UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

February 26, 2010

VIA ELECTRONIC FILING

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20462

Re: National Marine Fisheries Service's Comments and Preliminary Recommended Terms and Conditions for an Application for a Major New License for the Enloe Hydroelectric Project, FERC No. 12569-001

Dear Secretary Bose:

Please find enclosed for filing the National Marine Fisheries Service's (NMFS) comments, preliminary recommended terms and conditions, and Certificate of Service for the above-captioned proceeding. NMFS is not prescribing passage in this proceeding, but is reserving its authority under Section 18 of the Federal Power Act.

Questions regarding this filing should be directed to Scott Carlon at 503.231.2379 (Scott.Carlon@noaa.gov).

Sincerely,

for

Barry A. Thom
Acting Regional Administrator

Enclosures

cc: Service List

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Public Utility District No. 1 of Okanogan County Application for Major New License	))))	(Project No. 12569-001) (Enloe Hydroelectric Project)

NATIONAL MARINE FISHERIES SERVICE COMMENTS AND PRELIMINARY RECOMMENDED TERMS AND CONDITIONS

I. INTRODUCTION

The U.S. Department of Commerce, National Marine Fisheries Service (NMFS) hereby submits its preliminary recommended terms and conditions for the Enloe Hydroelectric Project, Federal Energy Regulatory Commission (FERC) No. 12569-001 (hereafter the Project) in response to FERC's Notice of Application Ready for Environmental Analysis and Soliciting Comments, Recommendations, Terms and Conditions, and Prescriptions issued on December 28, 2009. This filing includes a schedule for submitting modified recommendations. NMFS is submitting this document to FERC and will file its supporting Administrative Record within 45 days.

The Project is located at roughly river mile (RM) 8.8 on the Similkameen River in Okanogan County, about 3.5 miles northwest of the City of Oroville in north-central Washington State. Public Utility District No. 1 of Okanogan County (hereafter the Applicant) filed a Final License Application (FLA) for an original license with FERC on August 22, 2008.

NMFS has statutory responsibility for the protection and enhancement of the Nation's living marine resources, including anadromous salmon and steelhead and their supporting habitats, under the Endangered Species Act (ESA), 16 USC 1531 et seq.; Magnuson-Stevens Fishery Conservation and Management Act (MSA), 16 USC 1801 et seq.; Fish and Wildlife

Coordination Act (FWCA), 16 USC 661 et seq.; Federal Power Act (FPA), 16 USC 791a et seq.; Reorganization Plan No. 4 of 1970, 84 Stat. 2090; Pacific Northwest Electric Power Planning and Conservation Act (PNEPPCA), 16 USC 839 et seq.; the Pacific Salmon Treaty Act of 1985, 16 USC 3631-3644; and the National Environmental Policy Act (NEPA), 42 USC 4321 et seq. The effects of the Project on habitat, water quality, and other effects on salmon and steelhead relate directly to NMFS' responsibilities under the statutory authorities cited above.

II. SCHEDULE FOR PROVIDING MODIFIED CONDITIONS

NMFS may submit modified recommendations within 60 days of the close of FERC's NEPA comment period, or in accordance with a schedule otherwise established by NMFS (in the case of, for example, substantial or new information is provided during the NEPA comment period requiring additional time for consideration).

III. PROCEDURAL BACKGROUND

Construction of Enloe Dam was completed around 1920 and the dam and associated power works were acquired by the Applicant in 1945. The Federal Power Commission issued the Applicant a license for the Project in 1956. However, with the arrival of high-voltage transmission lines and lower cost power, the Project become uneconomical to operate and the Applicant ceased operating the Project in 1958. FERC subsequently withdrew the license in 1974. In 1981, the Applicant again applied for a license and in 1983, FERC issued a 50-year license with fish passage requirements. In 1986, FERC rescinded the license due to regional disagreement over fish passage at the Project. FERC stated that anadromous fishery issues had to be resolved before a licensing decision could be made.

In 1991, the Applicant filed another license application. FERC eventually granted a license in September 1996. In August 1996, NMFS proposed to list the Upper Columbia River steelhead distinct population segment (DPS), which occurs in the Project area, as endangered under the ESA. In October 1996, due to the proposed listing, NMFS submitted a motion for stay of the license order until a more complete analysis of potential effects on Upper Columbia River steelhead could be conducted and a conference pursuant to Section 7 (a)(4) of the ESA completed. The Applicant also filed a motion for stay of the license and FERC issued a stay order in June 1997. NMFS listed the Upper Columbia River steelhead DPS as endangered in August 1997, and in May 1998, FERC requested formal consultation under Section 7(a)(2) with NMFS on issuance of a new Federal license for the Project.

NMFS issued its biological opinion on the new license in November 1998. In the absence of a recovery plan for Upper Columbia River steelhead, and to not foreclose any opportunity or measures to promote recovery of this species, NMFS felt it prudent to require passage as a term and condition of the biological opinion and new license. Once again, there was substantial opposition to passage from Canadian Tribes and the Provincial government of British Columbia. Citing the continued and significant disagreement over anadromous fish passage at the Project, FERC denied the license in 2000.

On January 21, 2005, the Applicant filed an Application for Preliminary Permit for the Project with FERC. The Preliminary Permit was granted by FERC and the Applicant issued an Initial Consultation Document in July 2005. The Applicant filed a Draft License Application in November 2007 and its Final License Application in August 2008. FERC subsequently issued, under the NEPA, Scoping Document I in December 2008 and Scoping Document II in May 2009.

IV. PROJECT DESCRIPTION

The existing dam is a 315-foot long by 54-foot high concrete gravity arch structure with an arch radius of 200 feet. River flow currently spills over the top of the structure. The central overflow section is approximately 276 feet long and about 6 feet thick at the crest, expanding to 40 feet thick at the base. The spillway crest elevation is 1044.3 feet above mean seal level (msl) and has provision for installing 5-foot flashboards, raising the spillway crest elevation to 1049.3 feet msl. The dam creates a reservoir about 2 miles long by 200 feet wide and an average depth of 9 feet. The existing power works are located on the right bank (looking down stream) and consist of two 84-inch-diameter sluice gates; one 600-foot-long, 84-inch diameter wood stave penstock (one penstock has been removed); two steel surge towers; and a powerhouse (largely dismantled).

The Applicant proposes to construct a new power plant on the left bank and closer to the dam. The Project would consist of the existing concrete gravity arch dam with newly integrated 5-foot-high crest gates. The reservoir would have a storage capacity of about 775 acre-feet at a surface elevation of 1049.3 feet msl. The intake would start at the left bank abutment and consist of an unlined, 190-foot canal excavated in bedrock. The downstream end of the intake canal would transition to a 35-foot-long by 30-foot-wide reinforced concrete structure founded in bedrock and connected to the penstock intake structure. Two aboveground 8.5-foot-diameter by 150-foot-long steel penstocks would carry flow to the powerhouse. The powerhouse would be located about 230 feet downstream of the dam's left bank abutment and house two vertical Kaplan turbines with a total installed capacity of 9 megawatts and total hydraulic capacity of 1,600 cubic feet per second (cfs). The tailrace would consist of a 180-foot-long unlined channel excavated in the bedrock and discharge flow back into the river at the pool downstream of the

falls. Other appurtenances include a new substation adjacent to the powerhouse, a new 100-foot-long 13.2-kilovolt primary transmission line connecting the substation to an existing distribution line, and about 1.5 miles of new and upgraded access roads.

The Project will be operated in a run-of-river mode. The integrated crest gates will normally be fully deployed, raising the pool elevation about 5 feet to increase head for power production. When flows exceed powerhouse hydraulic capacity (1600 cfs), which would normally occur during the spring and early summer months, the pool elevation would be controlled by progressively lowering the crest gates as flows increase. Once the crest gates were fully lowered, the water surface elevation would be controlled by the stage discharge relationship of the spillway crest with the gates down.

V. AFFECTED ANADROMOUS FISH RESOURCES

Three species under NMFS' jurisdiction occur in the Project area. These are summer steelhead, summer Chinook salmon and sockeye salmon. Below are brief descriptions of each species.

Summer Steelhead

The summer steelhead that spawn and rear in major Columbia River tributaries between Rock Island Dam (RM 453) and Chief Joseph Dam (RM 545) make up the Upper Columbia River (UCR) distinct population segment (DPS). The UCR steelhead DPS was listed as endangered under the ESA on August 18, 1997, but its status was upgraded to threatened on January 5, 2006 (NMFS 2006 and 2009). The Similkameen River below the Project is designated as critical habitat for this species.

Adult UCR steelhead pass Wells Dam on the Columbia River (RM 516) from late July through early November with peak passage occurring in September and October. UCR steelhead enter the Okanogan and Similkameen Rivers from mid-September through April and adults may hold in the Similkameen from its mouth up to the pool below Similkameen Falls until spawning. Spawning usually occurs March through May.

Juveniles emerge from the gravel between July and September and move about considerably as they seek suitable rearing habitat, moving downstream in the fall in search of suitable overwintering habitat (Chapman et al. 1994). Parrs generally rear between 2 and 3 years before migrating to the ocean but freshwater residence can range from 1 to 7 years (Busby et al. 1996).

Summer Chinook Salmon

The summer Chinook salmon that occur in the Similkameen River are part of the Upper Columbia River summer/fall-run Chinook evolutionary significant unit (ESU) that includes all late-run summer and fall, ocean-type Chinook salmon that are present in the mainstem Columbia River and its tributaries between Chief Joseph and McNary Dams (excluding Marion Drain). NMFS concluded that at the time of its review, this larger ESU did not merit protection under the ESA (Waknitz et al. 1995 and NMFS 1998).

Adults enter the Okanogan River from July through late September, and spawn from October through early November, peaking in mid-October. In the Similkameen River, Chinook spawn between its mouth and Enloe Dam (RM 8.8) with redd density being highest between the mouth and about RM 5. Adults are known to hold in the pool below Similkameen Falls until spawning takes place.

Emergence occurs from January through April and juveniles emigrate to the ocean as subyearlings, leaving the Similkameen River from 1 to 4 months after emergence. The Washington Department of Fish and Wildlife maintains a summer Chinook rearing and acclimation facility (Similkameen Pond) on the Similkameen River at about RM 3. These facilities are mitigation for the loss of summer Chinook salmon adults that would have been produced in the Okanogan River basin in the absence of Wells, Rocky Reach, and Rock Island hydroelectric projects. Juvenile releases from the Similkameen Pond occur from mid-April to mid-May.

Sockeye Salmon

The sockeye salmon that occur in the Similkameen River are included in the Okanogan River sockeye salmon ESU; this ESU and the Lake Wenatchee sockeye salmon ESU are the only remaining viable populations of sockeye salmon in the Columbia drainage. NMFS has concluded that neither stock warrants listing under the ESA (Gustafson et al. 1997).

Okanogan sockeye spawn predominantly in the mainstem Okanogan River upstream of Lake Osoyoos in Canada. Adults are known to stage in the Similkameen River as far upstream as the pool below Similkameen Falls to avoid high summer water temperatures in the Okanogan River and move up to spawning areas once Okanogan River water temperatures cool. Okanogan sockeye begin their entry to the Columbia River from late May to mid-June. Spawning typically occurs in October. Fry emerge in the spring (March-May) and emigrate to Lake Osoyoos where they rear from 1 to 2 years. Migration to the ocean usually occurs in May.

VI. PROJECT IMPACTS

The Project would likely impact anadromous fish resources in a number of areas. The Applicant has proposed protection, mitigation, and enhancement measures (PME) to address significant potential impacts. These are discussed below.

A. Tailrace False Attraction

The tailrace consists of a 180-foot-long unlined channel excavated in the bedrock that discharges flow back into the river at the pool downstream of the falls. At times when river flow is less than the powerhouse hydraulic capacity of 1600 cfs (roughly 70 percent of the time), all of the flow will be discharged through the tailrace. It is likely that adults will be attracted to the channel, potentially swimming into the draft tubes where injury or mortality could occur.

1. PME: Tailrace Net Barrier (FLA at A-7 and E.3-48). The Applicant proposes to exclude anadromous fish from the draft tubes during periods of part load operation by installing a conical physical net barrier at the outlet of each draft tube. During full load operation, it is expected that water velocity exiting the turbines would exceed the burst speed of adult salmonids, essentially creating a velocity barrier.

2. PME: Tailrace Video Monitoring (FLA at E.3-48). The Applicant would monitor the effectiveness of the barrier by suspending underwater video cameras to observe fish behavior in response to the nets.

B. Fish Habitat: Large Woody Debris

Large wood enters stream channels though either the toppling of trees as they die or are undercut by streamflow; or trees are placed in stream channels through catastrophic events such as wind storms, landslides, or debris torrents. Large wood increases coarse sediment storage, increases habitat complexity, gravel retention for spawning habitat, and flow heterogeneity;

provides long term nutrient storage and substrate for aquatic invertebrates; moderates flow disturbances, and provides refugia for aquatic organisms during high and low-flow events (Bjornn and Reiser 1991, Spence et al. 1996). The ability of woody debris to form these functions is largely a function of the size and type of wood, size and hydrology of a stream, and the watersheds general climate (Gurnell et al. 2002, Spence et al. 1996)

Opportunities for large woody debris (LWD) recruitment to the lower Similkameen River are limited to sources from upstream of the Project. Enloe Dam would likely prevent LWD from passing downstream.

1. PME: Transport of LWD (FLA at E.3-44). To prevent the loss of LWD from downstream habitats, the Applicant proposes to allow logs and other LWD to pass over the spillway during flood events. The Applicant also proposes to transport LWD around the dam and be placed in the river downstream of the dam and allowed to be carried by the natural hydraulic force of the river.

C. Entrainment of Gravel

Dams alter fluvial processes disrupting the natural downstream conveyance of water and sediment. Because few dams have provisions for conveying sediment around the dam, the effect is often 100 percent blockage of sediment (Emmett 1999). The complete blockage of sediment alters river morphology and can lead to significant reductions in suitable spawning gravel.

1. PME: Gravel Supplementation (FLA at E.3-51). The Applicant recognizes that the Project inhibits the natural recruitment of gravel to the lower river and proposes to place spawning gravels (1 to 3 inches in size) in the active flood plain adjacent to the wetted area during the low flow period. Gravels would be placed in areas that would facilitate the transport of gravel under winter and spring flows. The gravel would be distributed downstream by the

hydraulic forces of the river. To be effective at replenishing gravels in existing spawning areas or in developing gravel bars or deposits that might be considered new habitat, the Applicant may also place gravel in the main channel upstream of the bridge crossing in Oroville. The estimated volume of gravel to be placed would be 3,000 cubic yards. Gravel placement would begin post license at Year 3 when the Project is constructed and subsequent stockpiles would be placed every 5 years for the next 20 years (e.g. Year 8, Year 13, Year 18, and Year 23).

D. Flow Fluctuations

Under normal conditions, the Applicant would operate the Project in run-of-river mode. Flow through the powerhouse and spillway would be automatically regulated to maintain a stable water level in the reservoir so that total outflow from the reservoir would closely track inflow. However, during an unexpected shutdown, the flows would switch from running through the powerhouse to spilling over the crest gates and there would likely be temporary drop in flows downstream until the crest gates have lowered enough and flow from the reservoir catches up to the lower river. This has the potential to dewater redds or strand fry in cobble substrate and the significance of such an impact would depend on extent and duration of dewatering.

1. PME: Run-of-River Operations (FLA at E.3-48). The Applicant proposes to operate the crest gates such that an emergency shutdown of the turbines would affect flow levels in the lower river for about 1 minute. In other words, the Applicant states that flow spilled over the crest gates during a power shutdown would take about 1 minute to reach the lower river below the falls. The Applicant also plans to have backup power for crest gate operation if needed.

E. Construction Impacts: Blasting

Blasting and mechanical excavation has the potential to disturb or harm fish in the vicinity of the work area. Anadromous salmonids occupying the large pool at the base of

Similkameen Falls may be affected by noise and pressure waves from blasting associated with tailrace construction. For example, swim bladders in salmonids can be ruptured from pressure waves resulting in pre-spawn mortality. Another potential impact is destruction of developing gametes in adults.

The FLA does not contain a blasting plan or contain any significant detail of what a plan may consist of. FERC requested additional information about blasting in a letter to the Applicant dated October 28, 2008. The Applicant provided additional detail on blasting in a letter dated July 21, 2009.

1. PME: Blasting Plan and Best Management Practices (FLA at E.3-42). The Applicant proposes to complete a detailed blasting plan that would include implement established Best Management Practices (BMP) for blasting.

F. Construction Impacts: Sediment and Hazardous Spills

Construction of access roads, excavation of the intake channel, penstock foundations, powerhouse foundation, and the tailrace channel could increase soil erosion resulting in large pulses of suspended sediment and gravel embeddeness. Suspended sediment can accumulate on gill filaments and inhibit a fish's ability to function properly. Increased sediment loads can also limit spawning areas and increase mortality rates of incubating eggs (Bjornn and Reiser 1991). Aquatic insect density, biomass, and standing crops are also affected when increases in fine sediments or changes in bottom substrates occur. Furthermore, significant spills of toxic materials can occur from heavy equipment operation and fueling. Accidental spills can kill anadromous fish if not contained properly and in a timely manner.

1. PME: Erosion and Sediment Control Plan (FLA at E.2-47). An Erosion and Sediment Control Plan will be prepared when designs have been finalized. The plan will address site-

specific mitigation measures to minimize effects of construction, repair and operation of the dam and intake, penstocks, powerhouse, tailrace, impoundment, access roads, powerline and construction staging. Critical areas within the project footprint identified as sensitive to erosion, slope failure and mass wasting will be identified and a plan will be developed to minimize effects from these areas.

2. PME: Sediment Management Program (FLA at E.2-47). The Applicant proposes to complete BMPs that include preventative measures to minimize sediment disturbance and maximize sediment containment during construction. A storm water runoff plan and a sediment management plan will be prepared and implemented. A sampling program will be used to monitor compliance with water quality standards during construction. Monitoring also will be conducted during a gradual ramp-up of water diversion at the intake structure.

Standard erosion and sediment control measures will be used and site-specific BMPs will be developed, including: remove existing slide material; maintain the roadway with crushed rock; construct check dams; install filter fabric fences; grade roads and construction areas toward ditches and sediment traps; mulch and hydro seed in disturbed areas; minimize ground disturbance in or near wetland and riparian habitats.

3. PME: Spill Plan (FLA at E.2-47). The Applicant will develop and carry out a spill prevention, containment, and clean-up plan. Development of the plan, training, and the provision of emergency spill containment kits to contain and remove spilled fuels and other fluids is anticipated.

G. Water Quality: Temperature

Water temperature may pose the most pressing problem for anadromous fish survival in the Similkameen River. Bjornn and Reiser (1991) reported that water temperatures between 23-

29°C are lethal to salmonids depending on species and acclimation temperature. Chapman *et al.* (1994) reported temperatures in the Similkameen up to 22°C during the summer.

The Washington state water quality standards state that human actions considered cumulatively may not cause the 7-DADMax temperature of that water body to increase more than 0.3°C. Temperature studies conducted by the Applicant suggest that the Project is not violating this standard.

1. PME: Temperature Monitoring (FLA at E.2-45). The Applicant proposes to monitor water temperatures at three locations for a period of 5 years to determine if the operation of crest gates causes an increase in the 7-DADMax water temperatures compared to upstream of the reservoir.

H. Water Quality: Total Dissolved Gas

The tolerance of anadromous salmon and steelhead to total dissolved gas (TDG) supersaturation varies greatly by life stage. Weitkamp (1977) summarized TDG research on various life stages of species of fish. For salmonids, eggs appear quite resistant to the effect of high TDG levels, while sac-fry are particularly sensitive. The susceptibility of juvenile fish to TDG supersaturation appears to increase with increasing size. Prior to emergence from the gravel, eggs and fry benefit from hydrostatic compensation. That is, each one meter of depth compensates for approximately 10 percent of TDG saturation (Weitkamp 1977).

The Washington State standard for TDG requires that it not exceed 110 percent saturation. The Applicant took TDG measurements in late May 2006, during the spring runoff. The TDG levels increased by three to seven percent of saturation after flowing over Enloe Dam but remained below the water quality criterion, with mean hourly TDG levels ranging from 106.1 to 108.7 percent of saturation between the dam and the falls. However, TDG increased by an

additional 12 to 14 percent after flowing over the falls. Downstream of the falls, the mean TDG levels ranged from 118.5 to 120.7 percent of saturation. Near the railroad trestle located about 2.2 miles downstream, the mean TDG saturation was slightly lower (115.3 to 116.2 percent of saturation), but still remained above the 110 percent criterion.

1. PME: Dissolved Gas Monitoring (FLA at E.2-46). The Applicant proposes to monitor TGD concentrations at the powerhouse intake and below the falls for a period of 5 years. The Applicant also suggests that during high runoff periods, flow over the dam will be reduced due to flow up to 1600 cfs through the powerhouse. The turbines are not expected to increase TDG saturation.

I. Water Quality: Dissolved Oxygen

The biological significance of this to anadromous salmon and steelhead depends upon the exposure of individuals and the magnitude and duration of the exposure. Exposure to dissolved oxygen (DO) levels between 3 and 6 mg/L on pre-spawning adults is not well understood, but can include negative impacts such as avoidance, delayed migration, reduced swimming speeds, reduced fecundity, reduced spawning condition, and death (ODEQ 1995b; WDOE 2000b).

The Washington state standard for the one-day minimum DO concentration for salmonid spawning, rearing and migration is 8.0 mg/L. When a waterbody's dissolved oxygen is lower than this criterion (or within 0.2 mg/L of the criterion) and that condition is due to natural conditions, then human actions considered cumulatively may not cause the concentration to decrease more than 0.2 mg/L.

As evidenced by the increase in TDG from spill over the dam and then again over the falls, dissolved oxygen (DO) levels are likely augmented in the lower river by the spill as well.

The Applicant recognizes that during the summer months (July-September) when all river flow is through the powerhouse, DO levels may drop below state criteria in the lower river.

1. PME: Install Aeration in Turbine Draft Tubes (FLA at E.2-46). To minimize the loss of aeration by diverting water around the dam during the critical summer season, the Applicant proposes to inject air into the turbine draft tubes. The aeration vents would be blocked during high spring flows when high TDG is a concern and DO concentrations are not low.

2. PME: DO Monitoring (FLA at E.2-46). The Applicant proposes to monitor DO concentrations at the powerhouse intake and below the falls for a period of 5 years. Based on this monitoring, the Applicant would determine the optimal time to provide aeration in the draft tubes.

3. PME: Location of Project Outfall (FLA at E.2-45). The Applicant has designed the tailrace exit to direct flow such that the large pool below the falls is circulated with oxygenated water.

J. Summary of Potential Project Impacts on Anadromous Fish

The Project could have substantial adverse impacts on steelhead, Chinook salmon, and sockeye salmon. The major potential impacts are: injury or mortality to adults resulting from impact with turbine runners; reduced downstream water quality from seasonally reduced DO levels in the late-summer/early fall period and elevated TDG levels in the spring period; potential drop in lower river flows from unexpected turbine shutdowns; and interruption of geomorphological processes by trapping sediment (gravel) and LWD. Each of these impacts individually is detrimental to anadromous fish. The Applicant has proposed a number of PMEs to address the potential impacts to water quality and anadromous fish. The FERC license should provide adequate mitigation for each of these Project impacts.

VII. NMFS' RESOURCE MANAGEMENT GOALS AND OBJECTIVES

NMFS is responsible for the stewardship of the Nation's living marine resources and their habitats. In NMFS Strategic Plan, one of its stated mission goals is to "protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management." The plan also states that an agency goal is to conserve, protect, and restore the Nation's coastal and ocean resources. NMFS' general resource management goals and objectives for the recovery of salmon and steelhead in the Columbia River Basin are as follows:

- *Conserve Species*. Avoid extinction and foster long-term survival and recovery of Columbia basin salmon and steelhead and other aquatic species.
- *Conserve Ecosystems*. Conserve the ecosystems upon which salmon and steelhead depend.
- *Assure Tribal Fishing Rights and Provide Non-Tribal Fishing Opportunities*. Restore salmon and steelhead populations over time to a level that provides a sustainable harvest sufficient to allow for the exercise of meaningful tribal fishing rights and provide non-tribal fishing opportunities.
- *Balance the Needs of Other Species*. Ensure that salmon and steelhead conservation measures are balanced with the needs of other native fish and wildlife species and do not unduly impact upriver interests.
- *Protect Historic Properties*. Assure that effects of recovery measures on historic properties are identified and addressed in consultation with all interested and affected parties.

- *Consider Resources of Cultural Importance to Tribes.* Seek to preserve resources important to maintaining the traditional culture of basin Tribes in implementing recovery measures.
- *Support Sustainable Salmon Fisheries.* Provide for adequate fish passage and essential habitat to help support a sustainable salmon fishery, and the salmon's contribution to a healthy ecosystem.

VIII. RECOMMENDED SECTION 10(j) TERMS AND CONDITIONS

Under Section 10(j) of the FPA, 16 USC 803(j), NMFS provides the following recommended terms and conditions which are necessary for the protection, mitigation, and enhancement of anadromous fish resources adversely affected by the project. We recommend that these terms and conditions be incorporated into any license issued for the project.

NMFS, in crafting its preliminary recommendations for the protection, mitigation, and enhancement of anadromous salmon and steelhead resources affected by the proposed action, has drawn upon its expertise and the best available biological and engineering information in order to produce a cohesive package of measures that, if adopted by FERC, would likely provide adequate protection of salmon and steelhead resources. Each of NMFS' recommendations is based on substantial evidence contained in the record. NMFS will file updated or supplemental supporting information during the proceeding, as necessary.

A. Tailrace Barrier

1. Construction of a Tailrace Barrier. The Licensee, in consultation with NMFS, must construct a tailrace barrier facility at the Project tailrace to prevent upstream migrating fish from

injury and mortality caused by operation of the powerhouse. Construction must be completed, and the barrier fully operational, before the Licensee initiates the diversion of flow for Project operation. The Licensee must conduct and complete a hydraulic evaluation of the facilities and ensure the facility operates within allowable hydraulic criteria prior to continuous Project operation. Upon construction and throughout the remaining term of the license, the Licensee must maintain and repair the tailrace barrier facility and monitor its performance to ensure the facility prevents fish injury and mortality over the license term.

2. Submittal of Draft and Final Tailrace Barrier Designs. The Licensee must design the tailrace barrier in consultation with, and subject to, NMFS approval. The Licensee must submit draft and subsequent design plans to NMFS and obtain NMFS approval of design specifications for the tailrace barrier. The Licensee must file at FERC for FERC approval detailed design of the barrier at least 180 days before the start of any land-disturbing or land-clearing activities.

3. Written Operation Plan. The Licensee must develop and implement a written operation plan to ensure that the tailrace barrier operates effectively during the life of the Project. The tailrace barrier must be operable at all times when steelhead are present and can access the project draft tubes. Specifically, adult steelhead exhibit burst speeds up to 27 feet per second (Bell 1991). Therefore, when downstream oriented velocities in the draft tube are less than or equal to 27 feet per second the barrier should be in place and operating as designed. The operation plan must include procedures for notification and coordination with NMFS on maintenance scheduling or emergencies that affect anadromous fish. The Licensee must consult with and submit a draft and final operations plan to NMFS for review and approval prior to submitting to FERC in final form.

4. Post Construction Evaluation and Monitoring Plan. Prior to completion of the fish facilities, the Licensee, in consultation with NMFS, must prepare a post-construction hydraulic evaluation plan, monitoring plan, and implementation schedule. The written plans must be submitted to NMFS for approval prior to filing with FERC. The plans must include a (1) short term hydraulic evaluation to ensure that the performance of the facilities is consistent with the design criteria including velocity through the tailrace barrier net, (2) measurement of draft tube velocities in at least two draft tube cross-sectional areas over the expected range of turbine flow rates, to determine what flows may allow draft tube entry by anadromous fish, (3) short term monitoring of the barrier, to assure smaller steelhead are not "gilled" (i.e. unable to retract head after attempted entry through the net) on the net or are entering the net from the downstream end, and (4) long-term monitoring to ensure performance is maintained over the license term. The Licensee must begin to carry out the post-construction hydraulic evaluation and monitoring plans within 3 months of completion of Project construction. If the results of the hydraulic evaluation or monitoring plans indicate that the barrier is not performing as designed, then the Licensee must consult with NMFS to develop and file with FERC measures for bringing the facilities into compliance, including the submission of a schedule for implementing the measures. In addition, the Licensee must use the post-construction evaluation and monitoring plans to develop measures to eliminate or minimize adverse impacts to the fish resources.

5. Inspection and Maintenance Plan. Prior to construction of the tailrace barrier net and in consultation with NMFS, the Licensee must prepare an inspection and maintenance plan that assures that the tailrace barrier net performs as intended for the life of the project. Minimally, the inspection and maintenance plan must include: (1) provisions for periodic physical inspection of net material and structural connections, (2) provisions to assure the tailrace barrier net is

properly deployed for turbine start-up (i.e. truth marks that indicate proper installation), and (3) provisions to make timely repairs or replace net material and structural net connections when needed. The objective of the inspection and maintenance plan is to assure that a positive barrier exists as designed to prevent anadromous fish (and potentially other species of fish) from entering draft tubes from the Project's tailrace, for all powerhouse operations.

Rationale: *Operation of the Project will result in attraction of upstream migrating fish into the turbine discharge flow, including attracting anadromous fish listed as threatened under the ESA. Fish can become attracted towards the source of the highest quantity of flow and for about 70 percent of the time (on average) all stream flow will be diverted through the Powerhouse. Salmonids are attracted to areas of higher velocity even if they are unable to ultimately pass that route, as demonstrated in laboratory testing at the Bonneville Lab in the 1960's. It is expected that this behavior will result in steelhead attempting to enter draft tubes, potentially being struck an injured by turbine runners.*

In recognition that upstream migrants will be attracted to and able to enter the tailrace channel, the Applicant completed preliminary designs for a tailrace barrier for its FLA. The Applicant did consult with NMFS and the U.S. Fish and Wildlife Service on the preliminary design. Under full turbine operation, water exiting the turbine runners and though the draft tubes will have a velocity that is near or above the very upper end of adult salmon and steelhead burst speed, thus it is expected that fish will not be able to reach the turbine runner. However, during turbine startup and shutdown, and during period of low turbine flow, velocities in the draft tube will be such that fish could reach the runners and be injured or killed. A barrier will be necessary during those periods.

B. Ramping Rates

1. Ramping Rates to Protect Adult and Juvenile Anadromous Fish Species and their Habitat. For the protection, mitigation of damages to, and enhancement of aquatic species, the Licensee must implement, during normal start-up and shutdown operations, the following interim ramping rates to protect fish resources downstream of the tailrace in the Similkameen River:

SEASON	Daylight	Night
February 16 to June 15	No ramping	2 inches per hour.
June 16 to October 31	2 inches per hour	1 inch per hour.
November 1 to February 15	2 inches per hour	2 inches per hour.

Daylight is defined as the period from one hour before sunrise to one hour after sunset; night is defined as the period from one hour after sunset to one hour before sunrise.

The location at which to measure ramping rate compliance shall be mutually determined by the Licensee, NMFS, the U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, Confederated Tribes and Bands of the Yakama Indian Nation, and the Confederated Tribes of the Colville Reservation, before project operation begins.

2. Temporary Modifications to Schedule. The interim ramping rates may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods for project maintenance purposes, upon mutual agreement between the Licensee, NMFS, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, Confederated Tribes and Bands of the Yakama Indian Nation, and the Confederated Tribes of the Colville

Reservation. If the interim ramping rates are so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Rationale: The above table describes the ramping rate decreases and increases recommended by NMFS considering there are no ramping rate criteria proposed by the applicant in its FLA. The applicant does propose to synchronize the use of its proposed crest gates with the operation of the project's future powerhouse to avoid flow fluctuations below the project in the Similkameen River. However, the specific details and criteria to achieve this goal are not outlined in the FLA. Down-ramping regulation and minimization of flow fluctuation amplitude minimizes direct mortality to juvenile fish and the loss of eggs. These restrictions include the lag time it takes for fluctuations to pass through all affected fish habitat downstream to the confluence of the Similkameen and Okanogan rivers.

Rapid reductions in stream flow downstream of regulating structures, such as hydropower dams, have a well-documented history of causing direct mortality to juvenile salmon and steelhead. Hydropower maintenance and shut-down operations can also result in detrimental flow fluctuations that can cause repeated stranding and large-scale mortality to salmon fry and juveniles. In turn, exposed eggs and juvenile fish are subject to rapid predation by birds. Stream morphology, bar slope, side channels, time of day, and size and species of fish are all factors that influence this stranding. In addition to direct impacts to fish, significant disruptions to the aquatic invertebrate community occur, which indirectly impacts fish production.

C. Fish Habitat Enhancement

1. Fish Habitat Enhancement Plan. For the protection, mitigation of damages to, and enhancement of aquatic species and their habitat, the Licensee must file with FERC a fish habitat enhancement plan. This filing should be made at least 180 days before the start of any land-clearing or land-disturbing activities. The plan must provide for, but not be limited to, the following measures:

a. Side channel/off-channel development/enhancement at locations in the lower Similkameen River or nearby Okanogan River (FLA, Appendix E.3-3).

b. Gravel supplementation downstream of Enloe Dam (FLA at E.3-51).

The plan shall include the following: (1) a schedule for completing the plan within 3 years; (2) performance criteria; (3) monitoring provisions; (4) contingency plans; and (5) provisions for the plan's periodic review and revision.

The Licensee must prepare the plan after consultation with NMFS, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, the Confederated Tribes and Bands of the Yakama Indian Nation, and the Confederated Tribes of the Colville Indian Reservation. The Licensee must include with the plan documentation of consultation, copies of comments and recommendation on the completed plan after it has been prepared and provided to the agencies and tribes, and specific descriptions of how the agencies' and tribes' comments are accommodated by the plan. The Licensee must allow a minimum of 30 days for the agencies and tribes to comment and to make recommendations before filing with FERC. If the Licensee does not adopt a recommendation, the filing must include the recommendation not adopted and the Licensee's reasons, based upon project-specific information.

Rationale: The implementation of the side channel/off-channel development/enhancement project in addition to the gravel supplementation downstream of Enloe Dam will benefit anadromous fish species found in the Similkameen River. The two measures together are intended to compensate for loss of fishery resources that could occur as a result of the construction and operation of the Project. The actions are designed to target Federally listed species, and species of special concern that inhabit the river downstream of the Project.

D. Downstream Water Quality

1. Improve Dissolved Oxygen Concentrations during Low Flow Periods. To minimize the loss of aeration by diverting water around the dam during the critical summer season, the Licensee shall make provisions for injecting air into the turbine draft tubes. The Licensee must monitor DO concentrations at the powerhouse intake and below the falls for the term of the license. Monitoring must begin when Project starts operations. An annual monitoring report must be filed with FERC each year of the license term. Copies of the annual report must also be sent to NMFS, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, Washington Department of Ecology, the Confederated Tribes and Bands of the Yakama Indian Nation, and the Confederated Tribes of the Colville Indian Reservation.

2. Annual Monitoring and Reporting of Total Dissolved Gas Concentrations. The Licensee must monitor for TDG concentrations at the powerhouse intake and below the Project for a period of 5 years. The Licensee must maintain the capability to monitor for TDG for the term of the license. Monitoring must begin at the start of Project operations. An annual monitoring report must be filed with FERC for 5 years. Copies of the annual report must also be sent to NMFS, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife,

Washington Department of Ecology, the Confederated Tribes and Bands of the Yakama Indian Nation, and the Confederated Tribes of the Colville Indian Reservation.

3. Monitoring and Reporting Water Temperature. The Licensee must monitor water temperatures upstream and downstream of the Project for a period of 5 years. Monitoring must begin at the start of Project operations. An annual monitoring report must be filed with FERC for 5 years. Copies of the annual report must also be sent to NMFS, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, Washington Department of Ecology, the Confederated Tribes and Bands of the Yakama Indian Nation, and the Confederated Tribes of the Colville Indian Reservation.

4. Soil Erosion Control Plan and Spill Prevention Plan. The Licensee must prepare a Soil Erosion Control Plan to guide Project-related ground disturbing activities during construction and ongoing operation and maintenance of the Project. The Plan must be filed with FERC, for approval, at least 90 days prior to any ground disturbing activities commence. The Licensee must provide NMFS with the opportunity to review and approve the plan prior to start of project construction. The Licensee must carry out the requirements of the approved plan during all ground disturbing activities, unless otherwise agreed to by NMFS.

5. Spill Prevention, Containment, and Clean-Up Plan. The Licensee must develop and implement a spill prevention, containment, and clean-up plan. Construction personnel must be trained to use the plan and trained in all aspects of spill prevention, containment and clean-up. Hazardous spills that enter the waterway shall be reported to FERC and to NMFS, U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, Washington Department of Ecology, the Confederated Tribes and Bands of the Yakama Indian Nation, and the Confederated Tribes of the Colville Indian Reservation.

Rationale: Ground-disturbing activities can result in erosion and increased turbidity in the Similkameen River below the Project. Suspended sediment can accumulate on gill filaments and inhibit a fish's ability to function properly. Increased sediment loads can also limit spawning areas and increase mortality rates of incubating eggs. Aquatic insect density, biomass, and standing crops are also affected when increases in fine sediments or changes in bottom substrates occur. Fueling and operating heavy equipment around the waterway will significantly increase occasion for hazardous materials to enter the Similkameen River. Accidental spills can kill anadromous fish if not contained properly and in a timely manner.

Measures are necessary to reduce adverse effects to fish and aquatic habitat associated with initial Project construction, ongoing maintenance, ground disturbing activities and operations of the Project. The monitoring and reporting requirements will assist agencies and Tribes with resource management responsibilities to better comprehend Project effects on fish resources.

IX. RESERVATION OF AUTHORITY

NMFS reserves its right under Section 18 of the FPA to require fish passage or modify recommended terms and conditions based upon significant new information and conclusions developed in connection with the fulfillment of other statutory consultation and review requirements, including consultation under Section 7 of the ESA, 16 U.S.C. §1536, or Section 305(b) of the MSA, 16 U.S.C. §1855, regarding essential fish habitat. NMFS respectfully requests FERC, upon issuance of any new license in this proceeding, retain by means of a specific reopener provision for fishway prescriptions in accordance with Section 18 of the FPA, and other appropriate reservations of authority sufficient discretionary involvement or control with respect to project construction, operation, maintenance and modification under the new

license, or any amendments thereto, so as to ensure full compliance with the requirements of Section 18 of the FPA.

In addition, NMFS respectfully requests the Commission, upon issuance of any new license in this proceeding, retain by means of a specific ESA reopener provision and other appropriate reservations of authority (including authority to require license amendments or project modifications to comply with the ESA following reinitiation of ESA Section 7 consultation at the request of the NMFS) sufficient discretionary involvement or control with respect to project construction, operation, maintenance and modification under each new license, or any amendments thereto, so as to ensure full compliance with the requirements of the ESA, with respect to the carrying out of such actions during the term of the new license.

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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Public Utility District No. 1 of	)	(Project No. 12569-001)
Okanogan County	)	(Enloe Hydroelectric Project)
	)	
Application for Major New License	)	

CERTIFICATE OF SERVICE

I hereby certify that I have this day served, by electronic or first class mail, a letter to Kimberly D. Bose, Federal Energy Regulatory Commission, from the National Marine Fisheries Service, regarding Preliminary Recommended Terms and Conditions for the Enloe Hydroelectric Project (FERC No. 12569-001) and this Certificate of Service to each person designated on the official service list compiled by the FERC in the above captioned proceeding.

Dated on February 26, 2010

Bonnie Hossack

Bonnie Hossack, Secretary
FERC & Water Diversions Branch
Hydropower Division