

Lewis River Hydroelectric Projects Relicensing

Merwin Hydroelectric Project (FERC No. 935)
Yale Hydroelectric Project (FERC No. 2071)
Swift No. 1 Hydroelectric Project (FERC No. 2111)
Swift No. 2 Hydroelectric Project (FERC No. 2213)

USDA Forest Service Gifford Pinchot National Forest

EXISTING INFORMATION ANALYSIS

5. Threatened Bull Trout Viability

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I. Existing Situation

The U.S. Fish and Wildlife Service recognized two sub-populations of bull trout in the Lewis River system: the Yale Reservoir Sub-Population and the Swift Reservoir Sub-Population (USDI 1998a and 1998b). Both sub-populations exhibit an adfluvial life history type. Adult fish reside in the reservoirs for the majority of the year and then migrate into the main river or its tributaries during late spring. Adult fish hold in their spawning tributaries throughout the early summer months, then spawn in August and September. After spawning, the adult fish return to the reservoirs until the following year's spawning season.

Cougar Creek is the only tributary to Yale Reservoir where bull trout are known to spawn. The Yale Reservoir Sub-Population contains an extremely low number of individual fish coming dangerously close to extinction. *“PacifiCorp has been conducting bull trout spawner counts on Cougar Creek since 1978. The estimated Cougar Creek spawner population ranges from zero to 40 individuals (PacifiCorp and Cowlitz PUD 1999a, 100% Initial Information Package).”*

Pine and Rush creeks are believed to be the principal spawning tributaries supporting the Swift Reservoir Sub-Population (Faler and Bair 1996). A cooperative monitoring effort began in the early 1990s on the Swift Reservoir Sub-Population. The primary cooperators include the Washington Department of Fish and Wildlife, PacifiCorp, and U.S. Forest Service. In the early 1990s, radio-tagging of adult bull trout was conducted to determine distribution of spawners. Beginning in 1994, population size estimates have been made on an annual basis using a visual mark-recapture method. The population

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estimates at the 95 percent confidence limit for the Swift Reservoir Sub-population are given, below, in Table 1. Annual estimates of the Swift Reservoir Sub-Population ranged between 101 to 437 individuals from 1994 through 1998 (GPNF 1999). The 1999 population estimate is considered provisional at the time of completion for this Existing Information Analysis Report.

Table 1. Swift Reservoir sub-population estimates: 1994 – 2001.

1994	1995	1996	1997	1998	1999	2000	2001
101	246	325	233	437	244 ¹	288	542

¹ The 1999 population estimate was received from John Weinheimer (WDFW) on January 12, 2000 and is considered only as a provisional estimate as of that date. 2000 and 2001 data were provided by Jim Bryne (WDFW).

Yale and Swift reservoirs; created by the construction of Yale Dam in 1953 and Swift No. 1 in 1958, respectively; are actively managed for intensive recreational sport fisheries of both kokanee and rainbow trout. While hatchery management on the Lewis River is the responsibility of the Washington Department of Fish and Wildlife, both PacifiCorp and Cowlitz PUD No. 1 are mandated to fund hatchery operations at both Merwin and Speelyai hatcheries in accordance with the articles of their existing licenses. Past and current fish production at these two hatchery facilities provide for the recreational sport fisheries in Merwin, Yale, and Swift reservoirs (PacifiCorp and Cowlitz PUD 1999a, 100% Initial Information Package, Table 4.3-4 on Page 4-13).

Swift Power Canal was constructed to carry water from the tailrace of Swift power house #1 to power house #2. In April of 2002 the canal breached immediately west of Swift #2's penstock causing considerable damage to the power facility, State Road 503, the canal, operations at Swift #1, the former river channel, and the power canal fishery. In general, it was thought that the canal was unsuitable for bull trout occupancy. However, after draining of the canal it became clear that bull trout were, in fact, doing quite well in the canal. Approximately 45-50 live bull trout were rescued from the canal. Four bull trout were found dead near the breach. Based upon the evidence obtained from the canal breach, a method for allowing the movement of bull trout between, as well as some form of preventive entrainment guidance facility at Swift #1, Yale and Swift reservoirs appears to be warranted.

The primary partners involved in the cooperative monitoring of the Swift Reservoir Sub-Population have long recognized the occurrences of incidental catch and illegal harvest that occurs in the popular recreational sport fisheries, both Yale and Swift reservoirs. In addition to the lack of suitable spawning and rearing habitat available in the Lewis River system, the incidental take and illegal harvest of bull trout in both reservoirs were believed to be substantial factors contributing to the fluctuation of the two sub-populations. The Washington Department of Fish and Wildlife closed all waters in the Lewis River system to the harvest of bull trout in 1992. However, random reports of angler harvested bull trout are received frequently. The amount of direct mortality from illegal harvest and the amount of incidental mortality from catch-and-release is unknown

and has not been quantified. These sources of mortality have not been assessed in a viability analysis of the two sub-populations.

The reintroduction of anadromous fishes to habitat historically occupied prior to the dams is under consideration as part of the relicensing process (see EIA for Fish Passage and Reintroduction of Anadromous Fish Species). Any reintroduction of anadromous fishes has the potential to affect bull trout populations.

II. Management Direction

Code of Federal Regulations (CFR)

36 CFR 219 covers the planning process for development of National Forest Land and Resource Management Plans. The Code of Federal Regulations provides the implementing direction for the National Forest Management Act (1976).

Under 36 CFR 219.19, paragraph 1 states, “Fish and Wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. In order to insure that viable populations will be maintained, habitat must be provided to support, at least a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.”

- 219.19 (2) Planning alternatives shall be stated and evaluated in terms of both amount and quality of habitat and of animal population trends of the management indicator species. We interpret this to include Threatened and Endangered species as well as EDT diagnostic species, such as spring/fall Chinook salmon, coho salmon, chum salmon, summer/winter steelhead trout and bull trout.
- 219.19 (3) Biologists from State fish and wildlife agencies and other Federal agencies shall be consulted in order to coordinate planning for fish and wildlife, including opportunities for the reintroduction of extirpated species.

Section 219.27(g) Diversity states in part, “Management prescriptions, where appropriate and to the extent practicable, shall preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species.”

Gifford Pinchot Land and Resource Management Plan

The Gifford Pinchot National Forest Land and Resource Management Plan (1990), as amended by the Northwest Forest Plan in 1994 (the Northwest Forest Plan applies to Bureau of Land Management lands also), provides the management direction for all National Forest System lands and their associated resources directly affected by or within the project vicinity of the four hydroelectric projects in the Lewis River system. This

plan was developed and enacted consistent with the requirements of the Forest and Rangeland Renewable Planning Act, as amended by the National Forest Management Act. The Aquatic Conservation Strategy (ACS), a core component of the Northwest Forest Plan, provides management direction aimed at maintaining or restoring the ecological health and functioning of watersheds and the aquatic ecosystems contained within them. ACS objectives that apply most to this issue are:

Objective 1 – Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.

Objective 2 – Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

Objective 3 – Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

Objective 4 – Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

Objective 5 – Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

Objective 6 – Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

Objective 7 – Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

Objective 9 – Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

Additionally, Northwest Forest Plan Standard and Guideline LH-2 for Tier 1 Key Watersheds states: “During the relicensing of hydroelectric projects, (the Forest Service

shall) provide written and timely license conditions to FERC that emphasize flows and habitat conditions that maintain or restore riparian resources and channel integrity.”

Forest Service Manual Direction

Forest Service Manual (FSM) 2670.12 directs the Forest Service to:

- *Conduct activities and programs to assist in the identification and recovery of threatened and endangered plant and animal species, and*
- *Avoid actions that may cause a species to become threatened or endangered.*

Forest Service Manual (FSM) 2670.22 directs the Forest Service to:

- *Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands. A viable population is further defined by FSM 2670.5 as one that has the estimated numbers and distribution of reproductive individuals to ensure the continued existence of the species throughout its existing range (or range required to meet recovery for listed species) within the planning area.*

Federal Power Act (FPA)

Section 4(e) of the FPA provides the USDA Forest Service, as administrators of reserved lands affected within the project area, authority to attach mandatory terms and conditions to Project licenses. This section of the FPA states, “that licenses shall be subject to and contain such conditions as the Secretary of the department under whose supervision such reservation falls shall deem necessary for the adequate protection and utilization of such reservation.” Section 4(e) also states that “...the Commission (FERC), in addition to the equal power and development purposes for which licenses are issued, shall give equal consideration to the purposes of enhancement of, fish and wildlife (including related spawning grounds and habitat)...”. Forest Service terms and conditions are based upon management direction contained in amended Forest Plans. If the project being relicensed is not located on Forest Service land but affects resources managed by the agency (i.e. migratory fish that historically used NFSL), the Forest Service can make recommendations regarding fish passage to FERC.

Executive Order 12962

Under the Recreational Fisheries Executive Order (Executive Order 12962 of June 7, 1995, Federal Register Notice 60(111): 30769-30770), the President of the United States directs federal agencies to cooperate with state and tribal governments to improve aquatic resources for increased recreational fishing opportunities by:

- Identifying recreational fishing opportunities limited by degraded habitat and water quality,
- Restoring habitat and water quality,
- Providing access and promote awareness of recreational fishing opportunities,
- Stimulating angler participation in conservation and restoration,
- Using cost-share programs and implementing laws to conserve, restore, and enhance aquatic systems to support recreational fisheries,
- Evaluate effects of federally funded, permitted, or authorized actions on aquatic systems and recreational fisheries and document those effects relative to the purpose of this order, and
- Assisting private landowners to conserve and enhance aquatic resources.

Master Memorandum of Understanding, Washington Department of Fish and Wildlife and USDA Forest Service Region Six

Signatory parties agreed under this MOU to consult on fish and wildlife actions that occur or may affect USDA Forest Service Region Six Forests. Listed below are four key elements of this MOU.

Section A #2. The Forest Service agrees to recognize WDFW as being responsible for the protection, perpetuation, and management of all game fish and wildlife in the State of Washington.

Section B #2. WDFW agrees to solicit Forest Service participation in establishing the desired level of fish and wildlife populations on the National Forests...

Section B #4. WDFW agrees to consider Forest Service's goals and objectives in the development of Fish and Wildlife plans.

Section B #6. WDFW agrees to cooperate with the Forest Service in preparation and conduct of research plans of mutual interest.

III. Information Analysis

Recreational fisheries on Merwin, Yale and Swift reservoirs were developed and have been intensively managed since their construction. These sport fisheries are quite popular among the general angling community and have grown in size due to the expansive population growth in the southwest Washington area. Fishing by bank and boat are common on both reservoirs. Swift Campground and Eagle Cliff Park provide easy bank access for anglers along the upper lobe of Swift Reservoir where adult bull trout are known to congregate in the spring prior to migrating up the Lewis River into

Pine and Rush creeks. A two-lane boat ramp at Swift Campground provides nearby access for boat anglers close to the upper lobe of Swift Reservoir. The fishing season in Yale Reservoir is year-round, while it is from the last Saturday in April through October 31st for Swift Reservoir. Many bank anglers congregate along the Lewis River where it flows into Swift Reservoir and along its upper lobe near Eagle Cliff Park throughout the spring months. This temporal and spatial overlap between the recreational trout fishery and the staging of adult bull trout for their spawning migration is likely to greatly increase the occurrences of incidental take or illegal harvesting.

Swift Power Canal developed into a popular fishery and received stocking of rainbow trout to support a bank fishing constituency. Incidental “take” of bull trout undoubtedly occurred, especially given the relative abundance data gathered as a result of the canal failure.

Illegal harvest of bull trout has been reported in recent years during the remainder of the general recreational sport fishery within both Yale and Swift reservoirs (Ed Wickersham, USFWS Law Enforcement Agent, personal communication 5/30/00). Angler reported bull trout captures have even been documented for Swift Power Canal (Jack Tipping, WDFW fish biologist personal communication 12/7/99). While cooperators have taken a progressive step forward to educate anglers about bull trout via informational signing at Eagle Cliff Park and the Pine Creek Information Center (a Forest Service operated facility), the effectiveness of this outreach effort has not been evaluated. There is a high incident of vandalism associated with many information signs posted on National Forest System Lands.

The large recreational fisheries on the reservoirs was a direct result of project construction and operations. As stipulated in their existing licenses, PacifiCorp and Cowlitz PUD are required to mitigate for project impacts through supporting hatchery operations and providing facilities that support these recreational fisheries (Initial Information Package Final for the Lewis River Hydroelectric Projects 2000). While it is important to continue providing for the recreational sport fishing demand, it is even more critical to evaluate the best means for doing this while ensuring greater protection for and recovery of threatened bull trout. The impacts of incidental take and illegal harvest may be directly attributable to facility existence and project operations, therefore, ultimately affecting the number of adult bull trout that reach spawning grounds located on National Forest System lands. These impacts are likely to continue, and they will require close evaluation. Protection, mitigation, and enhancement measures for this important fisheries resource will likely be a critical component of the recovery actions identified for Lewis River bull trout by the Lower Columbia River Bull Trout Recovery Team.

IV. Preliminary Forest Service Objectives

1. The licensees (PacifiCorp and Cowlitz PUD) fund the recovery action items to be identified for the two Lewis River bull trout sub-populations in the Recovery Plan for the Columbia River Bull Trout Distinct Population Segment (DPS). This plan is currently under development. At the request of the U.S. Fish and Wildlife Service, Forest Service and PacifiCorp fisheries biologists have been participating in recovery planning efforts for the Lower Columbia Recovery Unit for which the Lewis River system is contained. Recovery action items may include:
 - a) Provide fish passage for the Yale and Swift bull trout populations
 - b) Increased monitoring of the current sub-population levels,
 - c) Conducting presence/absence surveys to better define the current range of bull trout within the Lewis River system,
 - d) Habitat evaluations to determine suitable habitats for reintroduction and for prioritizing habitat recovery actions,
 - e) Implementation of habitat recovery actions,
 - f) Reintroduction of bull trout into unoccupied, suitable habitats in order to extend the current range and promote population growth, and
 - g) Monitoring of reintroduction efforts.

2. Licensees develop a *Basin-wide Fish Planning Document* for the Lewis River system that re-examines reservoir stocking levels and establishes recreational fishery objectives consistent with the recovery action items identified for “threatened” bull trout. A *Basin-wide Fish Planning Document* may:
 - a) Eliminate the sport fishery altogether for rainbow trout in Swift Reservoir, for rainbow trout and kokanee in Yale Reservoir, or both.
 - b) Curtail the sport fisheries in either or both Swift and Yale reservoirs during periods (early and late spring) when adult bull trout are staging in particular areas for their spawning migrations and are more vulnerable to angling effort.
 - c) Require the licensees to provide greater enforcement of existing fishing regulations through an increased presence of law enforcement officials.
 - d) Require creel surveys on an annual basis to evaluate sport fishing efforts, occurrence of incidental take or unintentional illegal harvest, and the effectiveness of the recreational component of a larger Fish Management Plan in an adaptive management capacity.
 - e) Require additional outreach and angler education efforts to protect bull trout. These efforts may include additional information signing, brochure handouts during routine creel survey efforts, and evaluation of angler outreach effectiveness.
 - f) Promote an increased recreational sport fishery in Merwin Reservoir or other suitable areas within or outside of the basin to compensate for loss of recreational sport fishing opportunities in Swift and/or Yale reservoirs.

V. Information Needs

The licensees conducted a creel survey study: AQU 7 Creel Surveys. The study plan identified a creel survey to be conducted at Swift Reservoir and Swift No. 2 Power Canal in 1999 and a creel survey in Lake Merwin from November 1999 through October 2000. The overall objective of this study plan was to provide “continuing information on the success of hatchery stocking programs in the Lewis River basin specific objectives for this study plan were to quantify angler effort (hours), angler catch rates, and angler harvest by fish species (number of fish) and gain biological information (lengths, origins, possibly age) for those fish species (PacifiCorp and Cowlitz PUD 2000, see Study Plan Document, , Page AQU 7-1).” The portion of this study focusing on Swift Reservoir began in 1999 field season. Unfortunately, the portion of this survey aimed at angler identification ability was begun in August, over halfway through the angling season. Results of this study were made available by PacifiCorp to participants in the collaborative relicensing process. A preliminary review of the results indicates that additional studies would be necessary to fully investigate the issues identified above and to provide adequate information to develop protection, mitigation, and enhancement (PM&E) measures.

Additional study needs were identified as:

1. Quantify the amount of incidental take and illegal harvesting of bull trout in Swift and Yale reservoirs and Swift No. 2 Power Canal.

Current situation relative to this proposal – Based on the 2001 Technical report a quantification of incidental and illegal take of bull trout did not occur. The incidental take of bull trout associated with the 2002 breach of the Swift Power Canal will be reported in the 2002 Technical Report.

2. Investigate the temporal and spatial components of incidental angler take and illegal harvesting of bull trout (e.g., At what periods during the angling season and at what locations in the reservoirs or power canal is incidental take and illegal harvest greatest?).

Current situation relative to this proposal – Information gathered on this topic was obtained from WDFW.

3. Determine the amounts of incidental take of bull trout (i.e., mortality from hook and release) and direct take from illegal harvest in a statistically rigorous manner that is extrapolated to the two separate sub-populations.

Current situation relative to this proposal – Limited data collection and analysis found in the AQU-7. WDFW law enforcement efforts cited several anglers for possession of bull trout during the 2001 fishing season.

4. Investigate the bio-energetics of bull trout in the reservoirs to gain an understanding of their relationship to planted rainbow trout and kokanee.

Current situation relative to this proposal – Not addressed, although there may have been an opportunity to collect valuable bull trout biological data from the rescued Swift Power Canal fish.

5. Compile the results from past (e.g., the Yale Relicensing Study entitled “Creel Survey of Yale Lake” found in PacifiCorp 1999), present, and proposed (above) studies to assess the entire Lewis River system recreational fishery.

Current situation relative to this proposal – AQU-7 focused on Merwin and Swift reservoirs, as well as Swift power canal. There were several objectives stated, including a section on bull trout. The added emphasis on bull trout attempted to determine incidental take, whether anglers could identify bull trout, to educate anglers on bull trout identification, and to ultimately reduce the harvest of bull trout from the North Fork Lewis River.

Study results (Technical Report 2001) indicated a low percentage of anglers (<43%) could accurately identify bull trout. Brook trout were also frequently mis-identified (<47%).

6. Investigate providing fish passage (all possible scenarios) that includes bull trout between Yale and Swift reservoirs.

Current situation relative to this proposal – See AQU-5 in the 2001 Technical Report.

7. Investigate methods that allow bull trout entrained at Swift #1 to move safely through the Swift Power Canal and Swift #2 into Yale reservoir.

Current situation relative to this proposal – See AQU-5 in the 2001 Technical Report.

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