sulfide	1350	0.01	mg/kg	
06-12094-JP11G	C-11,S-1	Sulfide	246	0.01	mg/kg	
06-12379-JP58C	C-12,S-2C/3C	Sulfide	631	0.01	mg/kg	
06-12041-JP03C	C-2,S-1	Sulfide	397	0.01	mg/kg	
06-11771-JO60A	C3-S1	Sulfide	121	0.01	mg/kg	
06-12110-JP12D	C-4,S-1	Sulfide	288	0.01	mg/kg	
06-12052-JP06B	C-5,S-1	Sulfide	82.3	0.01	mg/kg	
06-12380-JP58D	C-6,S-1	Sulfide	1410	0.01	mg/kg	
06-12092-JP11E	C-7,S-1	Sulfide	480	0.01	mg/kg	
06-12109-JP12C	C-8,S-1	Sulfide	710	0.01	mg/kg	
06-12040-JP03B	C-9,S-1	Sulfide	213	0.01	mg/kg	
06-11570-JO18A	IG1-S1	Sulfide	344	0.01	mg/kg	
06-11567-JO17A	IG2-S1	Sulfide	1440	0.01	mg/kg	
06-11676-JO43A	IG3-S1	Sulfide	2100	0.01	mg/kg	
06-11678-JO43C	IG4-S1	Sulfide	1800	0.01	mg/kg	
06-11362-JN72A	IG5-S1	Sulfide	160	0.01	mg/kg	

TABLE 2
ANALYTICAL LABORATORY TESTING - 2006
KLAMATH RIVER SEDIMENT SAMPLING

ARI ID	Client ID	Compound	Value	Screening Level	Units	% of SL
06-11363-JN72B	IG6-S1	Sulfide	350	0.01	mg/kg	
06-11572-JO18C	IG7-S1	Sulfide	1000	0.01	mg/kg	
06-11677-JO43B	IG8-S1	Sulfide	2700	0.01	mg/kg	
06-11571-JO18B	IG9-S1	Sulfide	631	0.01	mg/kg	
06-12485-JP75B	J-1,S-1	Sulfide	557	0.01	mg/kg	
06-12486-JP75C	J-3,S-1	Sulfide	10.3	0.01	mg/kg	
06-12488-JP75E	J-4,S-1	Sulfide	284	0.01	mg/kg	
06-12487-JP75D	J-5,S-1	Sulfide	156	0.01	mg/kg	
06-12051-JP06A	C-10,S-1	Toluene	3.7	0.01	ug/kg	
06-13025-JP11E	C-7,S-1	Toluene	680	0.01	ug/kg	
06-12485-JP75B	J-1,S-1	Toluene	390	0.01	ug/kg	
06-12486-JP75C	J-3,S-1	Toluene	3.6	0.01	ug/kg	
06-12110-JP12D	C-4,S-1	Total Cyanide	2.01	0.01	mg/kg	
06-12488-JP75E	J-4,S-1	Total Cyanide	1.41	0.01	mg/kg	
06-12110-JP12D	C-4,S-1	Total Kjeldahl Nitrogen	5130	0.01	mg-N/kg	
06-11572-JO18C	IG7-S1	Total Kjeldahl Nitrogen	4170	0.01	mg-N/kg	
06-12488-JP75E	J-4,S-1	Total Kjeldahl Nitrogen	2730	0.01	mg-N/kg	
06-12110-JP12D	C-4,S-1	Total Phosphorus	1420	0.01	mg/kg	
06-11572-JO18C	IG7-S1	Total Phosphorus	1360	0.01	mg/kg	
06-12488-JP75E	J-4,S-1	Total Phosphorus	902	0.01	mg/kg	
06-12041-JP03C	**C-2,S-1**	**Total Xylenes**	**220**	**40**	**ug/kg**	**550%**
06-12486-JP75C	J-3,S-1	Vinyl Chloride	1.1	0.01	ug/kg	
06-12093-JP11F	C-1,S-1	Zinc	38.1	410	mg/kg	9%
06-12051-JP06A	C-10,S-1	Zinc	67	410	mg/kg	16%
06-12094-JP11G	C-11,S-1	Zinc	68	410	mg/kg	17%
06-12379-JP58C	C-12,S-1	Zinc	72	410	mg/kg	18%
06-12041-JP03C	C-2,S-1	Zinc	76	410	mg/kg	19%
06-11771-JO60A	C3-S1	Zinc	75	410	mg/kg	18%
06-12110-JP12D	C-4,S-1	Zinc	72	410	mg/kg	18%
06-12052-JP06B	C-5,S-1	Zinc	64	410	mg/kg	16%
06-12380-JP58D	C-6,S-1	Zinc	64	410	mg/kg	16%
06-12092-JP11E	C-7,S-1	Zinc	57.3	410	mg/kg	14%
06-12109-JP12C	C-8,S-1	Zinc	75	410	mg/kg	18%
06-12040-JP03B	C-9,S-1	Zinc	71	410	mg/kg	17%
06-11570-JO18A	IG1-S1	Zinc	66	410	mg/kg	16%
06-11567-JO17A	IG2-S1	Zinc	80	410	mg/kg	20%
06-11676-JO43A	IG3-S1	Zinc	76	410	mg/kg	19%
06-11678-JO43C	IG4-S1	Zinc	76	410	mg/kg	19%
06-11362-JN72A	IG5-S1	Zinc	76	410	mg/kg	19%
06-11363-JN72B	IG6-S1	Zinc	89	410	mg/kg	22%
06-11572-JO18C	IG7-S1	Zinc	73	410	mg/kg	18%
06-11677-JO43B	IG8-S1	Zinc	74	410	mg/kg	18%
06-11571-JO18B	IG9-S1	Zinc	78	410	mg/kg	19%
06-12485-JP75B	J-1,S-1	Zinc	75	410	mg/kg	18%
06-12486-JP75C	J-3,S-1	Zinc	28.5	410	mg/kg	7%
06-12488-JP75E	J-4,S-1	Zinc	50	410	mg/kg	12%
06-12487-JP75D	J-5,S-1	Zinc	53	410	mg/kg	13%

Note: Table provided by Gathard Engineering Consultants. Data is provided within this report as background information only
PCNB and Iprodione (organochlorine pesticides), and dioxin data are not included.

TABLE 3
DIOXIN TOXICITY EQUIVALENCY FACTOR-ADJUSTED CONCENTRATIONS
KLAMATH RIVER SEDIMENT SAMPLING

Analyte	C-4, S-1 pg/g	TEFs	TEQs	Total TEQs
Furans				
2,3,7,8-TCDF	0.631	0.1	0.0631	
1,2,3,7,8-PeCDF	< 0.823	0.05	0.020575	
2,3,4,7,8-PeCDF	1.12	0.5	0.56	
1,2,3,4,7,8-HxCDF	1.45	0.1	0.145	
1,2,3,6,7,8-HxCDF	2.76	0.1	0.276	
2,3,4,6,7,8-HxCDF	2.1	0.1	0.21	
1,2,3,7,8,9-HxCDF	< 0.403	0.1	0.02015	
1,2,3,4,6,7,8-HpCDF	38	0.01	0.38	
1,2,3,4,7,8,9, -HpCDF	1.6	0.01	0.016	
OCDF	81.7	0.001	0.0817	
Dioxins				
2,3,7,8-TCDD	< 0.205	1	0.1025	
1,2,3,7,8-PeCDD	< 1.96	0.5	0.49	
1,2,3,4,7,8-HxCDD	< 0.62	0.1	0.081	
1,2,3,6,7,8-HxCDD	4.98	0.1	0.498	
1,2,3,7,8,9-HxCDD	3.15	0.1	0.315	
1,2,3,4,6,7,8-HpCDD	83.6	0.01	0.836	
OCDD	737	0.001	0.737	**4.83**
Analyte	**IG7-S1 pg/g**	**TEFs**	**TEQs**	**Total TEQs**
Furans				
2,3,7,8-TCDF	0.39	0.1	0.039	
1,2,3,7,8-PeCDF	0.348	0.05	0.0174	
2,3,4,7,8-PeCDF	0.285	0.5	0.1425	
1,2,3,4,7,8-HxCDF	1.1	0.1	0.11	
1,2,3,6,7,8-HxCDF	0.925	0.1	0.0925	
2,3,4,6,7,8-HxCDF	0.986	0.1	0.0986	
1,2,3,7,8,9-HxCDF	< 0.158	0.1	0.0079	
1,2,3,4,6,7,8-HpCDF	18.9	0.01	0.189	
1,2,3,4,7,8,9, -HpCDF	1.18	0.01	0.0118	
OCDF	44.7	0.001	0.0447	
Dioxins				
2,3,7,8-TCDD	< 0.0776	1	0.0388	
1,2,3,7,8-PeCDD	0.347	0.5	0.1735	
1,2,3,4,7,8-HxCDD	0.919	0.1	0.0919	
1,2,3,6,7,8-HxCDD	2.69	0.1	0.269	
1,2,3,7,8,9-HxCDD	2.24	0.1	0.224	
1,2,3,4,6,7,8-HpCDD	51.7	0.01	0.517	
OCDD	413	0.001	0.413	**2.48**

TABLE 3
DIOXIN TOXICITY EQUIVALENCY FACTOR-ADJUSTED CONCENTRATIONS
KLAMATH RIVER SEDIMENT SAMPLING

Analyte	J4-S1 pg/g	TEFs	TEQs	Total TEQs
Furans				
2,3,7,8-TCDF	0.279	0.1	0.0279	
1,2,3,7,8-PeCDF	0.278	0.05	0.0139	
2,3,4,7,8-PeCDF	0.296	0.5	0.148	
1,2,3,4,7,8-HxCDF	1.08	0.1	0.108	
1,2,3,6,7,8-HxCDF	2.34	0.1	0.234	
2,3,4,6,7,8-HxCDF	2.27	0.1	0.227	
1,2,3,7,8,9-HxCDF	0.341	0.1	0.0341	
1,2,3,4,6,7,8-HpCDF	36.8	0.01	0.368	
1,2,3,4,7,8,9, -HpCDF	2.04	0.01	0.0204	
OCDF	120	0.001	0.12	
Dioxins				
2,3,7,8-TCDD	< 0.0615	1	0.03075	
1,2,3,7,8-PeCDD	0.362	0.5	0.181	
1,2,3,4,7,8-HxCDD	0.876	0.1	0.0876	
1,2,3,6,7,8-HxCDD	3.47	0.1	0.347	
1,2,3,7,8,9-HxCDD	1.74	0.1	0.174	
1,2,3,4,6,7,8-HpCDD	98.5	0.01	0.985	
OCDD	1020	0.001	1.02	**4.13**

Notes:
< = not detected above detection limit
TEFs = toxicity equivalency factors
TEQs = toxicity equivalents
pg/g = picograms per gram

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 21-1-12195-001

Date: September 22, 2006
To: Mr. Michael Bowen
California State Coastal Conservancy

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

2855 Telegraph Avenue, Suite 400, Berkeley, CA 94705, Phone (510) 848-8098, Fax (510) 848-8398

Memorandum

Date: September 13, 2006
To: Dennis Gathard, Gathard Engineering Consulting, Seattle, Washington
From: Yantao Cui, Ph.D., Hydraulic Engineer
Re: Klamath River Dam Removal – Reevaluation of Stillwater 2004 Preliminary Simulation Results

1. Introduction

In May 2005 Stillwater Sciences submitted a technical report titled "A preliminary evaluation of the potential downstream sediment deposition following the removal of Iron Gate, Copco, and J.C. Boyle Dams, Klamath River, CA" to American Rivers (Stillwater Sciences 2004), which detailed the assumptions, analysis, and conclusions regarding potential sediment deposition downstream of Iron Gate Dam following dam removal. Due to the limited information available at the time of that study and the objectives of the analysis, several "worst-case-scenario" assumptions were employed so that the predicted thickness of sediment deposition downstream of Iron Gate Dam following dam removal reflects the maximum possible thickness of deposited sediment.

This memorandum reexamines the assumptions made during the 2004 analysis in comparison with the most recent estimate of sediment release following dam removal to determine if the predicted thickness of sediment deposit downstream of Iron Gate Dam presented in Stillwater Sciences (2004) can still be viewed as the worst-case-scenario estimate. This memorandum, however, does not provide reviews to the proposed dam removal alternative and the estimated sediment release associated with the dam removal alternative.

2. Most recent estimate of sediment release following dam removal

The most recent estimate of sediment release following dam removal was provided by Mr. Dennis Gathard on September 6, 2006 via e-mail and telephone conversations. Mr. Gathard's estimate was based on information acquired through drilling and a proposed dam removal scenario briefly described below:

- Remove Copco 2 first. There is little sediment in the reservoir, so it does not need to be accounted for.
- Lower J.C. Boyle Reservoir and begin dam removal.
- Drill holes in the base of Copco 1 to provide a low-level outlet. The hole would be sized to control the rate of reservoir lowering. The average rate of reservoir lowering is assumed to be 1 ft/day.

- Lower Iron Gate Reservoir through the low-level tunnel at a rate of approximately 1 ft/day simultaneously with the lowering of Copco 1 Reservoir.
- Begin lowering the reservoirs sometime in the fall. Once the reservoirs reach their lowest levels, which is projected to take a maximum of 120 days, the demolition work on dam removal would begin. Copco will be removed completely, which may take 3 to 4 months if blasting and drilling methods are used. The removal of Iron Gate will take longer, but can be removed completely with the protection of a coffer dam.
- Remove the coffer dam above the Iron Gate Dam site approximately 1 year after the start of the removal process that would release the sediment still trapped behind the coffer dam.
- For calculating sediment release, Mr. Gathard assumed 200-ft-wide channels with 1:10 (V:H) side slopes in both Copco 1 and Iron Gate reservoirs.

Mr. Gathard estimated that the removal of Copco 1 will result in the release of 98,000 cubic yards of gravel, 419,000 cubic yards of sand, and 1,717,000 cubic yards of silt and clay, which will be distributed across the width of the Iron Gate Reservoir. Independent of the sediment released from the removal of Copco 1, Mr. Gathard estimated that the removal of Iron Gate will result in the release of 220,000 cubic yards of gravel, 451,000 cubic yards of sand, and 2,234,000 cubic yards of silt and clay. Mr. Gathard reasoned that because the estimated sediment release from Iron Gate Reservoir, without considering the sediment from the removal of Copco 1, represents 34% of the total sediment deposit in Iron Gate Reservoir, approximately 34% of the sediment released from Copco 1 will continue to transport downstream of Iron Gate Dam during and following Iron Gate Dam removal while the residual 66% would remain stored in Iron Gate Reservoir in the remnant terraces and other storage units. A brief summary of Mr. Gathard's estimate is provided below in Table 1.

Table 1. Estimated sediment release (in 10^3 yd^3) following dam removal provided by Mr. Dennis Gathard (personal communication)

	Gravel	Sand	Silt/Clay	Total
Sediment release to Iron Gate Reservoir from the removal of Copco 1	98	419	1,717	2,234
Copco 1 sediment that can transport to downstream of Iron Gate Dam following Iron Gate Dam removal (34% of row 2)	33	142	584	759
Release of the Iron Gate Reservoir sediment following Iron Gate Dam removal	220	451	2,340	3,011
Total sediment release to downstream of Iron Gate Dam site following Iron Gate Dam removal (sum of rows 3 and 4)	**253**	**593**	**2,924**	**3,770**

3. Comparison of the recent estimate of sediment release with 2004 analysis

The Stillwater Sciences (2004) analysis employed DREAM-1, one of the Dam Removal Express Assessment Models (Cui et al. 2006a,b), to simulate the potential sediment deposition downstream of Iron Gate Dam under a few worst-case-scenario assumptions that encouraged sediment deposition following dam removal. Here we only reexamine the assumptions with regard to sediment volume and grain size distribution, and compare those assumptions against the most recent estimate provided by Mr. Gathard and briefly discussed above in Section 2. Other worst-case-scenario assumptions made during the 2004 study and the details of the results can be found in the original reference (Stillwater Sciences 2004).

The modeling conducted in Stillwater Sciences (2004) assumed certain spatial distributions of sediment deposit thickness to allow for the flow to carve a channel through the sediment deposit following the rules set forth in DREAM-1, thus no explicit volume of sediment release was imposed on the model runs. A rough estimate of the volume of sediment released during and following dam removal predicted in the Stillwater Sciences (2004) modeling is described below, based on the understanding of DREAM-1 and information provided in the original report.

- The model assumed a trapezoidal channel with a bottom width of 150 ft and the default bank slope angle of 35° (Cui et al. 2006a). For simplicity, Stillwater Sciences (2004) provided an estimate based on a 150-ft-wide rectangular channel (i.e., assumes a slightly smaller cross section, and provides a volume estimate of sediment release that is slightly smaller than used in Stillwater Sciences 2004 modeling). Using the rectangular-channel assumption, a total of 3,400,000 cubic yards of sediment would be released downstream following the removal of Iron Gate Dam, of which 1,600,000 cubic yards are Iron Gates Reservoir sediment deposits, and 1,800,000 cubic yards are Copco 1 Reservoir sediment deposits (based on Table 5 on Page 8 in Stillwater Sciences 2004).

- For the 1,600,000 cubic yards released from Iron Gate Reservoir, the modeling assumed 30% sand and gravel and 70% silt and clay; for the 1,800,000 cubic yards released from Copco 1 Reservoir, the modeling assumed 5% sand and gravel and 95% silt and clay (based on the second bullet on Page 11 in Stillwater Sciences 2004).

- The sand and gravel was assumed to have a median size of 2.1 mm for modeling purposes (based on Figure 21 on Page 28 in Stillwater Sciences 2004), all of which was allowed to be released downstream unsorted during and following the removal of Iron Gate Dam, which can potentially be deposited in the downstream reach.

Based on the above information, an approximation of the volume of sediment released, as simulated in the Stillwater Sciences (2004) modeling analysis, is given below in Table 2. As noted previously, the estimated volume in Table 2 should be slightly smaller than the simulated sediment release in Stillwater Sciences (2004) worst-case-scenario modeling exercise.

Table 2. An estimate of sediment released (in 10^3 yd^3) following dam removal in the preliminary analysis of Stillwater Sciences (2004)

	Sand and gravel[a]	Silt/Clay[b]	Total
Copco 1 sediment that transports to downstream of Iron Gate Dam following Iron Gate Dam removal	90	1,710	1,800
Release of the Iron Gate Reservoir sediment following Iron Gate Dam removal	480	1,120	1,600
Total sediment release to downstream of Iron Gate Dam site following Iron Gate Dam removal (sum of rows 3 and 4)	**570**	**2,830**	**3,400**

a. All of the sediment in the sand and gravel range was assumed to be released downstream simultaneously without sorting during and following dam removal as a worst-case-scenario assumption of the modeling exercise.
b. Assumed to be transported downstream as suspended sediment without re-deposition.

In comparing the numbers in Tables 1 and 2, it is important to note that the initial sediment transport that can potentially result in sediment deposition downstream of Iron Gate Dam will in fact be particles primarily in sand range, because the gravel components is less mobile and so its transport will lag by a significant, although difficult-to-quantify, degree, and silt and clay will be transported downstream as suspended load without deposition. Thus, initial sediment deposition during Iron Gate Dam removal and immediately following the removal of the Iron Gate cofferdam in the following year should overwhelmingly comprise only the 593,000 cubic yards of sand in Table 1. This is the volume of sediment that we expect to potentially result in significant sediment deposition. For the Stillwater Sciences (2004) analysis, it is important to realize that the modeling did not directly simulate what would be most likely to occur following dam removal. Instead, the modeling provided an estimate of what might be the maximum downstream deposition that could potentially occur following dam removal under a few worst-case-scenario assumptions. One of these worst-case-scenario assumptions was that both sand and gravel would be transported downstream simultaneously as an unsorted mix during and following dam removal. Comparing Tables 1 and 2, it can be found that the combined gravel and sand release in Mr. Gathard's most recent estimate is 846,000 cubic yards, which is approximately 50% higher than the gravel and sand volume used in the Stillwater Sciences (2004) simulation. However, because the gravel will be transported downstream lagging behind sand, the amount of sediment released during Iron Gate Dam removal and immediately following the removal of the Iron Gate cofferdam will constitute primarily sand, or 593,000 cubic yards from Mr. Gathard's estimate in Table 1. This estimate is almost identical to the 570,000 cubic yards of sediment release used in the Stillwater Sciences (2004) modeling, as summarized in Table 3.

Table 3. Comparison of the volume and grain size of sediment release during Iron Gate Dam removal and immediately following Iron Gate cofferdam removal

	Volume (10^3 cubic yards)	Median Size
Mr. Gathard's most recent estimate	593	~ < 1 mm
Stillwater Sciences (2004) worst-case-scenario modeling	570	2.1 mm

In addition to the comparable volumes of predicted released sediment in Mr. Gathard's most recent estimate and Stillwater Sciences (2004) modeling for the period that includes Iron Gate Dam removal and immediately following the removal of the Iron Gate coffer dam, the median size used for the Stillwater Sciences (2004) modeling is significantly coarser than the actual grain size of the sediment most likely to be released during this period of the project. This assumption makes the modeling results even more conservative in terms of downstream sediment deposition, because there would have been less sediment deposition predicted in Stillwater Sciences (2004) modeling if a finer grain size was used.

To briefly summarize, the volume of sediment release assumed in Stillwater Sciences (2004) modeling is almost identical to Mr. Gathard's estimated sediment release for the period of Iron Gate Dam removal and immediately following the removal of the Iron Gate coffer dam; and the Stillwater Sciences (2004) modeling assumed a coarser sediment release during this period, further ensuring the conservativeness of that modeling. With that, we conclude that the Stillwater Sciences (2004) modeling results can still be viewed as worst-case-scenario results in terms of downstream sediment deposition. The above conclusion is made independent of several other worst-case-scenario assumptions made for the Stillwater Sciences (2004) modeling, which further ensure that the Stillwater Sciences (2004) results remain to be worst-case-scenario estimate. It can be expected that some or all of the worst-case-scenario assumptions can potentially be reexamined if new information that favors downstream sediment deposition is discovered.

References

Cui, Y., Braudrick, C., Dietrich, W.E., Cluer, B., and Parker, G. (2006a) Dam Removal Express Assessment Models (DREAM), Part 2: Sample runs/sensitivity tests. *Journal of Hydraulic Research*, 44(3), 308-323.

Cui, Y., Parker, G., Braudrick, C., Dietrich, W.E., and Cluer, B. (2006b) Dam Removal Express Assessment Models (DREAM), Part 1: Model development and validation. *Journal of Hydraulic Research*, 44(3), 291-307.

Stillwater Sciences (2004) A preliminary evaluation of the potential downstream sediment deposition following the removal of Iron Gate, Copco, and J.C. Boyle Dams, Klamath River, CA. *Final Report* prepared for American Rivers, 409 Spring Street, Nevada City, CA 95959, May, 34pp.

M. Bowen

United States Department of the Interior
OFFICE OF THE SECRETARY
Washington, DC 20240

TAKE PRIDE IN AMERICA

June 13, 2005

Mr. Douglas Bosco, Chairman
California Coastal Conservancy
Attention: Mr. Michael Bowen
1330 Broadway Avenue, 11th Floor
Oakland, California 94612

Dear Mr. Bosco:

The U.S. Department of the Interior is writing to recommend that the California Coastal Conservancy support funding for the proposed study of sediments trapped by Klamath River dams. Klamath River dams operated by PacifiCorp block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath Basin. The Department is participating in relicensing proceedings before the Federal Energy Regulatory Commission, and in confidential discussions on whether and under what conditions the Klamath hydropower project should be relicensed.

The Department has made working towards long-term solutions in the Klamath Basin a priority, and committed significant resources to that effort. In 2002, President Bush created the Klamath River Basin Federal Working Group, which includes the Secretaries of the Departments of the Interior, Agriculture, and Commerce, and the Chairman of the Council on Environmental Quality. In 2004, the Department joined with the Departments of Agriculture and Commerce, and the States of California and Oregon in signing the Klamath River Watershed Coordination Agreement, which targeted efforts to address complex environmental, tribal, and agricultural Klamath Basin issues. Recent presidential budget initiatives have led to unprecedented investments in habitat restoration and water management and improvement projects and programs for the Klamath River Basin to help Klamath communities restore their watershed and avoid future water supply crises.

By funding the proposed study, the California Coastal Conservancy would be providing key information on sediments and helping fill an important information gap. These, in turn, will aid in basin-wide decision making. Thank you for your consideration.

Sincerely,

RECEIVED
JUN 16 2005
COASTAL CONSERVANCY
OAKLAND, CALIF.

William D. Bettenberg
Director, Office of Policy Analysis

MIKE THOMPSON
1ST DISTRICT, CALIFORNIA

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WAYS AND MEANS

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June 15, 2005

Doug Bosco, Chairman
California Coastal Conservancy
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

I am writing in support of the California Coastal Conservancy proposal to study the composition of sediments trapped by Klamath River dams operated by PacificCorp.

The PacificCorp hyrdro power project is undergoing relicensing with the Federal Energy Regulatory Commission (FERC). The hydropower dams they operate on the lower Klamath River block access to over 300 miles of historic spawning habitat for salmon, steelhead and other anadromous fish. Removal of the dams could have a significant impact on anadromous fisheries. Because decision makers in the FERC proceeding lack the information necessary to determine whether removing the dams are feasible, the proposed sediment study would provide extremely valuable information. The study would assess the character of the sediments and help to determine how to manage the sediments following dam removal.

The Klamath River was formerly one of the most productive salmon rivers in the Pacific Northwest. The FERC proceeding presents an historic opportunity to review the impact of dam removal. Confidential negotiations among the key stakeholders are underway to help reach a settlement agreement on whether or not the hydropower project should be re-licensed. The Coastal Conservancy sediment study would provide essential information at a critical juncture in the negotiations.

The proposal enjoys widespread support and I urge the Conservancy's favorable consideration.

Sincerely,

Mike Thompson

MIKE THOMPSON
Member of Congress

MT:lm

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AGRICULTURE
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California State Senate

SENATOR
WESLEY CHESBRO
SECOND SENATORIAL DISTRICT

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June 8, 2005

Douglas Bosco, Chair
California Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

As the Senator for California's Second Senate District, I am writing to urge the California Coastal Conservancy to actively support the proposed study of sediments trapped by the dams on the Klamath River.

Once, one of the most productive salmon rivers in the lower 48 states, the Klamath River sustained thousands of fishing jobs in Northern California and Southern Oregon. The Klamath salmon harvests also supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. Because Klamath salmon spend up to three years in the ocean, they are also part of a healthy ocean ecosystem. Today, Klamath salmon populations have fallen to less than 10 percent of historic numbers, with devastating consequences for tribes and coastal fishing communities.

PacifiCorp's Klamath River dams block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic habitat in the upper basin. The possibility of removing Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. I understand that FERC has completed scoping for its Environmental Impact Statement for the project and expects to issue a relicensing decision in December 2006.

I believe strongly that decision-makers in the FERC proceeding do not have adequate information to determine the feasibility of removing Klamath dams. The most significant gap in understanding the issue is the physical and chemical nature of the reservoir sediments. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

Thank you for your consideration.

Sincerely,

WESLEY CHESBRO
State Senator, Second District

WC:zg

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ELDER ABUSE
RURAL ECONOMIC DEVELOPMENT

June 9, 2005

Mr. Douglas Bosco, Chair
California Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

As a stakeholder in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams, I am writing to urge the California Coastal Conservancy to support the proposed study of sediments trapped by the dams.

The Klamath River used to be one of the most productive salmon rivers in the Pacific Northwest. The historic range of salmon abundance for the Klamath-Trinity River system is estimated at 650,000 to one million fish. This fishery sustained thousands of fishing jobs in northern California and southern Oregon, and supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. Because Klamath salmon spend up to three years in the ocean, they are also part of a healthy ocean ecosystem. Today, Klamath salmon populations have fallen to less than 10 percent of historic numbers, with devastating consequences for tribes and coastal fishing communities. In fact, while the Sacramento River is expected to see a record number of salmon return this year, the Pacific Fishery Management Council recently cut harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay California to Coos Bay Oregon because of the precarious state of Klamath salmon stocks. These cuts could cause a loss of more than $100 million to the commercial fishing industry, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

The Klamath River Project dams, owned by PacifiCorp, block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic habitat in the upper basin. The possibility of removing Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will

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104 WEST CHURCH STREET
UKIAH, CA 95482
PH (707) 463-5770
FAX (707) 463-5773

235 4TH STREET, SUITE C
EUREKA, CA 95501
PH (707) 445-7014
FAX (707) 445-6607

Assembly
California Legislature

PATTY BERG
ASSEMBLYMEMBER, FIRST DISTRICT

COMMITTEES:
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ELDER ABUSE
RURAL ECONOMIC DEVELOPMENT

assess retiring some or all hydro developments and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding do not have adequate information to determine the feasibility of removing Klamath dams. The most significant gap in understanding the issue is the physical and chemical nature of the reservoir sediments. The character of the sediments will determine what sediment management approach would be required, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

In addition, confidential negotiations involving all key stakeholders in the Klamath basin are underway, with the aim of reaching a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. If funded by the Coastal Conservancy, the proposed sediment study would provide information essential to reaching agreement at a critical juncture in negotiations. Without funding from the Coastal Conservancy, it is highly likely this information would never be developed.

Thank you for your consideration.

Sincerely,

Patty Berg

Patty Berg, Assembly member
1st District

BOARD OF SUPERVISORS

COUNTY OF HUMBOLDT

825 5TH STREET

EUREKA, CALIFORNIA 95501-1153 PHONE (707) 476-2390 FAX (707) 445-7299

June 7, 2005

Douglas Bosco, Chair
California Coastal Conservancy
1330 Broadway Avenue, 11th Floor
Oakland, CA 94612

ATTN: Michael Bowen

Dear Chair Bosco:

As a stakeholder in the ongoing relicensing proceedings for PacifiCorp's Klamath River dams, the Humboldt County Board of Supervisors, urges the California Coastal Conservancy to support funding for the proposed study of sediments trapped by Klamath River dams.

The Klamath River was once one of the most productive salmon rivers in the Pacific Northwest and has sustained thousands of fishing jobs throughout northern California and southern Oregon. Klamath salmon also supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. As anadromous fish, Klamath salmon spend up to three years in the ocean, they contribute to a healthy ocean ecosystem. Today, Klamath salmon populations have plunged to less than 10 percent of historic numbers, and this has had devastating consequences for tribes and coastal fishing communities. In contrast to the Sacramento River's projected record number of returning salmon this year, the Pacific Fishery Management Council reduced harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay, California to Coos Bay, Oregon because of the precarious state of Klamath salmon stocks. These cuts represent an economic loss of more that $100 million to the Northcoast commercial fishing industry alone, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

Klamath River dams, operated by PacifiCorp, block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath Basin. Potential removal of Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission's (FERC) current relicensing proceedings. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydroelectric developments and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceedings lack sufficient information to determine the feasibility of removing Klamath dams. The most significant gap is determining the physical and chemical nature of the accumulated reservoir sediments. The character of the sediments will determine what sediment management approach would be required, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

In addition, confidential negotiations through the PacifiCorp Klamath Project Settlement Negotiation Group, involving key stakeholders in the Klamath basin, are underway. Their goal is to reach a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. Funding by the Coastal Conservancy of the proposed sediment study would provide information essential to reaching agreement at a critical juncture in negotiations.

Thank you for your consideration of our request.

Sincerely,

Roger Rodoni

Roger Rodoni, Chair
Humboldt County Board of Supervisors

RR/kr

YUROK TRIBE

190 Klamath Boulevard • Post Office Box 1027 • Klamath, CA 95548

June 9, 2005

Douglas Bosco, Chair
Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

As a Tribal government participating in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams, I am writing to urge the California Coastal Conservancy to support the proposed study of sediments trapped by the dams.

Klamath salmon have supported the health, culture and livelihoods of the Yurok Tribe since time immemorial. Today, Klamath salmon populations have fallen to less than 10 percent of historic numbers, with devastating consequences for tribes and coastal fishing communities. In fact, this year in the Klamath, the allocation for the tribal fishery is far from meeting the subsistence needs of the Yurok people and *no* tribal commercial harvest is expected.

PacifiCorp's Klamath River dams block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic habitat in the upper basin. The possibility of removing Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydro developments and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding do not have adequate information to determine the feasibility of removing Klamath dams. The most significant gap in understanding the issue is the physical and chemical nature of the reservoir sediments. The character of the sediments will determine what sediment management approach would be required, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

As you are likely aware, the Coastal Conservancy and the Yurok Tribe have enjoyed an innovative and productive partnership since 1996. As part of the Lower Klamath River Partnership, the Conservancy, Yurok Tribe, Green Diamond Resources (formerly Simpson) and a host of other federal and state agencies have conducted extensive planning, assessment and

Phone: (707) 482-1350 • Fax: (707) 482-1377

restoration of the Lower Klamath coastal tributaries. We feel that in order for this effort to continue producing positive results into the future, the Conservancy should take this opportunity to support this multi-stakeholder effort in addressing solutions for the mainstem Klamath. The Tribe would also like to emphasize the time-critical importance of the proposed study. The FERC is scheduled to make its decision by next year. We would strongly urge that the Conservancy, should it decide to fund this critical study, expedite its contracting process with as little administrative burden as possible.

Thank you for your consideration.

Sincerely,

Howard McConnell

Howard McConnell
Chairperson, Yurok Tribe

Hoopa Valley Tribal Council

HOOPA VALLEY TRIBE

Regular Meetings on the First and Third Thursday of Each Month

P.O. Box 1348 • HOOPA, CALIFORNIA 95546 • Phone 625-4211 • Fax 625-4594

Clifford Lyle Marshall
Chairman

June 7, 2005

Douglas Bosco, Chair
Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

As a stakeholder in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams, the Hoopa Valley Tribe, a federally recognized sovereign Indian Tribe is writing to urge the California Coastal Conservancy to support funding for the proposed study of sediments trapped by Klamath River dams.

The Klamath River was once one of the most productive salmon rivers on the West Coast, and sustained thousands of fishing jobs throughout northern California and southern Oregon. Klamath salmon also supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. Because Klamath salmon spend up to three years in the ocean, they contribute to a healthy ocean ecosystem. Today, Klamath salmon populations have plunged to less than 10 percent of historic numbers, and this has had devastating consequences for tribes and coastal fishing communities. In fact, while the Sacramento River is expected to see a record number of returning salmon this year, the Pacific Fishery Management Council reduced harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay California to Coos Bay Oregon because of the vulnerable Klamath salmon stocks mix in the ocean with populations from other rivers. These cuts represent an economic loss of more than $100 million to the northcoast commercial fishing industry alone, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

Klamath River dams operated by PacifiCorp block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath basin. Potential removal of Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydroelectric facilities and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding lack sufficient information to determine the feasibility of removing Klamath dams. The most significant gap is determining the physical and chemical nature of the accumulated reservoir sediments. The character of the sediments will determine what approach would be required to manage sediments, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

In addition, confidential negotiations involving key stakeholders in the Klamath basin are underway, with the aim of reaching a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. If funded by the Coastal Conservancy, the proposed sediment study would provide information essential to reaching agreement at a critical juncture in negotiations. Without funding from the Coastal Conservancy, it is highly unlikely this information would ever be developed.

Thank you for your time and consideration.

Sincerely,

Chairman Clifford Lyle Marshall
Hoopa Valley Tribal Council

Karuk Tribe of California

Department of Natural Resources
Post Office Box 282
Orleans, CA 95556
(530) 627-3446 Fax (530) 627-3448

Administrative Office
Post Office Box 1016
Happy Camp, CA 96039
(530) 493-5305 Fax (530) 493-5322

Karuk Tribal Health Clinic
Post Office Drawer 249
Orleans, CA 95556
(530) 627-3452 Fax (530) 627-3445

June 3, 2005

Douglas Bosco, Chairman
California Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

Although the Karuk Tribe is considered a stakeholder in the on going Federal Energy Regulatory Commission (FERC) relicencing proceedings, we are a Federally Recognized Indian Tribe; therefore, we consider our participation and involvement in Klamath River issues to be more than that of a stakeholder, but rather as a Federal Trust Responsibility. As you may know the Karuk Tribes Ancestral Territory is locate directly down river from Iron Gate Dam and as a result has suffered greatly from operations of the Klamath Hydroelectric Project. The Karuk Tribe has been an active participant in the traditional FERC relicencing proceedings and has taken a strong position regarding the need for dam decommissioning. Although we firmly believe that decommissioning is an essential component of the restoration of Klamath River fisheries, we also believe that our position must be grounded in sound science. In order to provide a key scientific component to validate our position, we are writing to urge the California Coastal Conservancy to support funding for the proposed study of sediments trapped by Klamath River dams.

The Klamath River once supported the third largest salmon run in North America. Klamath salmon also supported the health, culture and livelihoods of the Karuk, Yurok, Hoopa and Klamath Tribes. Because Klamath salmon spend up to three years in the ocean, they contribute to a healthy ocean ecosystem. The Klamath River salmon sustained thousands of fishing jobs throughout northern California and southern Oregon. Today, Klamath River Fall Chinook salmon populations have plunged to less than 8 percent of historic numbers, and Coho Salmon are only 1 percent of pre-dam populations; this loss in the salmon population has had devastating consequences for tribes and coastal fishing communities.
In fact, while the Sacramento River is expected to see a record number of returning salmon this year, the Pacific Fishery Management Council reduced harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay, California to Coos Bay, Oregon because of the vulnerable Klamath salmon stocks mix in the ocean with populations from other rivers. These cuts

represent an economic loss of more than $100 million to the northcoast commercial fishing industry alone, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

Klamath River dams operated by PacifiCorp block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath basin. Potential removal of Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the FERC relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydroelectric facilities and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding lack sufficient information to determine the feasibility of removing Klamath dams. The most significant gap is determining the physical and chemical nature of the accumulated reservoir sediments. The character of the sediments will determine what approach would be required to manage sediments, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

In addition, confidential negotiations involving key stakeholders in the Klamath basin are underway, with the aim of reaching a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. If funded by the Coastal Conservancy, the proposed sediment study would provide information essential to reaching agreement at a critical juncture in negotiations. Without funding from the Coastal Conservancy, it is highly unlikely this information will ever be developed.

The Karuk Tribe would appreciate the California Coastal Conservancy to support funding for the proposed study of sediments trapped by Klamath River dams. Thank you for your consideration of this request. If you have and questions or concerns please feel free to contact me at (530) 627-3446 ext. 13 or stripp@karuk.us.

Sincerely,

Sandi R. Tripp

Sandi R. Tripp
Director of Natural Resources
and Environmental Policy

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

JUN 9 2005

150304SWR02SR8505:DKW

Douglas Bosco
Chair
California Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

This concerns the ongoing relicensing proceeding for PacifiCorp's Klamath Hydroelectric Project dams. An important goal of NOAA's National Marine Fisheries Service is to ensure that the processes of negotiation, public disclosure and environmental review will result in decisions that provide for full and adequate protection, mitigation and enhancement of anadromous fish and other resources affected by the Klamath Hydroelectric Project. Accordingly, I am writing to urge the California Coastal Conservancy to support the proposed study of sediments trapped by the dams.

The Klamath River was formerly one of the most productive salmon rivers in the lower 48 states and sustained thousands of fishing jobs in northern California and southern Oregon. Estimates put the historical range of salmon abundance for the Klamath-Trinity River system at 650,000 to 1 million returning adults. Because Klamath salmon spend up to three years in the ocean, they are also part of a healthy ocean ecosystem. Today, Klamath salmon populations have fallen to less than 10 percent of historic numbers, with devastating consequences for tribes and coastal fishing communities. In fact, the Pacific Fishery Management Council recently cut harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay, California to Coos Bay, Oregon because of the precarious state of Klamath salmon stocks.

PacifiCorp's Klamath River dams block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic habitat in the upper basin. The possibility of removing Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydro developments and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding do not have information for a full consideration of relevant resource issues associated with removing Klamath dams. The most significant gap in understanding these issues is the physical and chemical nature of the reservoir sediments. The character of the sediments will determine what sediment management approach would be required, which could dramatically affect the potential costs of dam removal. The proposed

study would directly address this gap and would provide decision-makers information to assist in determining whether removing Klamath dams is advisable.

In addition, confidential negotiations involving all key stakeholders in the Klamath basin are underway, with the aim of reaching a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. If funded by the California Coastal Conservancy, the proposed sediment study would provide important information for reaching agreement at a critical point in the negotiations. Thank you for your consideration.

Sincerely,

Valerie L. Chambers
Assistant Regional Administrator
for Habitat Conservation

STATE OF CALIFORNIA -- THE RESOURCES AGENCY Arnold Schwarzenegger, Governor

CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

June 6, 2005

Mike Chrisman, Secretary
Resources Agency
1416 Ninth Street, Room 1311
Sacramento, CA 95814

Dear Secretary Chrisman:

I am writing to urge the California Ocean Protection Council to support the proposed study of sediments trapped by the dams on the Klamath River.

The Klamath River used to be one of the most productive salmon rivers in the lower 48 states and sustained thousands of fishing jobs in northern California and southern Oregon. Klamath salmon also supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. Because Klamath salmon spend up to three years in the ocean, they are also part of a healthy ocean ecosystem. Today, Klamath salmon populations have fallen to less than 10 percent of historic numbers, with devastating consequences for tribes and coastal fishing communities. In fact, while the Sacramento River is expected to see a record number of salmon return this year, the Pacific Fishery Management Council recently cut harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay California to Coos Bay Oregon because of the precarious state of Klamath salmon stocks. These cuts could cause a loss of more than $100 million to the commercial fishing industry, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

PacifiCorp's Klamath River dams block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic habitat in the upper basin. The possibility of removing Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) re-licensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydro developments and potential operational changes, and expects to issue a re-licensing decision in December 2006.

Decision-makers in the FERC proceeding do not have adequate information to determine the feasibility of removing Klamath dams. The most significant gap in understanding the issue is the physical and chemical nature of the reservoir sediments. The character of the sediments will determine what sediment management approach would be required, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

In addition, confidential negotiations involving all key stakeholders in the Klamath basin are underway, with the aim of reaching a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. If funded by the Coastal Conservancy, the proposed sediment study would provide information essential to reaching agreement at a critical juncture in negotiations. Without funding from the Coastal Conservancy, it is highly likely this information would never be developed.

Thank you for your consideration.

Sincerely,

Susan M. Hansch, Chief Deputy
for

PETER DOUGLAS
Executive Director

CC: Doug Bosco, California Coastal Conservancy
Sam Schuchat, California Coastal Conservancy
Michael Bowen, California Coastal Conservancy
Bob Merrill, California Coastal Commission

State of California The Resources Agency

Memorandum

To: Mr. Douglas Bosco, Chair
California Coastal Conservancy
1330 Broadway Avenue, 11th Floor
Oakland, CA 94612

ATTENTION Mr. Michael Bowen

Date: June 8, 2005

From: **L. RYAN BRODDRICK**, Director
Department of Fish and Game
1416 9th Street
Sacramento, CA 95814

Subject: Memorandum of Support, Proposed Sediment Study, Within and Downstream of PacifiCorp's Klamath River Hydroelectric Project

I am writing to express the California Department of Fish and Game's (DFG) support for the timely funding and implementation of the proposed sediment study within and downstream of PacifiCorp's Klamath River Hydro Electric Project.

PacifiCorp owns and operates a major hydroelectric project on the Klamath River in Northern California and Southern Oregon which includes 5 dams and 5 reservoirs on the main stem Klamath River. Currently, the DFG is consulting with PacifiCorp and numerous other stakeholders in an effort to craft balanced conditions for a new project license. In addition, with the aim of reaching a settlement agreement on the future of the Klamath hydropower project, confidential negotiations involving all key stakeholders in the Klamath basin are underway. A fundamental step in the relicensing and negotiation process is gathering site specific information to document current impacts of the hydroelectric project and predict the likely consequences of various alternatives.

One critical data gap that has not been addressed to date involves the quantity and quality of sediment stored behind the hydroelectric dams. The character of the stored sediments will dictate future sediment management options and could dramatically affect the costs of any alternatives involving dam decommissioning. Throughout this relicensing process the DFG has emphasized the importance of seriously considering decommissioning some or all of the PacifiCorp dams to benefit the anadromous fish resources of northern California and southern Oregon. DFG's analysis of existing information indicates that decommissioning PacifiCorp's facilities would reestablish access to hundreds of miles of habitat for salmon and steelhead. However, decision makers currently do not have adequate information to evaluate the feasibility of removing some or

all of the Klamath dams. The proposal to characterize the physical and chemical nature of sediments trapped behind PacifiCorp's dams would provide invaluable data for State and Federal resource agencies responsible for restoring and enhancing native anadromous species.

In conclusion, the information gained from the proposed sediment studies would provide essential guidance in developing responsible alternatives for restoring the anadromous fishery of the Klamath River while minimizing environmental risks and uncertainties. Without funding from the California Coastal Conservancy, this information may never be developed and dam removal as a salmon restoration strategy may never receive adequate consideration. Therefore DFG urges the California Coastal Conservancy to support the proposed study of sediments trapped by the PacifiCorp dams.

If you have any questions regarding this memorandum of support, please contact Mr. Donald B. Koch, Regional Manager, Northern California North Coast Region, (530) 225-2300.

cc: Mr. Donald B. Koch, Regional Manager
Ms. Anne Manji, Environmental Scientist
Department of Fish and Game
601 Locust Street
Redding, CA 96001

State Water Resources Control Board

Division of Water Rights
1001 I Street, 14th Floor ♦ Sacramento, California 95814 ♦ 916.341.5300
P.O. Box 2000 ♦ Sacramento, California 95812-2000
Fax: 916.341.5400 ♦ www.waterrights.ca.gov

Alan C. Lloyd, Ph.D.
Agency Secretary

Arnold Schwarzenegger
Governor

JUN - 9 2005

Douglas Bosco, Chair
Coastal Conservancy
Attn: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

KLAMATH HYDROELECTRIC PROJECT SEDIMENT STUDY

The Klamath Hydroelectric Project (Project) is currently undergoing relicensing with the Federal Energy Regulatory Commission (FERC). PacifiCorp cannot obtain a new license from the FERC until they obtain water quality certification (section 401 of the Clean Water Act) from the State Water Resources Control Board (State Water Board). Issuance, or denial of water quality certification is important to protecting the beneficial uses of the Klamath River. The Klamath River was one of the most productive salmon rivers in the Pacific Northwest. The historic range of salmon abundance for the Klamath-Trinity River system is estimated at 650,000 to one million fish. This fishery sustained thousands of fishing jobs in northern California and southern Oregon, and supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. Declines in the Klamath River fishery can be linked to water quality impairments, including blockage of access to over 300 miles of historic fish habitat upstream of Iron Gate Dam.

The State Water Board will be required to comply with the California Environmental Quality Act prior to taking action on water quality certification. The State Water Board will be evaluating a range of alternatives during the environmental review process for the Project including dam removal. The information generated from the proposed sediment study is critical to evaluating the impact of a dam removal alternative. At the current time State Water Board staff do not have adequate information to determine the feasibility of removing Project dams. The most significant gap is the quantity and physical and chemical nature of the reservoir sediments. The character of the sediments will determine what sediment management approach would be required, and whether dam removal is feasible.

Furthermore, confidential negotiations involving all key stakeholders in the Klamath basin are underway, with the aim of reaching a settlement agreement on whether and under what conditions the Klamath Hydropower Project should be relicensed. If funded by the Coastal Conservancy, the proposed sediment study would provide information essential to reaching agreement at a critical juncture in negotiations. Without funding from the Coastal Conservancy, this information may never be developed, or will be developed too late to support settlement.

Please contact me at (916) 341-5341 if you need more information.

RECEIVED
JUN 13 2005
COASTAL CONSERVANCY
OAKLAND, CALIF.

Sincerely,

Russ J. Kanz
Staff Environmental Scientist

Bowie

825 N.E. Multnomah St.
Portland, OR 97232

PACIFICORP

June 14, 2005

Douglas Bosco, Chairman
California Coastal Conservancy
1330 Broadway, 11th Floor
Oakland, CA 94612

Dear Chairman Bosco:

It is my understanding that the Conservancy is considering studying the removal of PacifiCorp's dams on the Klamath River. I thought it might be helpful if the Conservancy understood PacifiCorp's position on the proposed dam decommissioning study plan.

PacifiCorp, the owner and operator of the 151-megawatt Klamath Hydroelectric Project, is one of the West's leading investor-owned utilities, serving 1.5 million customers in six Western states. The Klamath Project is a valuable source of clean, renewable power for our customers. As such, we have a vested interest in the proposed study.

As you may be aware, PacifiCorp is engaged with stakeholders in settlement negotiations as part of the process of obtaining a new operating license from the Federal Energy Regulatory Commission. Relicensing participants have indicated they believe the results of the proposed decommissioning study are critical to inform their decision-making. Relicensing participants also recognize there are many other important questions not addressed in this study plan that would need to be answered to fully evaluate the benefits and costs of dam removal. It is important to note that no decision with respect to removal of any of the Klamath dams has been made.

PacifiCorp is not endorsing the study. However, we understand and appreciate other parties' interest in the study. It is important to us that the study is conducted as objectively and completely as possible. Therefore, we hope you will consider our request to participate actively and fully in all aspects of any study effort that might move forward. Given our special status as project owner, we would like to review the evolving work plans and study results, with access to data and split samples as they're collected. We look forward to reviewing and providing comments on study conclusions and recommendations.

Thank you for your consideration of the parties' request. We hope this information has been helpful. Please don't hesitate to call me at (503) 813-5535 or Toby Freeman at (503) 813-6208, if you have any questions or comments.

Sincerely,

Robin Furness
Vice President, PacifiCorp

BRINGING RIVERS TO LIFE

American Rivers
FOUNDED 1973

June 7, 2005

Douglas Bosco, Chair
Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

As a stakeholder in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams, American Rivers urges the California Coastal Conservancy to fund the proposed study of sediments trapped by Klamath River dams.

The Klamath River was once one of the most productive salmon rivers on the West Coast, and sustained thousands of fishing jobs throughout northern California and southern Oregon. Klamath salmon also supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. Because Klamath salmon spend up to three years in the ocean, they contribute to a healthy ocean ecosystem. Today, Klamath salmon populations have plunged to less than 10 percent of historic numbers, and this has had devastating consequences for tribes and coastal fishing communities. In fact, while the Sacramento River is expected to see a record number of returning salmon this year, the Pacific Fishery Management Council reduced harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay California to Coos Bay Oregon because of the vulnerable Klamath salmon stocks mix in the ocean with populations from other rivers. These cuts represent an economic loss of more than $100 million to the northcoast commercial fishing industry alone, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

Klamath River dams operated by PacifiCorp block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath basin. Potential removal of Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydroelectric facilities and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding lack some important information to determine the feasibility of removing Klamath dams. The most significant gap is determining the physical and

1025 VERMONT AVENUE, N.W. • SUITE 720 • WASHINGTON, D.C. 20005-3516
(202) 347-7550 • (202) 347-9240 FAX • www.americanrivers.org

chemical nature of the accumulated reservoir sediments. The character of the sediments will determine what approach would be required to manage sediments, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

In addition, confidential negotiations involving key stakeholders in the Klamath basin are underway, with the aim of reaching a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. If funded by the Coastal Conservancy, the proposed sediment study would provide information essential to reaching agreement at a critical juncture in negotiations. Without funding from the Coastal Conservancy, it is unlikely this information would ever be developed.

Thank you for your consideration.

Sincerely,

Andrew Fahlund
Vice President for Protection & Restoration

June 08, 2005

Submitted via Facsimile

Douglas Bosco, Chair
Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

World Wildlife Fund, the globe's largest conservation organization with over 1.2 million members in the United States alone, has been a stakeholder in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams since 2001. We are writing to urge the California Coastal Conservancy to strongly consider providing the necessary funding for a proposed study of sediments trapped by Klamath River dams.

The Klamath River was once one of the most productive salmon rivers on the West Coast, and sustained thousands of fishing jobs and the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. In addition to the sociao-economic benefits these fish have provided the region both historically and recently, these fish bring large quantities of nutrients from the ocean to rivers and streams, sustaining many terrestrial and aquatic species, including riparian forests. However, Klamath salmon populations have plunged to 10 percent of their historic numbers, having devastating consequences for the ecosystem, tribes, and coastal fishing communities. The socioeconomic reach of these poor salmon runs in the Klamath River extends to the entire north coast of California and southern Oregon as fish management regulations are formulated to protect the weakest stock that swims in those waters—in this case, Klamath River fish. As a consequence, while the Sacramento River is expected to see a record number of returning salmon this year, the Pacific Fishery Management Council reduced harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay California to Coos Bay Oregon with an estimated economic loss of more than $100 million to the northcoast commercial fishing industry.

Klamath River dams operated by PacifiCorp block salmon, steelhead and other migratory fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath basin. The potential for removing of Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some

World Wildlife Fund
116 Lithia Way, Suite 7 Ashland, OR 97520
Tel: (541) 482-4878 Fax: (541) 482-4895
www.worldwildlife.org
Affiliated with World Wide Fund for Nature

or all hydroelectric facilities and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding lack sufficient information to determine the feasibility of removing Klamath dams. The most significant gap in the process is an understanding of the physical and chemical nature of accumulated reservoir sediments behind each structure. The character of the sediments will determine the sediment management approach, the single issue that drives dam removal costs. The study, under review for funding by the Coastal Conservancy, would directly address this gap and would provide decision-makers information critical to determining whether removing Klamath dams is advisable.

In addition, confidential negotiations involving key stakeholders in the Klamath basin are underway, with the aim of reaching a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. If funded by the Coastal Conservancy, the proposed sediment study would provide information essential to reaching agreement at a critical juncture in negotiations. Without funding from the Coastal Conservancy, it is highly unlikely that this information will ever be developed.

Thank you for your consideration.

Sincerely,

Brian R. Barr
Program Officer, Wildlands Restoration
World Wildlife Fund, Klamath-Siskiyou Ecoregion

Charlton H. Bonham
Trout Unlimited
828 San Pablo Avenue, Suite 208
Albany, CA 94706

June 7, 2005

Douglas Bosco, Chair
Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Chairman Bosco:

As a stakeholder in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams, Trout Unlimited is writing to respectfully request that the California Coastal Conservancy support funding for the proposed study of sediments trapped by Klamath River dams.

The Klamath River was once one of the most productive salmon rivers on the West Coast, and sustained thousands of fishing jobs throughout northern California and southern Oregon. Klamath salmon also supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. Because Klamath salmon spend up to three years in the ocean, they contribute to a healthy ocean ecosystem. Today, Klamath salmon populations have plunged to less than 10 percent of historic numbers, and this has had devastating consequences for tribes and coastal fishing communities. In fact, while the Sacramento River is expected to see a record number of returning salmon this year, the Pacific Fishery Management Council reduced harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay California to Coos Bay Oregon because of the vulnerable Klamath salmon stocks mix in the ocean with populations from other rivers. These cuts represent an economic loss of more than $100 million to the northcoast commercial fishing industry alone, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

Klamath River dams operated by PacifiCorp block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath basin. Potential removal of Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydroelectric facilities and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding lack sufficient information to determine the feasibility of removing Klamath dams. The most significant gap is determining the physical and chemical nature of the accumulated reservoir sediments. The character of the sediments will determine what approach would be required to manage sediments, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable. In addition, as with many FERC relicensings, settlement is often the outcome. Thus, it is possible that stakeholders in this relicensing could reach a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. The proposed study would produce information useful for that possibility as well. Without funding from the Coastal Conservancy, it is highly likely this information would never be developed.

Thank you for your consideration.

Sincerely yours,

Charlton H. Bonham
California Counsel
Trout Unlimited

FRIENDS OF THE RIVER

915 20th Street, Sacramento, CA 95814
916/442-3155 • FAX: 916/442-3396 • E-mail: info@friendsoftheriver.org • www.friendsoftheriver.org

June 6, 2005

CALIFORNIA'S STATEWIDE RIVER CONSERVATION ORGANIZATION

Douglas Bosco, Chair
Coastal Conservanc y
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

As a stakeholde r in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams, Friends of the River is writing to urge the California Coastal Conservanc y to support funding for the propose d study of sediments trapp ed by Klamath River da ms.

The Klamath River w as one of the most producti ve salmon rivers on the West Coast, and sustained thousands of fi shing jobs throughout northern California and southern Oregon. Klamath salmon also supported the health, cultur e and livelihoods of Native Americ an tribes from the coast to the upp er Klamath basin, some 2 50 miles inland. B ecause Klamath salmon spend up to three years in the oc ean, they contribute to a health y ocean ecosystem. Today, Klamath salmon populations have plunge d to less than 10 percent of historic numbers, and this has ha d devastating consequences for tribes and coastal fishing communities. In fact, while the Sacramento River is expected to see a r ecord number of returning salmon this year, the Pacific Fishery Management Council redu ced harvest levels for all salmon b y up to 50 percent in ports f rom Half Moon Bay California to Coos Bay Oregon because the vulnerable Kl amath salmon stocks mix in the ocean wi th populations from other rivers. These cuts represent an economic loss of more than $100 million to the northcoast commer cial fishing industry alone, and the National Oc eanic and Atmospheric Administration is consid ering declaring an economic disaster as a r esult.

Klamath River dams ope rated by PacifiCorp bloc k salmon, steelhead and other anadromous fish from rea ching more than 300 miles of historic spawning and rearing habitat in the upper Klamath basin. Potential removal of Klam ath River dams as a m eans of restoring Klamath salmon populations has been a topic of consider ation in the F ederal Energy Regulatory Commission (F ERC) relicensing proceeding since 2000. FERC has completed scopin g for its Environmental Impact Statement for the proje ct, which will assess retirin g some or all hydroelectric facilities and potential operational ch anges, and ex pects to issue a relic ensing decision in Decemb er 2006.

Decision-make rs in the FERC proceedin g lack su fficient information to det ermine the feasibilit y of removing Klamath dams. The most sig nificant gap is determi ning the physical and chemic al nature of the ac cumulated res ervoir sediments. The cha racter of the sediments will determine what app roach is requir ed to mana ge sediments, which coul d dramaticall y affect the potential costs of dam removal. Th e proposed study directly addresses this gap and provides de cision-makers inform ation that is critical to determinin g whether removing Klamath dams is advisab le.

CALIFORNIA TROUT

KEEPER OF THE STREAMS

June 3, 2005

Douglas Bosco, Chair
Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

As a stakeholder in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams, California Trout is writing to urge the California Coastal Conservancy to support funding for the proposed study of sediments trapped by Klamath River dams.

The Klamath River was once one of the most productive salmon rivers on the West Coast, and sustained thousands of fishing jobs throughout northern California and southern Oregon. Klamath salmon also supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. Because Klamath salmon spend up to three years in the ocean, they contribute to a healthy ocean ecosystem. Today, Klamath salmon populations have plunged to less than 10 percent of historic numbers, and this has had devastating consequences for tribes and coastal fishing communities. In fact, while the Sacramento River is expected to see a record number of returning salmon this year, the Pacific Fishery Management Council reduced harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay California to Coos Bay Oregon because of the vulnerable Klamath salmon stocks mix in the ocean with populations from other rivers. These cuts represent an economic loss of more than $100 million to the northcoast commercial fishing industry alone, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

Klamath River dams operated by PacifiCorp block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath basin. Potential removal of Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydroelectric facilities and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding lack sufficient information to determine the feasibility of removing Klamath dams. The most significant gap is determining the physical and chemical nature of the accumulated reservoir sediments. The character of the sediments will determine what approach would be required to manage sediments, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would

the Northcoast Environmental Center

7 June 2005

Douglas Bosco, Chair
Coastal Conservancy, ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

As a stakeholder in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams, the Northcoast Environmental Center is writing to urge the California Coastal Conservancy to grant funding to study sediments trapped behind the Klamath River dams.

The Klamath-Trinity River was once the third–most productive salmon river on the West Coast, providing many thousands of fishing jobs on North Coast of California and Oregon. Klamath salmon also supported Indian tribes from the coast to the upper Klamath basin, more than 250 miles upstream. Because these fish spend up to three years in the ocean, they also contribute to a healthy ocean ecosystem. Klamath salmon populations, now however, have plunged to less than 10 percent of historic numbers, adversely affecting tribes and coastal fishing communities. The Pacific Fishery Management Council reduced harvest levels for all salmon this year to protect weak Klamath stocks. The move represents an economic loss of more than $100 million to the North Coast commercial fishing industry alone and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

Klamath River dams operated by PacifiCorp block salmon and other anadromous fish from reaching some 350 miles of historic spawning and rearing habitat in the upper Klamath basin. Potential removal of Klamath River dams as a means of restoring Klamath salmon populations is a serious topic of consideration in thePacifiCorp Federal Energy Regulatory Commission (FERC) relicensing proceeding.. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydroelectric facilities and potential operational changes, and expects to issue a relicensing decision in 2006.

Decision-makers in the FERC proceeding lack sufficient information to determine the feasibility of removing Klamath dams. The most significant gap is determining the physical and chemical nature of the accumulated reservoir sediments. The character of the sediments will determine what approach would be required to manage sediments, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

As well, PacifiCorp has convened confidential negotiations among key Klamath baisn stakeholders in the Klamath basin to achieve an agreement as to what conditions the Klamath hydropower project should be relicensed. If funded by the Coastal Conservancy, the proposed sediment study could provide information essential to reaching agreement at a critical juncture in negotiations.

Thank you for your consideration in this important matter.

Sincerely,

Tim McKay, executive director

TM/me
CC: Congressman Mike Thompsen, Senator Wes Chesbro, Assemblymember Patty Berg

575 H STREET ~ ARCATA, CA 95521
(707) 822-6918 – Fax (707) 822-0827 ~ email: tim@yournec.org

WATERWATCH

PROTECTING NATURAL FLOWS IN OREGON RIVERS

June 13, 2005

Douglas Bosco, Chair
Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

RE: Support for Funding Klamath River Dams Sediment Study

Dear Mr. Bosco:

WaterWatch is writing to urge the California Coastal Conservancy to support funding for the proposed study of sediments trapped by Klamath River dams. The proposed sediment study would provide timely information essential to informed decision-making over the fate of these dams. WaterWatch is an Oregon river conservation organization of approximately 900 members. WaterWatch is a stakeholder in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams and has been working on Klamath Basin water issues for the last decade.

The Klamath River, located in both California and Oregon, was once one of the most productive salmon rivers on the West Coast. Klamath salmon have supported the health, culture and livelihoods of several Native American tribes and coastal fishing communities from Coos Bay, Oregon to Fort Bragg, California. Today, Klamath salmon populations have plunged to less than 10 percent of historic numbers, and this has had devastating consequences for tribes and coastal fishing communities.

The PacifiCorp dams on the Klamath River keep Klamath River salmon and steelhead from their historic spawning areas in Oregon and California reducing the productivity of the whole basin. Currently there is a unique opportunity to consider removal of Klamath River dams as a means of restoring Klamath salmon populations as a result of the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams. There currently is insufficient information on the physical and chemical nature of the accumulated reservoir sediments, which is essential to appropriate decision-making and consideration of the dam removal option. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

Funding from the Coastal Conservancy is critical to the timely development of this important information so that this opportunity to restore Klamath salmon is not lost.

Thank you for your consideration.

Sincerely,

WaterWatch
Robert G. Hunter, Staff Attorney

Main Office: 213 SW ASH ST. STE. 208 PORTLAND, OR 97204 TEL: 503-295-4039 FAX: 503-295-2791
Field Office: 27 NORTH IVY ST. MEDFORD, OR 97501 TEL: 541-772-6116 FAX: 541-779-0791
Visit us at: www.waterwatch.org

Northern California/Nevada Council Federation of Fly Fishers

June 9, 2005

Douglas Bosco, Chair
Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Chairman Bosco:

As a stakeholder in the ongoing relicensing proceeding for the PacifiCorp's Klamath River dams, Northern California Council, Federation of Fly Fishers (NCCFFF) is writing to respectfully request that the California Coastal Conservancy support funding for the proposed study of sediments trapped by the Klamath River dams.

The Klamath River was once one of the most productive salmon rivers in the West Coast, and sustained thousands of fishing jobs throughout northern California and southern Oregon. Klamath salmon also supported the health, culture and livelihoods of Native American tribes from the coast to the upper Kamath basin, some 250 miles inland. Because Klamath salmon spend up to three years in the ocean, they contribute to a healthy ocean ecosystem. Today, Klamath salmon populations have plunged to less than 10 percent of historic numbers, and this has had devastating consequences for tribes and coastal fishing communities. In fact, the Pacific Fishery Management Council reduced harvest levels for all salmon by up to 50 percent in the ports from Half Moon Bay, California, to Coos Bay, Oregon, because of the vulnerable Klamath salmon stocks mix in the ocean with populations from other rivers. These cuts represent an economic loss of more than $100 million to the north coast commercial fishing industry alone, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

Klamath River dams operated by PacifiCorp block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath basin. Potential removal of Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydroelectric facilities and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding lack sufficient information to determine the

feasibility of removing Klamath dams. The most significant gap is determining the physical and chemical nature of the accumulated reservoir sediments. The character of the sediments will determine what approach would be required to manage sediments, which could dramatically affect the potential costs of dam removal. The proposed sudy would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable. In addition, as with many FERC relicensings, settlement is often the outcome. Thus, it is possible that stakeholders in this relicensing could reach a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. The proposed study would produce information useful for that possibility as well. Without funding from the Coastal Conservancy, it is highly likely this information would never be developed.

Thank you for your consideration and time for review.

Sincerely,

C. Mark Rockwell, DC

Dr. C. Mark Rockwell, D.C.
V.P. Conservation, Northern California Council,
Federation of Fly Fishers
19737 Wildwood West Dr.
Penn Valley, CA 95946

Klamath Forest Alliance
HCR 4- Box 610
Forks of Salmon, CA 96031

Salmon River Restoration Council
PO Box 1089
Sawyers Bar, CA 96031

June 8, 2005

Douglas Bosco, Chair
Coastal Conservancy
ATTN: Michael Bowen
1330 Broadway Ave., 11th Floor
Oakland, CA 94612

Dear Mr. Bosco:

As a stakeholder in the ongoing relicensing proceeding for PacifiCorp's Klamath River dams, the Klamath Forest Alliance and the Salmon River Restoration Council are writing to urge the California Coastal Conservancy to support funding for the proposed study of sediments trapped by Klamath River dams.

The Klamath River was once one of the most productive salmon rivers on the West Coast, and sustained thousands of fishing jobs throughout northern California and southern Oregon. Klamath salmon also supported the health, culture and livelihoods of Native American tribes from the coast to the upper Klamath basin, some 250 miles inland. Because Klamath salmon spend up to three years in the ocean, they contribute to a healthy ocean ecosystem. Today, Klamath salmon populations have plunged to less than 10 percent of historic numbers, and this has had devastating consequences for tribes and coastal fishing communities. In fact, while the Sacramento River is expected to see a record number of returning salmon this year, the Pacific Fishery Management Council reduced harvest levels for all salmon by up to 50 percent in ports from Half Moon Bay California to Coos Bay Oregon because of the vulnerable Klamath salmon stocks mix in the ocean with populations from other rivers. These cuts represent an economic loss of more than $100 million to the northcoast commercial fishing industry alone, and the National Oceanic and Atmospheric Administration is considering declaring an economic disaster as a result.

Klamath River dams operated by PacifiCorp block salmon, steelhead and other anadromous fish from reaching more than 300 miles of historic spawning and rearing habitat in the upper Klamath basin. Potential removal of Klamath River dams as a means of restoring Klamath salmon populations has been a topic of consideration in the Federal Energy Regulatory Commission (FERC) relicensing proceeding for these dams since 2000. FERC has completed scoping for its Environmental Impact Statement for the project, which will assess retiring some or all hydroelectric facilities and potential operational changes, and expects to issue a relicensing decision in December 2006.

Decision-makers in the FERC proceeding lack sufficient information to determine the feasibility of removing Klamath dams. The most significant gap is determining the physical and chemical nature of the accumulated reservoir sediments. The character of the sediments will determine what approach would be required to manage sediments, which could dramatically affect the potential costs of dam removal. The proposed study would directly address this gap and would provide decision-makers information that is critical to determining whether removing Klamath dams is advisable.

In addition, confidential negotiations involving key stakeholders in the Klamath basin are underway, with the aim of reaching a settlement agreement on whether and under what conditions the Klamath hydropower project should be relicensed. If funded by the Coastal Conservancy, the proposed sediment study would provide information essential to reaching agreement at a critical juncture in negotiations. Without funding from the Coastal Conservancy, it is highly likely this information would never be developed.

Thank you for your consideration.

Sincerely,

Petey Brucker

Petey Brucker
Klamath Forest Alliance – River Program Coordination
Salmon River Restoration Council – Community Restoration Program Coordinator

Submission Contents