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February 4, 2008

Enloe Hydroelectric Project  
Draft License Application Comments  
1331 Second Avenue North  
P.O. Box 912  
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**Re: Enloe Hydroelectric Project, Project No. 12569  
Comments on the Draft License Application**

To Whom It May Concern:

On November 7, 2007, Public Utility District No. 1 of Okanogan County (Okanogan PUD) issued for public comment its draft license application (DLA) for the Enloe Hydroelectric Project. American Rivers, the Center for Environmental Law and Policy, the Selkirk Conservation Alliance, the North Cascades Conservation Alliance, the Cascade Chapter of the Sierra Club, and the Columbia River Bioregional Education Project (collectively, the Conservation Groups) appreciate the opportunity to comment on the draft license application, dated November 2007. We have reviewed the document and offer the following comments.

**I. Overarching Comments**

*A. The DLA Fails to Clearly Define the Proposed Operations of the Enloe Hydroelectric Project*

A fundamental requirement of a draft license application is a clear and comprehensive description of how the proposed project will be operated. The DLA falls short in providing that description. There are repeated references to normal operations, however, the DLA fails to identify what constitutes normal. Of particular concern is the failure to specify what, if any, flow will be provided to the Similkameen River below Enloe Dam.

The DLA states that normally there is sufficient flow to operate at full capacity during the spring/summer freshet and that for the rest of the year output would be regulated according to flow in the river. (DLA, p. A-1). It also states the headworks divert a “portion” of streamflow from the Similkameen River and convey it to the intake. (DLA, p. A-6).

Further, flows in the reach below Enloe Dam would be reduced and dewatered during low flows. (DLA, p. E.3-29). While it is not at all clear, presumably, Okanogan PUD is proposing to divert the entire flow of the Similkameen River into the powerhouse because of its assertion that the river will be dewatered at certain times. However, the DLA does not specify at what flows the reach will be dewatered, the percentage of time during the year that dewatering will occur, and so forth. The final license application must provide significantly more detail regarding the proposed operations and the amount of water to be provided to the Similkameen River below the dam. And, for the reasons outlined throughout these comments, water must be provided to the Similkameen River, including the reach below Enloe Dam, at all times and in sufficient amounts to adequately protect aquatic resources in the river and other designated beneficial uses.

In addition, the DLA includes neither a proposed ramp rate during times of shut down or changes to project operations, nor an adequate discussion of how the crest gates will be operated during unscheduled outages to ensure continuous flow in the river. These measures (or an alternative to achieve the same objectives) have been repeatedly discussed and called for in the PUD's past attempts to relicense the project, but are not discussed adequately in the current DLA. We urge the PUD to more fully develop these measures, both of which are critical to protecting aquatic resources below the project and should be included in any future proposal.

#### *B. DLA Fails to Adequately Address Water Quality Impacts*

Section 401 of the Clean Water Act establishes that “[a]ny applicant for a Federal license or permit to conduct any activity . . . which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates . . .” (33 U.S.C. §1341(a)(1)). The Act further states that any certification provided pursuant to section 401 shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with [§§ 1311, 1312, 1316, 1317] and with any other appropriate requirement of State law set forth in such certification, and shall become a condition on any Federal license or permit subject to the provisions of this section. (33 U.S.C. §1341(d)). In sum, before a federal agency, in this case the Federal Energy Regulatory Commission, may issue a license for any project that may result in a discharge to navigable waters, the state must certify that the proposed project will comply with applicable state water quality standards.

Prior to issuance of a Clean Water Act Section 401 water quality certification, Ecology must find that there is reasonable assurance that the proposed action – relicensing the Enloe Hydroelectric Project – will comply with state water quality standards. Evaluation of water quality standards compliance requires findings for whether or not all components of standards will be met. Standards consist of three components: (1) existing or potential beneficial uses of the waterbody, (2) specific numeric and narrative criteria needed to support the designated beneficial uses; and (3) an anti-degradation component.

The DLA references some of the criteria at issue with the relicensing of the project, but fails to include all the relevant standards that must be met. WAC 173-201A-600 identifies

the designated uses in the Similkameen River: salmonid spawning, rearing and migration; primary contact recreation; domestic, industrial and municipal water supply; stock watering; wildlife habitat; harvesting; commerce and navigation; boating; and aesthetic values. In addition, the lower Similkameen has been identified as needing additional spawning and incubation protection under WAC 173-201A-200(1)(c)(iv). The DLA contains limited analysis of the various designated uses, focusing on three criteria related to salmonid use. These include temperature, dissolved oxygen, and total dissolved gas.

The DLA falls short with regard to water quality in several regards. First, the limited analysis set forth in the DLA focuses on existing conditions rather than potential impacts of the project. For example, there is no analysis of how an increase in storage volume in the reservoir may affect reservoir temperatures as well as lower river temperatures. At a minimum, Okanogan PUD should model the proposed scenarios, followed by a comprehensive monitoring program during the life of any new license. Second, the limited analysis of total dissolved gas (TDG) impacts of the project precludes the ability to make any conclusions regarding those overall impacts. The study conducted by Okanogan PUD is limited to a few days in the spring and fails to consider potential effects on TDG during times of higher temperatures. The PUD assumes that TDG issues will be resolved by running the water through the turbines and bypassing the falls. However, there is no analysis or modeling of this proposed action. The PUD has not adequately studied or addressed the TDG problem. Third, with regard to water temperature, the DLA asserts that the project will not violate Washington state water quality standards because it will not result in an increase of .3°C above natural background conditions in the river. This conclusion does not appear to be supported by the data provided in Appendix B to Appendix E.2.1 of Exhibit E. Appendix B sets forth 7DADMax Temperatures in the Similkameen River. While it is not entirely clear where the measurements were taken – River 1, River 2, River 4, River 6 – we assume that they represent temperature measuring points within the Project area. The data in this Appendix identifies multiple violations of the .3°C limitation.

Importantly, while not entirely clear as noted above, it appears that the project will completely dewater the reach below the dam and Similkameen Falls at certain times of the year. Such a proposal ignores designated uses of the river – aesthetics, salmonid spawning and rearing. In coordination with interested stakeholders and the Washington Department of Ecology, the PUD should undertake a study to analyze various flow levels in the Similkameen River and over the falls and identify a flow regime that will adequately protect the designated beneficial use of aesthetics. Similarly, dewatering of a river has the potential to affect macroinvertebrate drift, which would adversely affect salmonid and resident fish species that utilize the Similkameen River below the falls. The DLA concludes that the macroinvertebrate production in the river below the dam is likely limited due to a number of factors, but it has not provided any data to support this claim. The PUD should undertake the necessary field studies to accurately assess the production. In either situation, flows must be provided in the Similkameen River to ensure protection of designated beneficial uses; the question is the appropriate level of such flows.

In addition to ensuring protection of the designated uses, the Environmental Protection Agency's regulations implementing the Clean Water Act require that states adopt anti-degradation policies to ensure that existing instream water uses and the level of water quality

necessary to protect the existing uses shall be maintained and protected. (40 C.F.R. 131.12). Washington's anti-degradation policy is set forth in Part III of Washington's water quality standards for surface waters for the State of Washington, Chapter 173-201A WAC. The state's anti-degradation policy calls for restoration and maintenance of the highest possible quality of the surface waters of Washington. The policy requires that existing uses be maintained and protected, with no degradation that interferes with or injures such existing uses. (WAC 173-201A-310). The DLA fails to address how the proposed project will meet this requirement. Dewatering of a reach that is currently watered is wholly inconsistent with the anti-degradation requirements.

Finally, as noted in the January 13, 2006 letter from the Washington Department of Ecology to Okanogan County PUD, the state requires no net loss of wetlands. The DLA acknowledges that wetlands will be lost as a result of the increased reservoir storage, but fails to identify how that impact will be addressed and how the no net loss requirement will be met. In addition to state requirements, Clean Water Act section 404 guidelines prohibit the discharge or disposal of dredged or fill material if that discharge will adversely impact wetlands if a less damaging practicable alternative is available. 40 C.F.R. § 230.10(a). The past three administrations have embraced the concept of "no-net-loss" of wetlands. The DLA must address the issues associated with the loss of wetlands caused by the project.

### *C. The DLA Fails to Adequately Assess Historic Range of Anadromous Salmonids*

Okanogan PUD has tried to relicense the Enloe Hydroelectric Project three times prior to the current effort. In each of the previous proceedings, the issue of fish passage at the project has played a central role. Parties to those proceedings have differed greatly in their views of whether anadromous salmonids, in particular steelhead, ever passed Similkameen Falls to access miles of habitat in the Similkameen drainage. Significant documentation was provided in each of those proceedings regarding the question of fish passage, making it clear that there is no conclusive evidence that Similkameen Falls served as a barrier to fish passage. The PUD has not undertaken any additional study since the last relicensing effort, yet it again asserts that the Falls is a documented barrier to fish passage. We disagree and request that the PUD conduct the necessary studies to resolve the issue.

The record is replete with information calling into question the PUD's assertions. In its November 1991 filing, the Columbia River Inter-Tribal Fish Commission stated that it disagreed with the PUD's assertion that natural falls have historically represented the upper terminus of anadromous fish migration. It identified several studies that documented salmon and steelhead well into the Canadian Similkameen Basin. (CRITFC Petition to Intervene and Request for Studies, November 27, 1991). The Confederated Tribes of the Colville Reservation similarly questioned the PUD's assertion, noting that there is strong evidence that salmon utilized at least part of the Similkameen River above the Enloe Project before the dam was built. (Confederated Tribes of the Colville Reservation Petition for Leave to Intervene, November 25, 1991). The U.S. Department of Interior argued that "while the evidence at this time may not be clear that anadromous fish ever ascended the Similkameen River above Enloe Falls, neither is there clear evidence to the contrary." (U.S. Department of Interior Request for Rehearing and Finding of No Significant Impact, March 1, 1993, p. 5) Even FERC stated that it found that "the evidence was inconclusive as to . . . the historic presence of anadromous fish above the falls prior to the dam's construction."

(FERC, Order on Rehearing , Rescinding License, Denying License Application, and Terminating Stay, February 23, 2000).

More recently, a report prepared for the Colville Tribes, Department of Fish and Wildlife, states that “photographic interpretations of the falls suggest possible passage” and that “[t]he presence of redband trout upstream of Enloe Dam . . . gives strong evidence that at certain times these falls were likely passable by Interior Columbia River Redband Steelhead. (Aterburn, K. Kistler, and C. Fisher, Barriers to Anadromous Fish in the Okanogan Basin, January 2007). In addition, the National Marine Fisheries Service recently adopted its recovery plan for Upper Columbia listed stocks. In NMFS’ response to comments, the agency stated:

“NMFS agrees with the commenter that there is a possibility that steelhead once made it past the natural barrier where Enloe Dam is presently located. Studies show that many miles of high quality habitat exist in the Similkameen River above Enloe Dam. If passage were provided, the upper Similkameen River could become an important area for recovery of the Okanogan steelhead population, especially if actions in other areas of the Okanogan watershed are not successful. NMFS will wait for discussions to be completed with FERC, tribal governments, and others before providing a final position on passage.” (NMFS Responses to Public Comments On the Proposed Upper Columbia Spring Chinook Salmon and Steelhead Recovery Plan, September 2007).

The need to resolve the issue of the historic extent of fish runs in the Similkameen River prior to construction of Enloe Dam has been around for years. For example, the National Marine Fisheries Service, in its June 1, 1992 filing in one of the previous attempts to relicense the project, stated that “[d]espite the clear potential for anadromous fisheries in the Similkameen River Basin, there is an unresolved issue of the presence of anadromous fish in the Similkameen River Basin prior to construction of Enloe Dam.” (National Marine Fisheries Service Comments, Recommendations, and Fishway Prescriptions and Conditions, June 1, 1992, p. 3). This sentiment is repeated throughout the history of relicensing efforts at the Enloe Project. Nonetheless, the PUD has failed to conduct scientific studies that would help resolve the issue. In an effort to resolve the issue, we urge the PUD to undertake the studies set forth in the January 8, 2008 letter to Dan Boettger, Okanogan Public Utility District from Virginia Butler, Portland State University. (Attached)

In addition, the final application should include detailed information regarding the intensive mining that took place in the Similkameen River, beginning in the 1860s. The intensive mining undoubtedly had an adverse impact on the health of the Similkameen River, including any fish species that inhabited it. This information is critical to inform the issue of fish presence above the Falls.

Finally, the final license application should reference the unresolved nature of the issue rather than repeatedly asserting that Similkameen Falls serve as a complete barrier to anadromous fish. The data does not support such a conclusion.

#### *D. The DLA Fails to Provide Critical Context Regarding Fish Passage*

As already noted, Okanogan PUD has made three previous attempts to relicense the Enloe Hydroelectric Project. In each instance, FERC rescinded licenses that had been issued, the most recent on February 23, 2000. In part, the rescission was a result of an unresolved fish resource issues, including fish passage. As FERC noted in its September 13, 1996 Order Issuing License, “[t]he obstruction to fish passage at Enloe Dam has long been recognized, and several efforts to address this problem have been undertaken during the last 20 years.” (FERC, Order Issuing License, February 23, 1996). The issue of historic access above the falls has played an important role in this critical discussion, but is not the only factor informing the discussion. The DLA should provide a much more comprehensive discussion of the fish passage issue including relevant legislation. A good summary of it can be found both in FERC’s 1996 Order Issuing License and in the 1996 National Marine Fisheries Service’ Comments, Recommendations, and Fishway Prescription and Conditions.

The Similkameen River has long held the promise of mitigating for the massive loss of salmon caused by Columbia River mainstem dams. In 1976, Congress, in Title II of the Reclamations Authorizations Act of 1976, directed the Secretary to undertake “measures necessary to provide fish passage and propagation in the Similkameen River” as part of development of the Oroville-Tonasket unit extension, Okanogan-Similkameen division, Chief Joseph Project. Accompanying the legislation was the U.S. Senate’s Committee on Interior and Insular Affairs report (No. 94-1122) that stated that “[F]ishery enhancement will be accomplished by providing access to forty miles of potential spawning and rearing areas in the Similkameen River above the existing Enloe Dam .... Enloe Dam and powerhouse were constructed in the 1920s but use was discontinued in the early 1950’s. Alternatives for providing fish passage at Enloe Dam include dam removal or fish laddering.”

A 1977 Bureau of Reclamation study found that removal of Enloe Dam would be the preferred method for accomplishing the requirements of the Act. Much action was taken in the subsequent years regarding this issue. Pursuant to the Pacific Northwest Electric Power Planning and Conservation Act, the Northwest Power Planning Council proposed that the Bonneville Power Administration (BPA) provide funds for passage at Enloe Dam. BPA then undertook a study evaluating several passage alternatives. In 1983 BPA published its Similkameen River Habitat Inventory, and concluded that “[s]molt production from the system was estimated at about 610,000 steelhead trout and between 1.6 million and 4.8 million Chinook salmon. No water quality, temperature or flow problems for anadromous salmonids were evident from the available data and the habitat inventory.”

Throughout the previous FERC proceedings, fish passage has uniformly been recommended and required. In one form or another, it has been supported by federal agencies, tribes and other stakeholders. Dam removal, fish ladders, and constructing the project so that it could later be retrofitted with fish passage facilities have all been discussed. At one point, the U.S. Department of Interior argued that upstream passage at Enloe dam should be considered as off-site enhancement for the mainstem Columbia River anadromous fish losses as well as mitigation for the construction and reactivation of the Enloe Dam Project. It further argued that regardless of the issue of historic habitat, neither the Federal Power Act nor Commission regulations require the historical presence of anadromous fish as justification for a prescription of fish passage. Ultimately, Interior argued that prior to

authorizing construction and operation of the project, the Commission should not only assure that the project would be compatible with future installation and operation of fish passage facilities but it must resolve the issue of funding. (U.S. Department of Interior Request for Rehearing and Finding of No Significant Impact, March 1, 1993). Either way, this issue needs to be addressed in the current effort to relicense the project.

The DLA excludes information, including federal law, critical to the question of fish passage at the Enloe Hydroelectric Project. The Conservation Groups strongly urge the PUD to provide significantly more discussion of the issue in the final application.

*E. The DLA Provides Insufficient Information on the Need for Power and the Value of Generation*

Marginal economic value has been a central issue throughout the history of Enloe Dam. The Conservation Groups request that the PUD provide additional and more detailed data on the need for power, the value of generation, and on other project benefits in its final license application. Such data would provide a better understanding of project economics and would allow public, agency (including FERC), tribal and other stakeholders to accurately weigh the value of potential power production against the impacts to the Similkameen River and related resources.

As the PUD notes, the original project was decommissioned in 1958 because lower cost energy was available from other sources. In subsequent licensing efforts, FERC rescinded licenses for this project on the grounds that the anadromous fishery issues had to be resolved before a licensing decision could be made. While fish passage played a role in the economics of each of these licenses, it did not stand alone. As FERC stated in its February 23, 2000 Order on Rehearing, Rescinding License, Denying License Application, and Terminating Stay “[T]he obligation to construct and operate a fish ladder would significantly increase the costs of a project that already appears to be uneconomical.”

In its July 2005 Initial Consultation Document, the PUD stated that it believes that it is “feasible to resolve the fish passage issues . . . and therefore, it has a renewed interest in developing the site”. (ICD, Project History, p. 2). In support of this, the PUD has referenced a number of new economic factors which they believe benefit the value of this project, including: (1) rehabilitating an existing facility; (2) projected generation needs; (3) community benefits from construction and employment; (4) cost of relicensing; and (5) value in replacing carbon-fuel energy.

Unfortunately, the DLA does not provide adequate supporting evidence that demonstrates how these factors would change or improve the economics of a new Enloe Hydroelectric Project. Nor does the DLA discuss how the proposed and interrelated (economically and environmentally) Shanker’s Bend project would change the hydroelectric operations of the Enloe Project. Thus a more comprehensive study of overall project economics (including the Shanker’s Bend project) would be of great value and should be included in a final application. We touch on some of the PUD’s rationales for its renewed interest below.

### Projected generation needs

The DLA states that “[a]ll feasible power generation is needed to meet forecasted demand in the District Service Area.” Table B-5 shows that the annual average load growth for the past 18 years has been less than 10MW, while Table B-6 shows that the annual average load projected for the next 11 years has increased to 25MW. The DLA neither supports nor justifies this purported 150% annual increase. The final application should explain where this projection increase will come from, especially in light of the assertion that the region is expecting “mostly residential growth, with some commercial growth but very little industrial growth” and Table E.5-4 which shows that total population growth in Okanogan County has been much slower than the state as a whole (less than 1% between 2000 and 2005), as well as a lower growth in per capita income than other areas of the state (42%).

### Community benefits from construction and employment

The DLA discusses the expected economic benefits to the local community from construction and operation of the Enloe Project. While construction will certainly benefit local employment, this benefit is short term; the longer term benefits of operation are usually very small to nonexistent at hydropower projects. This would seem to be confirmed. The DLA states “[a]lthough not finalized at this point, it appears that there will be no long term increase in on-site employment or payroll within the impact area due to the operation of the Project.” (DLA, p. E.5-6) The final application should expand this discussion and provide hard numbers in terms of employment.

### Value in replacing carbon-fuel energy

The DLA states that “If a new large capital project were considered to replace market purchases, natural gas or coal-fired generation would be the most likely preferred sources.” (DLA, p.D-6). The DLA further states that replacement generation from a natural gas fired power plant or a coal fired power plant would contribute the equivalent of an estimated 20,000 tons of CO<sub>2</sub> per year or the equivalent of 44,000 tons of CO<sub>2</sub> per year, respectively. (DLA, p. D-7). The Conservation Groups are deeply concerned with the problem of climate change, and we recognize that carbon emissions caused by human activity play a significant role in exacerbating this problem. We also understand the need to lower carbon emissions to reduce the societal impacts of global warming, and we appreciate that hydropower may play some role in solving this problem. However, we believe that the PUD’s statement that this project will leave “no carbon-footprint” and “can contribute to reduced emissions” (DLA, p. D-5) is an overly simplistic consideration of this important issue. This assumes that if Enloe Dam is not built, generation would be replaced by coal-fired or natural gas generation. This analysis does not include or refer to any supporting evidence, and fails to consider other perfectly reasonable options. For example, projected power from Enloe operations could be replaced by other sources of energy that emit significantly less carbon than coal, such as solar or wind. Alternatively, its power could be replaced through energy conservation, such as the existing PUD conservation program which successfully saved more than 5,000 MWh in 2004.

In the final application, we would ask the PUD to provide substantial analysis in support of a realistic consideration of the carbon that could be emitted by various sources of replacement power – including conservation – and to not conclude that the sum of the assumptions listed in the draft will result in a net benefit for the project.

## *F. The DLA Fails to Adequately Consider the Proposed Shanker's Bend Project*

On May 17, 2007, Okanogan PUD applied for a preliminary permit application for the proposed Shanker's Bend Project (FERC Project No. 12804). The project would be located at RM 7.3, with the powerhouse located at RM 6.2. While we realize that the Shanker's Bend Project is not certain to occur, there is no question that it would have a significant impact on operations of the Enloe Hydroelectric Project as well as on the resources of the Similkameen River. In fact, the preliminary permit application for Shanker's Bend states that the two projects will be operated in conjunction. Nonetheless, Okanogan PUD opts to exclude any analysis of the two projects in the DLA, other than to assert that they are compatible. The impacts of the two dams must be considered together, not in a piecemeal fashion. We urge the PUD to defer action on the Enloe Project until there is a better understanding of the status of Shanker's Bend. Given the interrelated nature of the proposed projects, it is premature to move forward on the Enloe Hydroelectric Project.

Moreover, absent consideration of both projects, the Federal Energy Regulatory Commission (FERC) will be unable to take a watershed approach, to adequately assess cumulative impacts as required under the National Environmental Policy Act, and to make the necessary findings under the Federal Power Act. The FPA requires that the project adopted "shall be such as in the judgment of the Commission will be best adapted to a *comprehensive plan* for improving or developing a waterway or waterways for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water-power development, for the adequate protection, mitigation, and enhancement of fish and wildlife (including related spawning grounds and habitat), and for other beneficial public uses, including irrigation, flood control, water supply, and recreational and other purposes. (16 U.S.C. § 803(a)(1)).

## **II. Specific Comments**

In addition to our overarching comments above, we offer the following comments on specific sections of the Draft License Application.

### *Initial Statement (p. IS-3)*

In the discussion of water rights necessary for operation of the Enloe Hydroelectric Project, Okanogan PUD acknowledges that it will need to apply for and receive an additional water right for 600 cfs in order to fully develop the Project. As the WA Department of Ecology states in its January 13, 2006 letter to the PUD, "there is no guarantee that a certification will be issued." As such, the final license application should include an analysis of project operations, power generation, and economics should a water right be denied.

### *Exhibit A – Project Description*

#### *Section A.2 – Impoundment (p. A-11)*

The DLA describes the reservoir as being fairly shallow due to the accumulation of sediment. The Enloe project, like all reservoirs, will continue to fill with sediment, and therefore, the storage and generating capacity of the Project will continue to diminish over

time. The final application should discuss sediment inputs, diminishing storage, and corresponding impacts on generation over the life of the license. Such discussion should include a timeline estimate of when sedimentation would prevent or seriously compromise power generation and plans, if any, for sediment removal.

The DLA relies on studies conducted more than 15 years ago to support its claim that thermal stratification does not occur in Enloe Reservoir. The final application should explain how 15-year old data is still applicable. And, importantly, the PUD should include additional analysis of the impact of an increase in the water surface elevation and size of reservoir on thermal stratification.

#### *Exhibit B – Project Operation and Resource Utilization*

As outlined above, Okanogan PUD must include a much more comprehensive, detailed description of how it plans to operate the Enloe Project. There are some fundamental components that are critical to understanding the impacts of the Project. These include but are not limited to: (1) minimum flows adequate for aquatic resource protection and aesthetics in the Similkameen River below Enloe Dam and how those will be provided and monitored; (2) ramping rates and how those will be controlled; (3) crest gate raising and lowering; and (4) how the crest gates will be operated during times of unscheduled outages. Absent a more comprehensive plan, it is not possible to accurately assess the impacts of the Project on the resources of the Similkameen River. Moreover, exclusion of critical protection measures, including flows and ramping rates, both of which have been required in previous licenses, will result in inadequate protection, mitigation, and enhancement of affected resources.

#### *Section B.2 – Alternative Facility Designs, Processes and Operations Considered (p. B-4)*

The DLA lists several alternative intake designs that were considered but fails to provide a comprehensive discussion of the characteristics of each one and the potential level of protection that they would be provide to fish resources. Rather, the DLA just asserts that the trashrack was selected, in part because of the different survival of fish that become entrained. The underlying analysis, however, is insufficient, to conclude that the trashrack will be sufficient and that the other alternatives are not needed.

The survival estimates upon which the PUD is relying are identified later in the document, p. E.3-27, and are based on predictive models developed by the U.S. Department of Energy's Advanced Hydro Turbine System Program (Franke, et. Al. 1997). The PUD has not adequately explained why those predictive models are applicable to and representative of the two vertical axis Kaplan turbine/generator units that will be installed. The final application requires significantly more information in order to assess the adequacy of the proposed measure and justify rejection of more protective ones. This information is particularly essential in light of filings in previous proceedings that required the PUD to install a more protective screen at the intake as well as FERC's Order Issuing License that required a fish screen (FERC Order Issuing License, September 13, 1996).

*Section B.5 – System and Regional Power Needs  
Conservation Programs (p. B-20)*

Section 10(a)(2)(C) of the Federal Power Act requires the Commission, in acting on a license application of a state or municipality, to consider the extent of electric consumption efficiency programs. The DLA briefly touches on conservation programs that the PUD is implementing and the savings that have been realized. A mere listing of the programs being implemented, however, does not allow consideration of the overall program as required by law. As evidenced by the savings in 2004, clearly there is the potential for significantly more conservation to be realized. The final application should describe what the PUD's program has consisted of during the past years, what was undertaken in 2004 that led to significantly greater savings, and what the real potential is from conservation. This information is essential to assessing the overall need of the power.

*Section B.6 – Applicant's Plan for Future Development of the Project*

See comments above regarding the proposed Shanker's Bend Project and the need to integrate the analysis.

*Exhibit E – Environmental Report*

*Section E.2.2 – Flows, Water Uses, and Project Discharges Stream Flows (p. E.2-1)*

On page E.2-3, Okanogan PUD states that the Project would divert up to 1,600 cfs of water for generation. As noted earlier, the final application should clarify both (1) impacts on the project should an additional water right not be issued, and (2) how the diversion will occur in relation to a flow in the Similkameen River below the Dam. Diversion of the entire flow of the river will result in failure to protect designated beneficial uses in the Similkameen River.

*Section E.3.2.1 Existing Conditions (p. E.3-1)*

The DLA includes a discussion of fish distribution and abundance that relied in part on surveys conducted in 2006 and 2007. The surveys employed different methods for above and below Enloe Dam. Details of the surveys are set forth in Appendix E.3.1. The surveys in 2006 took place in July, August and September to represent "typical stream temperatures and flows, as well as the presence of fish life stages". In 2007, for the same reason, the surveys took place in March and July. The DLA, however, fails to explain how the months chosen represent the identified parameters, and how this limited analysis would adequately represent conditions at all times of the year. Given that the PUD is relying on this data, and the numbers of fish identified, to justify several of the proposed protection, mitigation, and enhancement measures, the final application should include a more detailed discussion regarding the adequacy of these limited surveys. In addition, it would be beneficial to survey the reach above the reservoir to get a more comprehensive picture of the species that will be affected by both the Enloe and Shanker's Bend Projects.

The DLA references a number of different studies with regard to fish use in the Similkameen River below Enloe Dam. In combination, however, it is challenging to get an accurate picture of fish distribution and abundance in the river. The DLA notes that adult

anadromous fish are most abundant in the river during spawning season, however, because spawning occurs during the spring freshet when flows and turbidity are high, snorkeling observations were not possible. (DLA, p. E.3-8) These conditions seem applicable to steelhead spawning timing, however, they do not justify failure to snorkel survey during summer chinook spawning that occurs during the late fall. (DLA, p. E.3-13) It is not clear why snorkel surveys were not conducted at that time.

In addition, although the PUD did not conduct redd surveys, the DLA references summer chinook and steelhead redd surveys conducted by WDFW and OBMEP respectively. We realize the challenges associated with surveying at different times of year and the potential impact on the accuracy of the findings. It would be beneficial to include a discussion of the conditions under which the various studies were conducted to allow for better understanding of the results. For example, spring flow and turbidity conditions precluded an adult snorkel survey in 2006, yet OBMEP conducted steelhead redd surveys at the time. Under what conditions were the redd surveys undertaken? We urge the PUD to provide greater detail of the various studies, the water years under which they were conducted, and the basis for the survey timing. We also recommend that the PUD, in conjunction with federal and state fishery agencies, tribes, and other stakeholder, undertake additional comprehensive fish distribution and abundance surveys.

*Fisheries Management Framework/Fisheries Resource Management Plans (p. E.3-15 to E.3-16)*

The DLA identifies the authority of the U.S. Fish & Wildlife Service and the National Oceanic and Atmospheric Administration Fisheries as responsibility for fish and wildlife on federal lands. The authority of both agencies is broader and not limited to federal lands. The final application should include a more accurate description of their authorities. It would be helpful if the final application including the following: (1) Status of the Okanogan River Watershed Management Plan; and (2) Date of the Okanogan Subbasin Plan

*Habitat Type and Quality (p. E.3-20)*

The DLA states that the relatively limited amounts of gravel in the river result in limited spawning habitat and that the Similkameen appears to be a naturally gravel starved system. (DLA, p. E.3-22). Several studies are cited in support of this finding. It appears that Entrix conducted a number of studies related to sediment, all of which are in Appendix 6. There is no discussion of the other studies upon which the PUD is relying to conclude that the Similkameen is sediment starved, and it is difficult to identify the actual studies. The final license application should include a discussion of each of the studies, including how they support the finding regarding gravel in the river, and identify them in a manner that allows people to locate and review them.

*Section E.3.2.2. – Impacts*

*Operational Impacts*

*Entrainment of Fish at the Project Intake (p. E.3-27)*

The discussion of entrainment in the DLA lacks critical information necessary to fully understand the impacts of the project. The final application should include the following: (1) explanation of how/whether the turbine survival predictive models are applicable to the

Enloe Hydroelectric Project, (2) greater clarification on what is meant by the statement that smaller fish are not meant to occupy the area to any substantial degree, (3) any spillway survival studies that have been conducted, and (4) support for and relevance of the potential that entrained fish may be replaced by emigration from upstream populations. Even if that were to occur, the population as a whole may decline due to ongoing mortality at the project.

In addition, we disagree with the PUD's assertions that turbine survival is relatively high. For larger non-salmonids, survival could be as low as 77.6%. And, for salmonids, it could be as low as 57.3%. And, there is no data regarding spillway survival that supports the PUD's claim that "there is expected to be little difference in the survival rates of fish passing over the spillway . . . and fish passing through the turbines." (DLA, p. E.3-28). If the PUD has conducted spillway survival studies, please include those in the final application.

*Bypass Reach Impacts (p. E.3-29)*

As already noted, eliminating all flow in the Similkameen River below the dam has unacceptable adverse impacts. In addition to adverse effects on aesthetics and macroinvertebrate drift, dewatering the reach will have a direct impact on those fish that use the reach between the dam and the falls. We disagree with the PUD's claim that impacts would be insignificant.

*Powerhouse and Tailrace Impacts (p. E.3-29)*

We disagree with Okanogan PUD that, based on the existing information, a tailrace barrier is not needed and that the flows will operate as a velocity barrier. There is no discussion of what flows are necessary to create an actual velocity barrier and whether that will exist even at the lowest flow. Moreover, it is difficult to understand how fish will not suffer adverse impacts if they are able to swim upstream into the tailrace and continue through the draft tube into the turbine environment. Certainly, if they are able to access the turbine area during what the PUD describes as normal operations, they will suffer injury or mortality during start up and shut down periods. Recognizing these adverse impacts, in the previous licensing effort, FERC required that the PUD develop a plan to install a "submerged bar rack tailrace barrier to prevent fish from entering the tailrace discharge chamber." (FERC Order Issuing License, September 13, 1996, p. 54). The PUD has not provided any new data that would lead to a different conclusion regarding the need to address the impacts of the project.

*Instream Flows (p. E.3-30)*

*Fish Passage (p. E.3-30)*

Please see discussion above in our overarching comments.

*Section 3.2.3 Protection, Mitigation, and Enhancement Measures*

*Operational Impacts Associated with Sediment (p. E.3-32)*

Analysis of sediment issues in the DLA is limited. It acknowledges some impacts that will occur during project construction, however it fails to adequately assess the issue

of sedimentation impacts on the Similkameen River, including potential and cumulative impacts from ongoing project operation. It does not address annual sedimentation buildup, high historic sedimentation during the spring/summer freshet, or the impacts of sedimentation over the life of the proposed license, including how sedimentation could effect future power generation, dam safety issues, or the need for future dredging of the reservoir. The DLA does not define the expected or potential risk of large sediment discharges from project operations (including crest gate manipulation) on water quality or habitat and navigable waters downstream from the project. Rather, it merely concludes that "sedimentation may accumulate in the intake area or other project facilities during lower flows and become mobilized during higher flows resulting in release of sediment into waterways." (DLA, p. E.3-32). The final application should include detailed data and information regarding each of the sedimentation issues listed above.

*Operational Impacts Upstream of the Dam – Inundation of Riverine Habitat (p. E.3-34)*

To address the impacts of the project resulting from increased storage and inundation of habitat, the PUD proposes to increase structural diversity and improve the quality of habitat by adding boulder clusters. It is difficult to assess what, if any, benefits such action will provide without significantly greater detail. At a minimum, the PUD should commit to implementing a measure that provides a specific amount of biological and habitat improvements.

In addition, the PUD has failed to address the loss of wetlands that will occur as a result of the project. As discussed above, this is not allowed under current law. Therefore, the final application should clarify how the PUD intends to address this loss of wetland habitat. One element of that will be for the PUD to better describe the characteristics of the wetland habitat that will be lost.

*Operational Impacts at the Project Powerplant – Entrainment of Fish at the Project Intake (p. E.3-35)*

To reiterate, the Conservation Groups disagree with the PUD's proposal to address entrainment at the project. Neither the level of potential impacts nor the level of expected benefit identified by the PUD are adequately supported. In addition, there is no way to assess the potential benefits of the downstream enhancement that the PUD refers to because of the lack of detail regarding what the project will actually be. The PUD is relying on the as yet to be defined project to address multiple impacts of the project, entrainment being just one.

The PUD does commit to conducting a turbine entrainment study, which we support provided it is sufficiently comprehensive. However, there is no indication of how the results of the study will be used. Is it the PUD's contention that the single habitat measures proposed for the lower river is to also mitigate for the results of the entrainment study? The final application should provide greater clarity on how this and other monitoring studies will inform protection, mitigation, and enhancement measures.

*Operational Impacts Upstream of the Dam – Riparian Vegetation (p. E.3-37)*

Planting riparian vegetation along the reservoir does not mitigate for the loss of wetland habitat that will occur with project operation.

*Powerhouse and Tailrace Impacts (p. E.3-37)*

Okanogan PUD has not provided sufficient information in its DLA to justify forgoing implementation of a tailrace barrier. Even if the PUD were to move forward without a tailrace barrier, significantly more information must be developed to support the assumption that it can create the appropriate conditions in the tailrace to keep the fish safe.

*Downstream Impacts – Instream Flows (p. E.3-38)*

The final application should include a ramp rate to ensure adequate protection of aquatic resources in the lower river. This should be applied to all flow sources, as practical.

*Downstream Impacts – Protection of Habitat Downstream of Similkameen Falls (p. E.3-39)*

Okanogan PUD proposes to relocate the tailrace in order to mitigate for adverse impacts to habitat downstream of the Falls. It is not entirely clear from where the PUD is relocating the tailrace. Use of the existing project facilities is not feasible for a number of reasons, several of which the PUD has identified. As such, it is not clear how construction of the project can also serve as mitigation for the project. Construction of the tailrace in the proposed location is a component of the project itself, but is not mitigation for its operation. The final application should not include tailrace relocation as a protection, mitigation, or enhancement measure.

*Downstream Impacts – Fisheries Enhancement Projects (p. E.3-40)*

The Conservation Groups support the implementation of habitat improvement projects below Enloe Hydroelectric Project. However, we do not support the PUD's premise that it is not practical to otherwise address the impacts that the projects are intended to mitigate. In addition, the DLA is flawed in several respects. It lacks sufficient information on which to review the proposed side channel development and get any indication of the benefits that it will provide. The PUD does not provide examples of other similar projects, does not establish any biologically measurable goals, and does not provide information that suggests it is even feasible to implement such a measure. As the DLA notes, the first phase of the measure will be to assess whether there are even possible sites. And subsequent phases also are critical to the question of feasibility. Absent more analysis, the proposed measure does not sufficiently protect, mitigate, or enhance the resources of the Similkameen River. The final application should include significantly more data regarding this measure.

We also support gravel augmentation to improve spawning habitat. However, it is not possible to assess the scale or possible adequacy of the proposed program. While the PUD identifies a cost of \$170,000 for the measure, it fails to include a discussion of how much gravel will be added, how much additional habitat is expected to result, and how its use by fish will be measured. It also fails to support that gravel augmentation will be successful and

that gravel will be retained in place. It is critical that these components be included in the final application.

Okanogan PUD is relying on these two enhancement projects to mitigate for a number of impacts of the project – entrainment injury and mortality, injury and mortality from tailrace operations, impacts resulting from construction and dewatering of a reach of the river. Yet, the DLA provides wholly inadequate information on which to assess the adequacy of the measures. Because of this, as well as limited data regarding impacts of the project, it is difficult to understand how the PUD concludes that “[t]he two measures together will more than compensate for loss that could occur as a result of the construction and operation of the project.” (DLA, p. E.3-41). We disagree.

*Section E.10.2 – Alternative Facility Designs, Processes, and Operations Considered  
Streamflow Downstream of Enloe Dam (p. E.10-7)*

The PUD repeatedly asserts that the proposed operation would effectively have no impacts on the flow regime of the Similkameen River. Again, it asserts that the flow regime downstream of the Project would be similar to natural inflow to Enloe Reservoir. (DLA, p. E.10-7). This statement is misleading and should be modified to reflect that the PUD is proposing to dewater a reach of the river.

### **III. Conclusion**

Considering the long history of licensing for this project and the depth with which many of the issues affecting this project have been debated over the years, the Conservation Groups are disappointed with the lack of information presented in the DLA. The Conservation Groups request that Okanogan PUD delay further action on the Enloe Hydroelectric Project until there is greater clarity regarding the status of the Shanker’s Bend proposal. Alternatively, we urge the PUD to modify the draft license application in accordance with our comments, including a comprehensive analysis of the cumulative impacts of Shanker’s Bend and Enloe. Absent such action, the DLA fails to provide sufficient information for purposes of relicensing.

Thank you for consideration of our comments. Please contact me at (503) 827-8648 or via email at [bswift@amrivers.org](mailto:bswift@amrivers.org) for further information or if you have any questions.

Sincerely,

Brett Swift  
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John Osborn, M.D.  
Center for Environmental Law and Policy

Jerry R. Boggs, Ph.D.  
Selkirk Conservation Alliance

Rick McGuire  
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Geraldine Gillespie  
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Mike O'Brien  
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Animal bones and teeth from archaeological sites provide an important record of past animal distributions that is increasingly used to address contemporary fish and wildlife management issues (Lyman and Cannon 2004). Past humans, through hunting and gathering activities, left residues of the animals they relied on in villages and seasonal camps. Often these places were occupied for hundreds to thousands of years, providing a long sequence of animal bone deposits. For the past ~40 years, the field of zooarchaeology (study of animal remains from archaeological sites) has developed a series of protocols and methods that have enabled detailed reconstructions of past animal distributions and abundances (Lyman 1996; Butler and Campbell 2004).

Using salmon and steelhead trout remains as a measure of past fish distribution is based on the following rationale: salmon and steelhead trout were highly favored foods of Plateau peoples (e.g., Ray 1932; Hewes 1998). If the fish were present in a region, they would be captured and in turn, their remains would be deposited in archaeological sites. This claim is supported by Butler and Campbell's study of fish remains from Columbia Plateau archaeological sites: 90% of the archaeological sites located adjacent to historically known salmon migration corridors contain salmon bones (Butler and Campbell 2004).

The archaeological record in the Similkameen River system is well-suited to address the question of whether the Falls blocked fish movement in the past. Salo (1987) carried out a preliminary review of Similkameen Valley cultural resources and documented 46 cultural resource sites. While testing was limited, his work suggested the likelihood for stratified sites and recovery of fish remains. He specifically noted the value of using the archaeo-fish record to evaluate whether the Similkameen above Enloe Dam supported salmon populations (Salo 1987:52).

While animal bone records from archaeology can be extremely valuable for reconstructing past animal distributions, several issues need to be considered in interpreting bone records.

#### A. Human transport of fish.

People may have caught fish below the falls or on the Okanogan River proper and only transported animal carcasses or parts to the Similkameen River above the Falls. If this occurred, then the presence of fish remains in sites above the Falls would not mean that salmon and steelhead ascended the falls, only that their skeletons were deposited in these areas. This confounding factor can be addressed by examining the range of skeletal parts represented across multiple sites. Given salmon (especially chinook) and steelhead trout's large size, when transporting fish, only parts of the body would be moved. Thus, the presence of all parts of the skeleton in Similkameen sites would indicate local capture.

#### B. Preservation.

Bone preservation depends on a complex set of interacting variables including condition when buried, speed of burial, and soil acidity and porosity (Lyman 1994). While specific preservation conditions in the Similkameen drainage are not known, buried remains have been recovered from nearby locations (near Oroville- Chatters et al. 1987) and in multiple archaeological sites along the Columbia River upriver of Chief Joseph Dam (Butler and Campbell 2004). Thus the archaeological record in the Similkameen drainage is likely to have good preservation conditions. Even if the bone has become degraded, small fragments should be preserved and would be recovered if fine-screen sampling was used. If remains are too fragmentary to allow

for species diagnosis using bone morphology, it would be possible to extract ancient DNA from the remains (e.g., Butler and Bowers 1998).

### C. Sampling.

Recovery of animal remains requires excavation of buried sediments. Comparative study of sites from nearby project areas and identification of likely site contexts and features (house pits, storage pits) would be needed to develop a sample plan and set sample intensity (e.g., amount of excavated volume needed to establish the presence of the fish, Lyman 1995). In terms of observation and collection in the field, the skeletal elements of salmon and steelhead trout are relatively large and should be recovered using large mesh screens (6.4 mm, ¼” mesh) that are commonly used during archaeological investigation (Butler 1993). If fish processing or other activities have caused the bone to break down, smaller fragments would be identified in finer mesh screens (3.2 mm, 1/8” mesh; 1.6 mm, 1/16” mesh).

### D. Previous Archaeological Excavation on the Similkameen River.

Copp summarizes recent excavation projects on the Similkameen in Canada (2006); salmonid remains were not recovered. Elder (2007) argues on several counts that the absence of salmon remains in Copp’s study should not be taken as evidence that salmon were not present. The total volume excavated was small relative to other projects with salmon bone, such as from the Columbia River upriver from Chief Joseph Dam (Butler and Campbell 2004). Copp’s study sites were mainly located on side streams, not the Similkameen proper, suggesting the site locations were not fishing areas, but more likely hunting camps. Also, bone preservation appeared to be very poor, reducing the likelihood of recovering bone from any creature, much less salmon. Thus Copp’s work does not constitute an adequate test for the historic distribution of salmonids in the Similkameen.

Recent archaeological study in the area to be affected by the Enloe Dam Hydro project was carried out by ENTRIX, Inc, in consultation with the Cultural Resources Work Group (Okanogan County, Exhibit E.4). Only limited archaeological excavation occurred as part of this work, which was designed to assess impacts to cultural resources in general, rather than consider the past record for fish. Thus this recent work was not adequate to address questions of ancient salmon in the river system.

## II. Geochemistry of Lake Sediments

A number of recent studies in southern Alaska (Finney et al. 2000; 2002) and Idaho (Selbie et al. 2007) have established the value of using paleolimnology to reconstruct past salmon abundance and distribution. Briefly, this work relies on the fact that salmon returning to freshwater habitats represent a significant output of marine-derived nutrients that have a distinctive geochemical signal (e.g., enriched Nitrogen-15). This approach is especially useful for studying history of sockeye salmon (*O. nerka*) which rely on lakes as part of their spawning life cycle. Spent, decaying carcasses become incorporated into stratified lake deposits that accumulate as part of natural lake processes. Cores obtained from lake bottoms have provided clear records of past sockeye salmon abundance from the historic era to ~2200 years ago (Finney et al. 2002).

It should be possible to assess whether Palmer Lake at one time supported sockeye salmon populations by coring the lake and conducting analysis of bottom sediments. Kokanee (a land-locked form of sockeye salmon) reside in Palmer Lake today; there was apparently a historic introduction of these fish to the lake in the 20<sup>th</sup> century. A lake coring study would allow detection of a pre-19<sup>th</sup> century record of sockeye salmon. Recent lake cores obtained by Bruce Finney and his team in nearby Lake Okanagan and Lake Osoyoos, lakes known to support sockeye salmon, would provide control samples for interpreting geochemistry signals in Palmer Lake (B. Finney, personal communication, June, 2007). Stream bottom sediments (from the Similkameen River channel for example) would not be amenable to this type of study, given the lack of continuous deposition in the more dynamic stream system. Other lakes in the Similkameen system may provide even better sampling sites appropriate for coring and geochemical analyses (Jesse Ford, Oregon State Univ. pers. comm.).

I strongly recommend that archaeological sampling for fish remains and geochemical testing of lake sediments be undertaken, given the importance of the question of past salmon and steelhead trout distribution and the benefits of relying on multiple independent lines of evidence in establishing scientific understanding. Neither approach will provide comprehensive and certain outcomes. For example, if archaeological sites lack bones entirely, then the absence of fish in particular could not be linked to past fish distribution, but rather reflect a lack of preservation. On the other hand, if multiple archaeological sites contain mammal bones (e.g., deer, marmot) but lack fish, the PUD would have a basis for arguing that salmon and steelhead did not migrate above the Falls prior to the 19<sup>th</sup> century. Alternatively, if multiple sites contain salmon or steelhead trout, then the evidence points to pre-19<sup>th</sup> century migration of fish above the Falls. The lake core study will evaluate whether sockeye salmon populations utilized the Similkameen and not assess whether other species ascended the Falls.

This letter outlines two approaches the PUD should take to evaluate the key question: did salmon and steelhead trout historically ascend Similkameen Falls? These study outlines are presented from a scientist with specific knowledge of the kinds of studies that are needed to address this question. If the PUD would like me to develop a more detailed proposal and budget or set up project guidelines for other scientists to pursue, I would be happy to work with the PUD in such a way. Please contact me at your earliest convenience to discuss undertaking these identified study approaches.

Sincerely,

Virginia L. Butler

cc:

Bose, Federal Energy Regulatory Commission  
Heinith, Columbia River Inter-Tribal Fish Commission  
Kirkendall, National Marine Fisheries Service  
Swift, American Rivers  
Morgan, Upper Columbia Salmon Recovery Board

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*Studies to determine historical presence of anadromy above Similkameen Falls*

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