



GENERAL COUNCIL
and
BOARD OF TRUSTEES

CONFEDERATED TRIBES
of the

Umatilla Indian Reservation

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August 14, 2007

Via E-mail, FAX, and U.S. Mail

Shane Bickford
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Re: Wells Hydroelectric Project (FERC No. 2149); Comments on Proposed Study Plans

Dear Mr. Bickford:

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) appreciates this opportunity to respond to the request by the Douglas County Public Utility District (Douglas) for comments on proposed studies for the Wells Hydroelectric Project (Project) relicensing under FERC's Integrated License Process (ILP). This request was made at the June 15, 2007, public meeting concerning Wells Hydroelectric Project relicensing.

The CTUIR has reviewed the May 2007 Study Plans (Plans) issued by Douglas. We believe that the scope of proposed studies may not fully and adequately assess and evaluate the full extent of Project impacts on natural resources. Therefore, we propose that Douglas fund and conduct the following studies, in consultation with the CTUIR, the Columbia River Inter-Tribal Fish Commission (CRITFC),¹ and other appropriate resource management agencies.

¹ CRITFC was established in 1977 by formal resolution of the governing bodies of the four Columbia River Treaty Tribes: the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Yakama Nation and the Nez Perce Tribe. The Commission is comprised of elected and appointed officials who are members of their respective tribal fish and wildlife commissions and committees. The Commission's technical and legal resources are employed to assist the tribes in protecting and enhancing our treaty-secured trust resources.

Adult Salmon and Steelhead Passage Studies

Currently there are no adult salmon and steelhead passage studies in the Plans. The presence and operation of the Project negatively affects adult passage. Impacted salmonid species include two ESA-listed stocks (Upper Columbia Spring Chinook, Upper Columbia Steelhead) and several stocks not listed but in poor status, including Mid-Columbia Summer Chinook and Okanogan Sockeye.

A new Biological Opinion (BiOp) for the Federal Columbia River Power System (FCRPS) is currently being developed. It is important for Project studies to evaluate conditions in a manner that enables non-federal projects such as Wells Dam to operate consistently and in coordination with FCRPS operations, as the entire hydrosystem is linked and its impacts on salmonids are intertwined. The 2000 Biological Opinion (BiOp) for the Federal Columbia River Power System (FCRPS) has, as part of its Reasonable and Prudent Alternative (RPA) to avoid jeopardy, a per-project (dam and reservoir) adult survival standard for Upper Columbia Spring Chinook and Upper Columbia Steelhead of 98.1 % and 97.3%, respectively (NMFS 2000). The Habitat Conservation Plan for the Project assumes a 2% mortality rate for adult salmon and steelhead, but this has not been verified by any recent studies. There has not been an adult passage study at the Project since 2001 for steelhead (English et al. 2002), since 1992 for sockeye (Swan et al. 1994), and since 1993 for spring and summer Chinook (Stuehrenberg et al. 1994).

The goal of adult passage studies would be to evaluate current passage rates and timing, to establish a baseline for adult passage improvements. The ultimate goal is to achieve adult passage survival standards consistent with those established for the FCRPS, and to reduce adult passage duration through the Project. Reduction of passage times is important to reduce delayed mortality and to assure that salmon have adequate energy reserves for successful spawning in natal areas above the Project (Geist et al. 2000).

The objectives of adult steelhead and salmon passage studies are consistent with past studies at mainstem Columbia River hydroelectric projects, and include:

- Determine survival rates for adults passing through the dam and reservoir
- Determine passage times for adults passing through the dam and reservoir
- Identify problematic areas for adult passage through the dam that may cause delay and identify possible structural/operational improvements to improve passage
- Determine potential thermal barriers within the ladder that may delay and affect adults
- Determine gross adult behavior characteristics as they pass through existing dam fishways
- Determine the efficiency and passage rates and times of fishway entrances, fishway exits and tailraces
- Determine proportion, incidence and magnitude of adult fall backs and fall out from ladder entrances and compare these to rates at other Columbia Basin mainstem hydroelectric projects
- Determine the fate of adults that fall back over Wells Dam.
- Assess steelhead kelt timing, survival and passage rates through the project and compare these metrics to other Columbia mainstem hydroelectric projects

The results of these studies will assist in establishing a baseline for project effects on adult passage and inform decision-making about potential operational/structural changes to the Project that will reduce these effects, leading to achievement of survival and passage timing goals. The Columbia River Treaty Tribes' anadromous fish restoration plan, *Wy-Kan-Ush-Mi Wa-Kish-Wit* (Nez Perce et al. 1995) calls for consideration of modifying adult fishways at all Mid-Columbia PUD dams. This plan, formally adopted by the CTUIR and the other three Treaty Tribes, states that the Mid-Columbia PUDs, in consultation with tribal, state and federal resource agencies, should finish ongoing structural analyses of all mainstem fishways and take corrective actions including:

- Improve existing fishway attraction flows, install additional pumps and gravity flow systems, and modify ladder exits to reduce occurrence of adult fallback
- Evaluate and implement new ladder designs including modifications to weirs, baffles and pools; emphasize designs that integrate fish swimming and leaping abilities with fluid dynamics and designs that are based on fish responses as recommended by Orsborn (1987)
- Implement hydraulic evaluations of all fishways, make operational and structural corrections and combine these evaluations with limited radio-telemetry studies that can provide focus on specific problem areas

These measures should increase the numbers of adult salmon successfully completing their upstream migration and reduce delay through the mainstem hydroelectric projects. The measures should also decrease pre-spawning mortality, contribute to increased spawning distribution with appropriate timing, and increase spawner success.

As stated above, existing adult passage studies and results of those studies related to the Project are very dated and may not represent current conditions. While the Project's fishways have PIT-Tag detectors, this methodology is very gross and cannot provide the data necessary to identify and improve specific areas in fishways and Project in general that are vital to reduce passage delay and increase passage success, such as radio-telemetry.

For example, Sturenberg et al. (1993) found that low negative net entrances were recorded for spring and summer Chinook attempting to enter the Wells fishway and that 21.2% of adult fall Chinook fell back over the dam. In comments on Sturenberg et al. (1993), Basham (1995) noted that the National Marine Fisheries Service recommended moving diffusers at the Wells ladder closer to the base of the ladder to create better hydraulic conditions for fish passage.

Swan et al. (1994) noted that the fallback rate for sockeye salmon was 13%. They concluded that additional radio-telemetry studies should be conducted at the Project focusing on fallback and its effects. They also recommended that more effort was needed to determine the extent of spawning, and that carcass counts for the area directly above the Project should be conducted.

English et al. (2002) noted that 11.9% of radio-tagged steelhead fell back over the dam and that this occurred during September-October when there was minimal to no spill for juvenile passage. Fallback has been demonstrated to result in fish death or injury, migration delays and reduction in spawner success through greater exposure to poor environmental conditions (Boggs et al.

2004). This is particularly true for the Project in that temperatures in the Wells reservoir are extreme in the summer and late fall, particularly in the backwaters to the Okanogan River. Fallback re-ascension and other delays at dams is energetically expensive and could result in reduction of spawner success (Boggs et al. 2004). English et al. (2004) noted that fishway entrance passage times accounted for the majority of delay, particularly for the right bank fishway. They reported that these extended passage times were likely the result of flow and head differential in the collection area as a result of aquatic buildup of vegetation blocking diffuser flow into these areas.

Radio-telemetry has been a standard tool for assessing adult passage success and survival in the Columbia Basin for almost two decades (Peery and Bjornn 2002; Keefer et al. 2004.). Tagging and tracking technology has improved since the time the last studies were conducted at the Project. We anticipate that tagging 50 to 75 adults for each salmon/steelhead stock at Rocky Reach Dam and/or Wells Dam at existing traps would provide detailed passage information. Temperature sensitive radio tagging techniques have been improved and should be used for summer and early fall adult migrants to determine migratory paths through the Project and potential areas in the fishways that may be thermal blocks (Peery and Bjornn 2002). Tracking adults would be accomplished by mobile means (boats, planes, foot) and fixed receivers in dam fishways, forebays and tailraces, tributary mouths and in spawning areas. Electromyogram telemetry is a recently developed tool that can be used to assess adult active swimming ability and with concurrent hydraulic evaluations in the fishways can be used to identify problem passage areas needing improvement (Brown et al. 2006). There is no existing data on migration temperatures or swimming ability for adults passing through the Project.

Ideally, these telemetry and concurrent hydraulic studies would be conducted for low, medium and high flow years for each adult salmon and steelhead stock to encompass the range of environmental variability around results. However, this would be costly in terms of Douglas' resources. Alternatively, we propose that a baseline telemetry and concurrent hydraulic study be conducted for one year for each salmon and steelhead stock, beginning in 2008, to describe baseline conditions necessary for structural and operational improvements for adult passage at the Project. Draft reports should be circulated to tribal, state and federal agencies and FERC in 2009 with a final report out in 2010. Comparative studies cost in the range of \$750,000-\$1,000,000.

Adult Pacific Lamprey Studies

The goals of Pacific lamprey studies are to 1) document baseline survival and passage success through the Project, and identify problem areas that need to be improved to increase survival and passage success, and 2) identify adult lamprey spawning and holding habitat within the Project area and upstream of the Project in tributaries.

Improvement of adult lamprey passage has been identified as a key need by the Columbia Basin Fish and Wildlife Authority's Lamprey Technical Working Group (2006). Lamprey is an imperiled species throughout the western U.S. and only 21 adults were recorded passing the Project in 2006.

Several radio tagging studies conducted at fish ladders on mainstem Columbia River dams found 38 to 82% passage efficiency for adult lamprey (Moser et al. 2002). These studies identified several features common to most dam fishways that appeared to hinder adult lamprey passage, including diffuser gratings, junction pools, counting windows, and fishway entrances. Laboratory bioenergetics studies have also concluded that lamprey must use significant energy reserves to successfully negotiate such fish ladders (Mesa et al. 1999). This loss of reserves could ultimately affect their spawning success, as adult lamprey are not known to feed during their freshwater migration, which can last for up to a year (Kostow 2002). Adult lamprey passage through the Project could be a serious concern, as it is with most other mainstem Columbia River hydroprojects.

Douglas should utilize existing radio-telemetry and/or PIT-Tag methods as appropriate for adult studies. Lamprey should be tracked into tributary areas and spawning success should be monitored if feasible. Douglas should evaluate delayed mortality or post-Project effects by monitoring lamprey after they leave the Project boundaries, particularly where they hold and spawn in tributary streams. Furthermore, Douglas should develop operations and maintenance procedures that would avoid lamprey impacts from dewatering fishways and other dam operations.

The CTUIR supports the proposed study of Pacific lamprey, but believe that study modifications are necessary. It is important to complete at least one year of a baseline study with at least 50 tagged lamprey to discern individual passage bottlenecks within the dam. Consistent with management plans for other recently relicensed FERC projects at Willamette Falls and Rocky Reach, a walk through the Project's fishways after winter dewatering with regional lamprey passage experts from the Columbia Basin Technical Lamprey Workgroup should occur in the winter of 2007-2008 to visually identify potential passage problem areas and develop recommendations for operational and/or structural modifications. In addition, a hydraulic analysis of the fishway at key areas (entrances, weirs and exits) should be conducted concurrently with the radio-telemetry assessment. While we understand the difficulty of trapping sufficient adults due to extremely low numbers passing the Project, we are concerned that studies will not be conducted in the relicensing time frame due to this problem. Indeed, in 2006 only 21 adults were recorded passing Wells Dam, and this year's adult lamprey count at Bonneville Dam is at a historical low. We recommend that adult lamprey from another source in the downstream Columbia River be obtained, transported and acclimated below the Project and released in order to attempt to discern passage metrics at the fishway. Adult lamprey should be tracked to spawning areas, and if possible, monitored for spawning success. This was recently accomplished by the University of Idaho for the Nez Perce Tribe in the Snake River Basin (Peery, pers. comm., 2007).

Douglas should also begin investigations in 2008 within upper Columbia tributary streams to enable you to identify more clearly where adult lamprey spawn and what habitat conditions are preferred. We recommend at least one year of baseline data for each tributary. Methods described in Stone (2006) should be used to accomplish this study. A report on the study results should be available to the tribal, state and federal fish agencies and FERC by 2009. Based on other lamprey studies in the Columbia Basin, the cost of this study should range between \$200,000 and \$400,000.

Juvenile Pacific Lamprey Studies

The goals for juvenile lamprey impacted by the Project include: 1) identifying passage routes and specific impacts through the dam; 2) assessing the impacts of project operations, such as pool drawdown, on juvenile lamprey survival and habitat; and 3) identifying juvenile lamprey presence and habitat in tributaries above the Project.

At the June 15, 2007, Project study public meeting, an incident was described where numerous juvenile lamprey, likely ammocetes, were desiccated after a drawdown of the Wells Pool. We believe this warrants further examination. A planned drawdown of the Wells Pool, particularly at the tributary mouths that are impounded by the Pool such as the Methow and Okanogan, should occur and monitoring of sediments for presence of lamprey, using electrofishing methods described by Luzier (2007), should be implemented and evaluated.

The success of downstream juvenile lamprey passage through the Project is an important piece of information that is currently missing. Douglas should: 1) implement a baseline study in 2008 or 2009 to examine juvenile passage through Project-specific routes; and 2) assess dam structures and operations to increase juvenile lamprey survival through the Project.

Specific tags to evaluate juvenile lamprey passage and survival are still under regional development; however, Douglas should move forward in assessing the indirect mortality and injury rates for the juvenile Pacific lamprey that pass through the Project by implementing route specific pilot passage and survival studies in coordination with the Lamprey Technical Working Group. Hi-Z balloon tagging coupled with radio-tag technology is available for juvenile salmon and could be used for juvenile lamprey for route specific dam passage studies (Scott Heppell, OSU, pers. comm.). Schreck et al. (2000) found that an external radio tag placed on juvenile lamprey remained on 75% of the lamprey for 3 days.

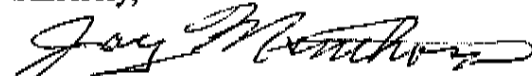
The U.S. Geological Survey is in the process of developing specific tags to evaluate juvenile lamprey passage (Mesa, pers. comm. 2005). The tagging protocols for release into turbines or screen systems only require that tags remain on fish for 20 minutes to one hour, as the fish are quickly recovered in the tailrace with the inflated balloon after passing through selected powerhouse routes. Using these tagging techniques and using microscopy to examine for internal injuries and holding subjects for examination for delayed mortality are important to fully assess the impacts of passage routes. Final decisions on improvements to or selection of passage routes necessary under the new license should take into account all mortality and passage information through the Project.

Finally, a study in 2008 or 2009 should be implemented by Douglas to enable you to identify where juvenile lamprey are located within the tributary streams above the Project and what habitat conditions are preferred. Methods identified by Claire (2000) and Luzier (2007) should be used for this work.

Conclusion

The Confederated Tribes of the Umatilla Indian Reservation thanks you for your request for comments on your proposed studies for the Wells Hydroelectric Project. We hope that the above comments will be helpful as you further modify and refine your study plan, and that you will take them into consideration. If you have any questions, please contact me, or Carl Merkle at (541) 276-3449.

Sincerely,



Jay Minthorn
Chairman
Fish and Wildlife Commission

JM: DNR: EP/RP: cm