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Ms. Jessica Gonzales
Wenatchee Office Lead
Central Washington Field Office
U. S. Fish and Wildlife Service
215 Melody Lane, Suite 119
Wenatchee, WA 98801-5933

April 12, 2013

Subject: **Wells Hydroelectric Project – FERC Project No. 2149**
Annual Report – 2012 Bull Trout Monitoring and Take Report

Dear Ms. Gonzales:

Public Utility District No. 1 of Douglas County, Washington (Douglas PUD), licensee for the Wells Hydroelectric Project No. 2149 (Wells Project) respectfully submits the attached Annual Bull Trout Monitoring and Take Report for Calendar Year 2012. This report is being filed in compliance with the reporting requirements found in the *Biological Opinion for the Proposed Relicensing of the Wells Hydroelectric Project* issued by the United States Fish and Wildlife Service (USFWS) on March 16, 2012 and as found in Appendix E of the new Federal Energy Regulatory Commission (FERC) license for the Wells Project.

The Biological Opinion requires Douglas PUD to submit its annual report to the USFWS, Central Washington Field Office on or before April 15th during each year of the license. The report is required to describe the work completed and the number of bull trout, if any, observed and /or incidentally taken during the course of implementing the license. The attached annual take report is in addition to the requirements in the Aquatic Settlement Agreement that requires Douglas PUD to provide the Aquatic Settlement Work Group with a report of annual activities associated with the implementation of the Bull Trout Management Plan (BTMP) and Article 406 of the FERC license that requires Douglas PUD to file an annual report of activities associated with the implementation of all six Aquatic Settlement Agreement Management Plans, including the implementation of the BTMP.

If you have any questions or require further information related to the *2012 Annual Bull Trout Monitoring and Take Report*, please feel free to contact Andrew Gingerich at (509) 881-2323 or andrewg@dcpud.org.

Sincerely,

Shane Bickford
Natural Resources Supervisor

Attachments:

(1) 2012 Bull Trout Monitoring and Take Report under the March 16, 2012 Bull Trout Biological Opinion associated with the Proposed Relicensing of the Wells Hydroelectric Project, FERC License No. 2149

Cc: Aquatic Settlement Work Group
Steve Lewis – USFWS, Wenatchee
Jeff Krupka – USFWS, Wenatchee
Judy Neibauer – USFWS, Wenatchee
Andrew Gingerich – Douglas PUD
Chas Kyger – Douglas PUD

2012 BULL TROUT MONITORING AND TAKE REPORT

FERC PROJECT NO. 2149

April 12, 2013

Prepared by:
Public Utility District No. 1 of Douglas County
East Wenatchee, Washington

EXECUTIVE SUMMARY

The Bull Trout Management Plan (BTMP) is one of six Aquatic Resource Management Plans contained within the Aquatic Settlement Agreement (Agreement). Collectively, these six Aquatic Resource Management Plans are critical to direct implementation of Protection, Mitigation, and Enhancement measures (PMEs) during the term of the new license and, together with the Wells Anadromous Fish Agreement and Habitat Conservation Plan (HCP), will function as the Water Quality Attainment Plan (WQAP) in support of the Clean Water Act Section 401 Water Quality Certification (401 Certification) for the Wells Hydroelectric Project (Project).

The goal of the BTMP is to identify, monitor, and address impacts, if any, on bull trout (*Salvelinus confluentus*) resulting from the Project in a manner consistent with the United States Fish and Wildlife Service (USFWS) Bull Trout Recovery Plan and the terms of the Section 7 Incidental Take Statement (ITS). This BTMP is intended to continue the implementation of management activities to protect bull trout during the new license term in a manner consistent with the original Wells Bull Trout Monitoring and Management Plan (WBTMMP) (Douglas 2004). The 2004 WBTMMP was developed in coordination with the USFWS, as required by the USFWS Bull Trout Section 7 Biological Opinion (BO) in association with the Federal Energy Regulatory Commission's (FERC) approval of the HCP. The PMEs presented within the BTMP are designed to meet the following objectives:

Objective 1: Operate the upstream fishways and downstream bypass systems in a manner consistent with the HCP. In 2012 Public Utility District No. 1 of Douglas County (Douglas PUD) maintained safe, efficient and timely passage through the downstream juvenile fish bypass system and upstream adult fishway passage structures for bull trout and conducted video monitoring of the Wells Dam fishway viewing windows during fish passage season. Douglas PUD continued to operate the juvenile fish bypass system at Wells Dam in accordance with criteria outlined in the Wells HCP.

Objective 2: Identify any adverse Project-related impacts on adult and sub-adult bull trout passage. Douglas PUD will implement the year 5 Passage Evaluation Study in 2017 or earlier if the 5-year average adult bull trout count of 60 fish increases more than two times (120 or more bull trout counted in a single year). No significant changes in the operation of the fish ladders or hydrocombine have been implemented or are proposed that would trigger the implementation of bull trout passage evaluation. During 2012 Douglas PUD in consultation with the Aquatic Settlement Work Group (Aquatic SWG) developed a study plan to assess incidental take of bull trout at the Twisp River Weir broodstock collection facility. After discussions with the Aquatic SWG and specifically with the USFWS, the parties including the USFWS signatories agreed that Douglas PUD should postpone the Off-Project Passage Evaluation until year five (2017) of the new license when the Bull Trout Passage and Enumeration Study is scheduled to take place at Wells Dam. During 2012, one sub-adult bull trout was collected during winter maintenance related fish salvage activities in one of the adult fishways. No new sub-adult related monitoring activities were implemented or are proposed; fewer than 10 sub-adult bull trout have been observed at Wells in a single calendar year.

Objective 3: Implement reasonable and appropriate options to modify upstream fishway, downstream bypass, or operations if adverse impacts on bull trout are identified and evaluate the effectiveness of these measures. No new adverse impacts to bull trout were identified in 2012.

Objective 4: Periodically monitor for bull trout entrapment or stranding during low Wells Reservoir elevations. Stranding surveys were not conducted in 2012 since reservoir elevation did not fall below 773' Mean Sea Level (MSL).

Objective 5: Participate in the development and implementation of the USFWS Bull Trout Recovery Plan including information exchange and genetic analysis. Should bull trout be delisted, the Aquatic SWG will re-evaluate the needs and objectives of the BTMP. Genetic samples were collected for all of the bull trout captured at the Twisp Weir in 2012. Samples will be analyzed if requested by the Aquatic SWG. Genetic samples will be taken at Wells Dam in year ten of the new license.

Objective 6: Identify any adverse impacts of Project-related hatchery operations on adult and sub-adult bull trout. In 2012, the number of bull trout encountered during hatchery operation activities was comparable to previous years. Hatchery actions in 2012 were very similar to other years where broodstock are collected at Wells Dam and the Twisp Weir traps.

This BTMP is intended to be compatible with other bull trout management plans and the Upper Columbia Salmon Recovery Plan (UCSRP) in the Columbia River mainstem. Furthermore, this management plan is intended to be not inconsistent with other management strategies of federal, state and tribal natural resource management agencies and supportive of designated uses for aquatic life under WAC 173-201A, the Washington state water quality standards.

The BTMP will be updated in 2013 to reflect additional requirements that have been added by the final 401 Certification, the 2012 Endangered Species Act Section 7 consultation for bull trout associated with the relicensing of the Wells Project and the new project license issued by the FERC. Implementation of all bull trout related measures implemented during the first full year of the FERC license will be reported within the 2013 BTMP Annual Report.

1.0 INTRODUCTION

The Bull Trout Management Plan (BTMP) is one of six Aquatic Resource Management Plans contained within the Aquatic Settlement Agreement (Agreement). Collectively, these six Aquatic Resource Management Plans are critical to direct implementation of Protection, Mitigation, and Enhancement measures (PMEs) during the term of the new license and, together with the Wells Anadromous Fish Agreement and Habitat Conservation Plan (HCP) will function as the Water Quality Attainment Plan (WQAP) in support of the Clean Water Act Section 401 Water Quality Certification (401 Certification) for the Wells Hydroelectric Project (Project).

To ensure active stakeholder participation and support, the Public Utility District No. 1 of Douglas County (Douglas PUD) developed all of the resource management plans in close coordination with agency and tribal natural resource managers (Aquatic Settlement Work Group or Aquatic SWG). During the development of this plan, the Aquatic SWG focused on developing management priorities for resources potentially impacted by Project operations. Entities invited to participate in the Aquatic SWG include the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA), Washington Department of Ecology (Ecology), Washington State Department of Fish and Wildlife (WDFW), the Confederated Tribes of the Colville Reservation (Colville), the Confederated Tribes and Bands of the Yakama Nation (Yakama Nation), and Douglas PUD.

The BTMP will direct implementation of measures to mitigate project impacts, if any, on bull trout (*Salvelinus confluentus*). To ensure active stakeholder participation and support, Douglas PUD developed this plan, along with the other aquatic management plans, in close coordination with the members of the Aquatic SWG.

The Aquatic SWG agrees on the need to develop a plan to direct the long-term management of bull trout in the Project. This management plan summarizes the relevant resource issues and background (Section 2), identifies goals and objectives of the plan (Section 3), and defines the relevant PMEs (Section 4) for bull trout during the term of the new license.

Additionally, this management plan is intended to continue implementation activities aimed at protecting bull trout in a manner consistent with measures specified in the original Wells Bull Trout Monitoring and Management Plan (WBTMMP) (Douglas 2004). The 2004 WBTMMP was developed in consultation with the USFWS, as required by the USFWS Bull Trout Biological Opinion (BO) in association with the implementation of the HCP.

In addition to the requirements found within the BTMP, the Endangered Species Act (ESA) Section 7 consultation for the relicensing of the Wells Project and the new Federal Energy Regulatory Commission (FERC) license has added several additional bull trout related requirements associated with the continued operation of the Wells Project. The 2013 annual report on the implementation of the BTMP will include all of the bull trout related activities that took place from the issuance of the new license in November 2012 to the end of December 2013 and will also include any bull trout related compliance reports or plans filed with the Aquatic SWG, USFWS and the FERC during calendar year 2013.

2.0 BACKGROUND

2.1 Bull Trout Biology

Bull trout are native to northwestern North America, historically occupying a large geographic range extending from California north into the Yukon and Northwest Territories of Canada, and east to western Montana and Alberta (Cavender 1978). They are generally found in interior drainages, but also occur on the Pacific Coast in Puget Sound and in the large drainages of British Columbia.

Bull trout currently occur in lakes, rivers and tributaries in Washington, Montana, Idaho, Oregon (including the Klamath River basin), Nevada, two Canadian Provinces (British Columbia and Alberta), and several cross-boundary drainages in extreme southeast Alaska. East of the Continental Divide, bull trout are found in the headwaters of the Saskatchewan River in Alberta, and the McKenzie River system in Alberta and British Columbia (Cavender 1978; McPhail and Baxter 1996; Brewin and Brewin 1997). The remaining distribution of bull trout is highly fragmented.

Bull trout are a member of the char group within the family Salmonidae. Bull trout closely resemble Dolly Varden (*Salvelinus malma*), a related species. Genetic analyses indicate, however, that bull trout are more closely related to an Asian char (*Salvelinus leucomaenis*) than to Dolly Varden (Pleyte et al. 1992). Bull trout are sympatric with Dolly Varden over part of their range, most notably in British Columbia and the Coastal-Puget Sound region of Washington State.

Bull trout are believed to have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993). Growth, survival, and long-term persistence are dependent upon habitat characteristics such as clean, cold, connected, and complex instream habitat, a stable substrate with a low percentage of fine sediments, high channel stability, and stream/population connectivity (USFWS et al. 2000). Stream temperature and substrate type, in particular, are critical factors for the sustained long-term persistence of bull trout. Spawning is often associated with the coldest, cleanest, and most complex stream reaches within basins. However, bull trout may exhibit a patchy distribution, even in pristine habitats, and should not be expected to occupy all available habitats at the same time (Rieman and McIntyre 1995; Rieman et al. 1997).

Bull trout exhibit four distinct life history types: resident, fluvial, adfluvial, and anadromous. The fluvial, adfluvial, and resident forms exist throughout the range of the bull trout (Rieman and McIntyre 1993). These forms spend their entire life in freshwater. The anadromous life history form is currently known only to occur in the Coastal-Puget Sound region within the coterminous United States (Volk 2000; Kraemer 1994; Mongillo 1993). Multiple life history types may be expressed in the same population, and this diversity of life history types is considered important to the stability and viability of bull trout populations (Rieman and McIntyre 1993).

The majority of growth and maturation for anadromous bull trout occurs in estuarine and marine waters, adfluvial bull trout in lakes or reservoirs, and fluvial bull trout in large river systems.

Resident bull trout populations are generally found in small headwater streams where fish remain their entire lives.

For migratory life history types, juveniles tend to rear in tributary streams for 1 to 4 years before migrating downstream into a larger river, lake, or estuary and/or nearshore marine area to mature (Rieman and McIntyre 1993). In some lake systems, age 0+ fish (less than 1 year old) may migrate directly to lakes (Riehle et al. 1997). Juvenile and adult bull trout in streams frequently inhabit side channels, stream margins and pools with suitable cover and areas with cold hyporheic zones or groundwater upwellings (Sexauer and James 1993; Baxter and Hauer 2000).

2.2 Species Status

On June 10, 1998, the USFWS listed bull trout within the Columbia River basin as threatened under the Endangered Species Act (ESA) (FR 63(111)). Later (November 1, 1999), the USFWS listed bull trout within the coterminous United States as threatened under the ESA (FR 64(210)). The USFWS identified habitat degradation, fragmentation, and alterations associated with dewatering, road construction and maintenance, mining, and grazing; blockage of migratory corridors by dams or other diversion structures; poor water quality; incidental angler harvest; entrainment into diversion channels; and introduced non-native species as major factors affecting the distribution and abundance of bull trout. They noted that dams (and natural barriers) have isolated population segments resulting in a loss of genetic exchange among these segments (FR 63(111)). The USFWS believes many populations are now isolated and disjunct. In October 2002, the USFWS completed the first draft of a bull trout recovery plan intended to provide information and guidance that will lead to recovery of the species, including its habitat (USFWS 2002). Threatened bull trout population segments are widely distributed over a large area and because population segments were subject to listing at different times, the USFWS adopted a two-tiered approach to develop the draft recovery plan for bull trout (USFWS 2002). In November 2002, the USFWS published in the federal register a proposed rule for the designation of critical habitat for the Klamath River and Columbia River distinct population segments of bull trout (67 FR 71235). In October 2004 the USFWS published a final rule in the Federal Register designating critical habitat for the Klamath River and Columbia River populations of bull trout (69 FR 59995).

In April 2008, the USFWS completed the 5-year status review for Columbia River bull trout with two recommendations: maintain "threatened" status for the species, and determine if multiple distinct population segments exist within the Columbia River and merit protection under the ESA. The recommendations intend to facilitate analysis of project effects over more specific and biologically appropriate areas, ultimately allowing a greater focus of regulatory protection and recovery resources (USFWS 2008a). The review also identified specific issues that limit the overall ability to accurately and quantitatively evaluate the current status of bull trout. Seven recommendations were made to improve future evaluation and management decisions, all of which are largely based on improvement and standardization of monitoring and evaluation techniques, better delineation and agreement of core areas and Recovery Units, and multi-agency cooperation and management (USFWS 2008b).

The Wells Project is situated within the Upper Columbia River Recovery Unit and the USFWS has identified the Wenatchee, Entiat, and Methow Rivers as its core areas. A core area represents the closest approximation of a biologically functioning unit for bull trout. A core area functions as a metapopulation for bull trout. Not all core areas are equal and each has specific functions that are unique. For example, the Entiat Core Area depends heavily on the mainstem Columbia River to provide overwinter, migration, and forage habitats. The Wenatchee Core Area has populations using lake and riverine (both the Wenatchee and Columbia Rivers) habitat for overwintering, migration, and foraging. Within a core area, many local populations may exist. A local population is assumed to be the smallest group of fish that is known to represent an interacting reproductive unit. Nineteen local populations have been identified in the Wenatchee (7), Entiat (2) and Methow (10) core areas (USFWS 2002).

2.3 Project Bull Trout Studies

2.3.1 2001-2003 Project Bull Trout Study

Listed Columbia River bull trout have been observed and counted at Wells Dam since 1998. In 2000, due to the potential for operations at mid-Columbia dams to affect the movement and survival of bull trout, the USFWS requested that the three mid-Columbia PUDs (Douglas, Chelan, and Grant PUDs) evaluate the movement and status of bull trout in their respective project areas. At that time, little was known about the life-history characteristics (e.g., movements, distribution, habitat use, etc.) of bull trout in the mid-Columbia River. Therefore, in order to assess the operational effects of hydroelectric projects on bull trout within the mid-Columbia, a three PUD coordinated radio-telemetry study was implemented beginning in 2001. The goal of the study was to monitor the movements and migration patterns of adult bull trout in the mid-Columbia River using radio-telemetry (Figure 2.3-1). The number of trout to be collected and tagged at each dam (Rock Island, Rocky Reach, and Wells) was based on the proportion of fish that migrated past those dams in 2000.

From 2001-2003, bull trout were collected from the Wells, Rocky Reach, and Rock Island dams and radio-tagged. Multiple-telemetry techniques were used to assess the movement of tagged bull trout within the study area. At Wells Dam, a combination of aerial and underwater antennas was deployed. The primary purpose for this system was to document the presence of bull trout at the Project, identify passage times and determine their direction of travel (upstream/downstream). In addition to these systems, a number of telemetry systems were deployed to address specific questions posed by the USFWS and Douglas PUD. At Wells Dam, several additional systems were installed to identify tagged bull trout that could enter, ascend, and exit specific gates and fish ladders. All possible access points to the adult fish ladders and the exits were monitored individually in 2001, 2002, and 2003, allowing the route of passage to be determined as well as the ability to establish the exact time of entrance and exit from the ladder system. English et al. (1998; 2001) provides a detailed description of the telemetry systems at each of the dams and within the tributaries.

To assess bull trout movements into and out of the Wells Reservoir, fixed-telemetry monitoring sites were established at the mouth of the Methow and Okanogan rivers and periodic aerial surveys were conducted on the reservoir and throughout both watersheds (English et al. 1998, 2001). Key findings of the multi-year study are as follows:

- Total upstream fishway counts (May 1st to November 15th) at Wells Dam from 2000 to 2003 were 90, 107, 76, and 53 bull trout, respectively.
- Adult bull trout migrate upstream through Wells Dam from May through November. Peak movement occurs in May and June with 94, 95, 92, and 89 percent of adult bull trout being detected during these months at Wells Dam for years 2000-2003, respectively.
- Tagged migratory adult bull trout successfully move both upstream and downstream past the Project (radio-telemetry). From the 79 bull trout radio-tagged in 2001 and 2002 at Rock Island, Rocky Reach, and Wells, five bull trout passed downstream through Wells Dam with no documented mortality. Twelve downstream passage events occurred at Rocky Reach (4) and Rock Island (8) through turbines from 2001 to 2003. None of the 17 (5 Wells, 4 Rocky Reach and 8 Rock Island) observed downstream passage events resulted in observed mortality of bull trout.
- Between 2001 and 2003, a total of 10 (2 tagged at Rock Island, 4 Rocky Reach, 4 Wells), 11 (4 Wells, 5 Rocky Reach, 2 from 2001), and 1 (1 Wells) tagged bull trout were detected moving upstream of the Project, respectively.
- Median tailrace times (tailrace detection to ladder entrance detection) during the telemetry study at Wells in 2001-2003 were 1.53, 7.84, and 1.00 days, respectively. Median travel times (tailrace detection to ladder exit detection) during the telemetry study at Wells in 2001-2003 were 8.87, 7.60, and 1.16 days, respectively. Median ladder passage times (entrance detection to ladder exit detection) during the telemetry study at Wells in 2001-2003 were 5.70, 0.23, and 0.16 days, respectively.
- Adult bull trout migrating upstream of Wells Dam appear to be destined for the Methow River. Between 2001 and 2003, no bull trout selected the Okanogan system (one trout moved into the Okanogan, but left shortly thereafter and moved into the Methow system).
- Median travel time from Wells Dam (detection at ladder exit) to first detection in the Methow River in 2001-2003 was 0.40, 2.78, and 1.09 days, respectively.
- All tributary entrance events (fixed station detections) into the Methow River by bull trout (28 total events, 2001-2003) occurred before June 27. An additional two bull trout, not detected by the tributary fixed station systems, were detected in the Methow River via 2002 aerial surveys. Bull trout in the Methow system selected two primary areas, the mainstem Methow River and the Twisp River.
- To date, 30% (9/30) of bull trout that entered the Methow River have been detected leaving the system. Tributary exit dates were recorded for 78% (7/9) of these emigrating bull trout and 86% (6/7) of bull trout with a recorded exit date left the Methow River system between October and December.
- Bull trout migrating upstream through Wells Dam in 2001 were 5 year old (n=2, mean fork length=55.6cm) and 6 year old (n=6, mean fork length= 54.6cm) fish as determined by scales.

- 92% (11/12) and 53% (8/15) of tagged bull trout detected in the vicinity of Wells Dam entered the Wells Hatchery Outfall in 2001 and 2002, respectively. It is possible that the bull trout frequented the outfall in search of prey. Typical operation at the hatchery is to volitionally release yearling chinook smolts between April 15 and 30, and subyearling chinook smolts in early June. Given that bull trout feed opportunistically (Goetz 1989), it is likely that the tagged bull trout were taking advantage of the large concentration of juvenile salmonids within the hatchery outfall system.

2.3.2 2005-2008 Project Bull Trout Study

On December 10, 2003, the USFWS received a request from the FERC for formal consultation to determine whether the proposed incorporation of the HCP into the FERC license for operation of the Project was likely to jeopardize the continued existence of the Columbia River distinct population segment (DPS) of ESA-listed bull trout, or destroy or adversely modify proposed bull trout critical habitat. In response to the FERC request and based upon the results of the 2001-2003 study, which suggested that continued operations are not likely to jeopardize bull trout, the USFWS filed the BO and Incidental Take Statement (ITS) with FERC. On June 21, 2004, FERC issued an order incorporating the HCP and the terms and conditions of the ITS into the FERC license for the Project.

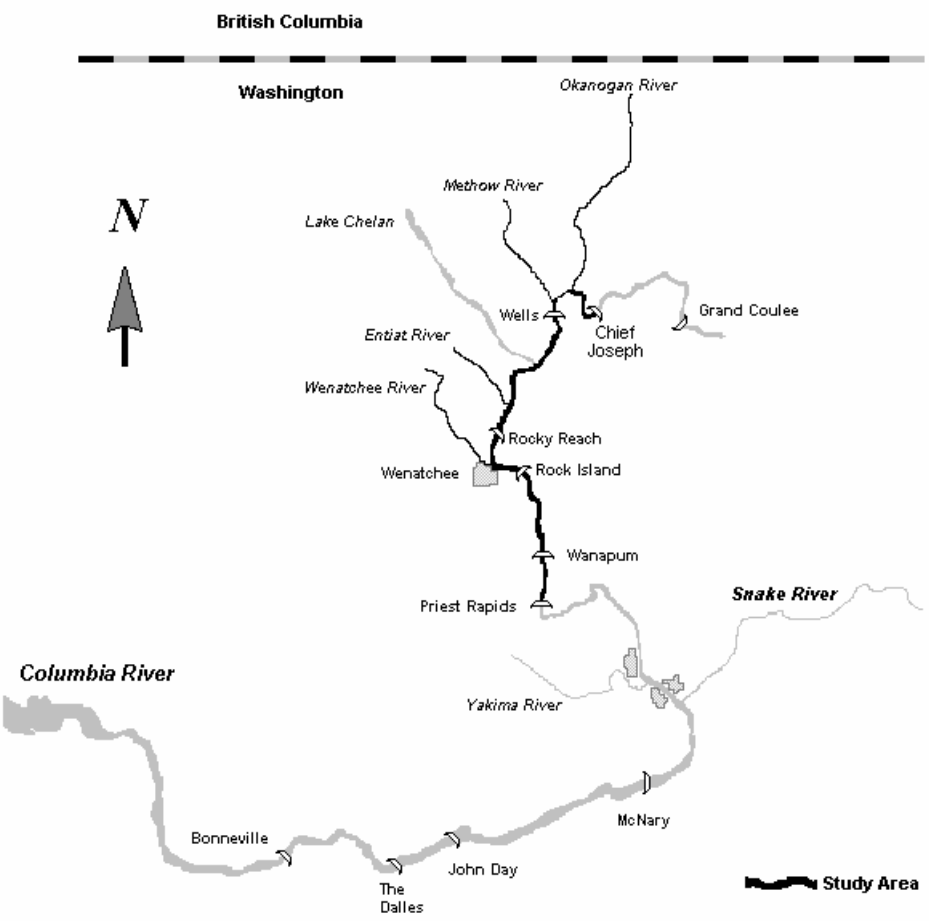

Figure 2.3-1 **Study area for assessing migration patterns of bull trout in the mid-Columbia River (2001-2003). Fixed radio-telemetry sites monitored the movement of bull trout near Priest Rapids, Wanapum, Rock Island, Rocky Reach and Wells dams. Fixed sites placed in the Wenatchee, Entiat, Methow and Okanogan rivers monitored time of entry and exodus of bull trout in large tributaries of the mid-Columbia River.**

In 2004, Douglas in consultation with the USFWS and as required under the HCP BO, developed the WBTMMP. The goal of the WBTMMP is to continue monitoring and evaluating bull trout in the Project to quantify and address, to the extent feasible, potential Project impacts on bull trout. Implementation of WBTMMP measures specifically include: (1) address ongoing Project impacts through the life of the existing operating license; (2) provide consistency with recovery actions as outlined in the USFWS bull trout recovery plan; and (3) monitor and minimize the extent of incidental take of bull trout, if any, consistent with Section 7 of the ESA. WBTMMP implementation started in 2005 and continued through the spring of 2008. Objectives of the plan include identifying Project impacts, if any, on upstream and downstream passage of adult and sub-adult bull trout through Wells Dam, investigating the potential for sub-adult entrapment or stranding in off-channel or backwater areas of Wells Reservoir, and identifying the Core Areas and Local Populations, as defined in the USFWS Bull Trout Recovery Plan, of bull trout that utilize the Project.

To address Project impacts, if any, on upstream and downstream passage of adult bull trout, Douglas PUD captured and radio-tagged 6, 10, and 10 adult bull trout at Wells Dam in 2005, 2006, and 2007, respectively (LGL and Douglas PUD, 2008). In 2005, all six fish traveled upstream into the Methow River and no downstream passage events were recorded. Travel time from release (after tagging) until entrance into the Methow River ranged from 7 hours to 12 days. In 2006, in addition to the 10 adult bull trout radio-tagged at Wells Dam, the USFWS radio-tagged 13 bull trout in the Methow River Core Area and Public Utility District No.1 of Chelan County (Chelan PUD) released 29 tagged bull trout from Rocky Reach and Rock Island dams. In total, 13 downstream passage events and 8 upstream passage events were recorded at Wells Dam in 2006. There were no observed instances of bull trout mortality resulting from these passage events. In 2007, 10 bull trout were tagged at Wells Dam, the USFWS tagged 5 bull trout in the Methow River Core Area, and Chelan PUD released 19 tagged bull trout from Rocky Reach and Rock Island dams. In total, 1 downstream passage event and 3 upstream passage events were recorded at Wells Dam in 2007. Similar to 2006, no instances of bull trout mortality were observed resulting from these passage events. From 2005 to 2008 (all radio-tagged fish combined), 25 downstream passage events and 52 upstream passage events by 40 individual bull trout were recorded at Wells Dam with no observances of bull trout injury or mortality (LGL and Douglas PUD, 2008). From 2005-2007, no adult or sub-adult bull trout were observed utilizing Wells Dam fishways during the winter monitoring period (typically November 16 to April 30). Monitoring of radio-tagged adult bull trout ended in June 2008.

To address potential project-related impacts on sub-adult bull trout, fish were opportunistically tagged with passive integrated transponder (PIT) tags when encountered during standard fish sampling operations at Wells Dam or during off-Project tributary smolt trapping activities. In 2005, 2006, 2007, and 2008 a total of 16, 20, 14, and 17 sub-adult bull trout were PIT-tagged during tributary smolt sampling activities, respectively. No sub-adult bull trout were observed during Wells Dam fish sampling operations or by the adult PIT-tag detection system in the fishways. Over the 2005-2008 period, no sub-adult bull trout were observed utilizing Wells Dam fishways during the winter period.

In 2005, Douglas PUD collected high resolution bathymetric information of Project waters to address the potential for entrapment or stranding of bull trout in off-channel or backwater areas of the Wells Reservoir. This data combined with Wells inflow patterns, reservoir elevations, and backwater curves would allow Douglas PUD to begin identifying entrapment or stranding areas. In 2006, a field survey of potential bull trout stranding sites using bathymetric and operations information was conducted during a period of low reservoir elevation associated with the Methow River flood control program. Following a complete survey of the project, no stranded bull trout (sub-adult or adult) were found during the 2006 low water event. In 2007, reservoir conditions were not sufficiently low to warranted further field investigations.

In support of identifying the local populations and core areas of bull trout utilizing the Project area, Douglas PUD funded the collection of genetic samples from 22, 20, and 24 bull trout in 2005, 2006 and 2007, respectively. In 2005, 6 samples were collected at Wells Dam and 16 were collected at off-Project operations (Methow and Twisp river screw traps). In 2006, 10 samples were collected at Wells Dam and 10 samples were collected at off-Project operations. In 2007, 10 samples were collected at Wells Dam and 14 samples were collected at off-Project operations. All genetic samples were provided to the USFWS.

3.0 GOALS AND OBJECTIVES

The goal of the BTMP is to identify, monitor and address impacts, if any, on bull trout resulting from the Project in a manner consistent with the USFWS Bull Trout Recovery Plan and the terms of the Section 7 ITS (See Section 4.7). This BTMP is intended to continue the implementation of management activities to protect bull trout during the new license term in a manner consistent with the original WBTMMP (Douglas 2004). The 2004 WBTMMP was developed in coordination with the USFWS, as required by the USFWS Bull Trout BO in association with the HCP. The PMEs presented within the BTMP are designed to meet the following objectives:

Objective 1: Operate the upstream fishways and downstream bypass systems in a manner consistent with the HCP;

Objective 2: Identify any adverse Project-related impacts on adult and sub-adult bull trout passage;

Objective 3: Implement reasonable and appropriate options to modify upstream fishway, downstream bypass, or operations if adverse impacts on bull trout are identified and evaluate effectiveness of these measures;

Objective 4: Periodically monitor for bull trout entrapment or stranding during low Wells Reservoir elevations (similar to WBTMMP);

Objective 5: Participate in the development and implementation of the USFWS Bull Trout Recovery Plan, including information exchange and genetic analysis. Should bull trout be delisted, the Aquatic SWG will re-evaluate the needs and objectives of the BTMP;

Objective 6: Identify any adverse impacts of Project-related hatchery operations on adult and sub-adult bull trout.

This BTMP is intended to be compatible with other bull trout management plans and the Upper Columbia Salmon Recovery Plan (UCSRP) in the Columbia River mainstem. Furthermore, this management plan is intended to be not inconsistent with other management strategies of federal, state and tribal natural resource management agencies and supportive of designated uses for aquatic life under WAC 173-201A, the Washington state water quality standards.

The schedule for implementation of specific measures within the BTMP is based on the best information available at the time the Plan was developed. As new information becomes available, implementation of each activity may be adjusted through consultation with the Aquatic SWG.

4.0 PROTECTION, MITIGATION AND ENHANCEMENT MEASURES

In order to fulfill the goals and objectives described in Section 3.0 of the BTMP, Douglas PUD, in consultation with the Aquatic SWG, has initiated the implementation of the following measures.

4.1 Operate the Upstream Fishways and Downstream Bypass Systems in a Manner Consistent with the HCP (Objective 1)

4.1.1 Provide Upstream and Downstream Passage for Adult and Sub-Adult Bull Trout

Douglas PUD will continue to provide upstream passage for adult bull trout through the existing upstream fishways and downstream passage of adult and sub-adult bull trout through the existing downstream bypass system. Both upstream fishway facilities (located on the west and east shores) are operational year around with maintenance occurring on each fishway at different times during the winter to ensure that one upstream fishway is always operational. Maintenance activities on Wells fishways occur during the winter when bull trout have not been observed passing Wells Dam. Operation of the downstream passage facilities for bull trout will be consistent with bypass operations for Plan Species identified in the HCP. Currently the bypass system is operated from April 12 through August 26 of each year. This operating period is consistent with the period of high bull trout and anadromous fish presence at the Project.

4.1.1.1 Progress Towards Meeting Objective 1 in 2012- Provide Upstream and Downstream Passage for Adult and Sub-Adult Bull Trout

Consistent with the BTMP and the Wells HCP, Douglas PUD maintained safe, efficient and timely passage through the downstream juvenile fish bypass system and upstream adult fishway passage structures for bull trout. Winter maintenance occurred in the adult fishway structures in January 2012 and December 2012. At least one of the adult fishways was in operation at all times during the winter maintenance period (December – February) and both adult fishways were in operation for the remainder of the year (March – November). Juvenile Fish Bypass operations were implemented consistent with the HCP Coordinating Committee approved Bypass Operations Plan for 2012. The dates of operation included initiation on April 9th at 000 hours with the bypass system operated continuously until midnight on August 19th. The 2012 dates of operation for the juvenile fish bypass system were developed in consultation with the Wells HCP Coordinating Committee and are the result of species run-timing estimates developed by the University of Washington, Columbia Basin Research that were reviewed, approved and adopted by the HCP Coordinating Committee and implemented by Douglas PUD prior to the beginning of the 2012 bypass season.

4.1.2 Upstream Fishway Counts

Douglas PUD shall continue to conduct video monitoring in the Wells Dam fishways from May 1st through November 15th to count and provide information on the population size of upstream moving bull trout.

4.1.2.1 Progress Towards Meeting Objective 1in 2012- Upstream Fishway Counts

Seventy four bull trout were counted at Wells Dam fish ladder viewing windows in 2012. Counts at Wells represent a 14% increase in the 12 year average count of 65. Eighty nine percent (89%) of the passage occurred during the months of May and June, which is consistent with the 12 year average of eighty eight percent (88%) of bull trout passage occurring during these months. Bull trout passing Wells Dam in May and June are primarily destined to spawn in the Methow Basin and in particular the upper reaches of the Twisp River. Only three of the 74 bull trout counted at Wells Dam passed the project after July 26th.

4.1.3 Upstream Fishway Operations Criteria

Douglas PUD shall continue to operate the upstream fishway at Wells Dam in accordance with criteria outlined in the HCP.

4.1.3.1 Progress Towards Meeting Objective 1 in 2012- Upstream Fishway Operations Criteria

Consistent with the BTMP and the Wells HCP, Douglas PUD continued to operate the two upstream fishways at Wells Dam in accordance with upstream fishway criteria found in the HCP and as approved by the Wells HCP Coordinating Committee.

4.1.4 Bypass Operations Criteria

Douglas PUD shall continue to operate the bypass system at Wells Dam in accordance with criteria outlined in the HCP.

4.1.4.1 Progress Towards Meeting Objective 1 in 2012- Bypass Operations Criteria

Consistent with the BTMP and the HCP, Douglas PUD continued to operate the juvenile fish bypass system at Wells Dam in accordance with criteria outlined in the Wells HCP and as approved by the HCP Coordinating Committee.

4.2 Identify Any Adverse Project-related Impacts on Adult and Sub-adult Bull Trout Passage (Objective 2)

4.2.1 Adult Bull Trout Upstream and Downstream Passage Evaluation

Douglas PUD shall continue to monitor upstream and downstream passage and incidental take of adult bull trout through Wells Dam and in the Wells Reservoir through the implementation of a radio-telemetry study. Specifically, in years 5 and 10 of the new license, and continuing every

ten years thereafter during the new license term, Douglas PUD will conduct a one-year monitoring program to determine whether Douglas PUD remains in compliance with the ITS. The same study protocols used during past radio-telemetry assessments at Wells Dam (LGL and Douglas PUD 2007) will be employed for these monitoring studies.

If the adult bull trout counts at Wells Dam increases more than two times the existing 5-year average or if there is a significant change in the operation of the fish ladders or hydrocombine, then the Aquatic SWG will determine whether additional years of take monitoring are needed beyond those identified in this section of the BTMP. If the authorized incidental take level is exceeded during any one-year period, Douglas PUD will conduct another monitoring study in the succeeding year. If the authorized incidental take level is exceeded in this second year, Douglas PUD will develop a plan, in consultation with the Aquatic SWG, to address the identified factors contributing to exceedance of the allowable level of incidental take.

4.2.1.1 Progress Towards Meeting Objective 2 in 2012- Adult Bull Trout Upstream and Downstream Passage Evaluation

Douglas PUD will implement the year 5 Passage Evaluation Study in 2017 or earlier if the 5-year average adult bull trout count of 60 fish increases more than two times (120 or more bull trout counted in a single year). At the time that the Aquatic Settlement Agreement was signed the five year average count of bull trout at Wells Dam was 60 fish. In 2012 the number of observed fish was 74.

No significant changes in the operation of the fish ladders or hydrocombine have been implemented or are proposed that would trigger the early implementation of bull trout passage evaluation.

4.2.2 Adult Bull Trout Passage Evaluation at Off-Project Collection Facilities

Douglas PUD shall assess upstream and downstream passage and incidental take of adult, migratory bull trout at off-Project (outside of the Project boundary) adult salmon and steelhead broodstock collection facilities associated with the Wells HCP. Specifically, beginning in year one of the new license, Douglas PUD will conduct a one-year radio-telemetry study to assess passage and incidental take at off-Project adult collection facilities (i.e., Twisp weir). Douglas PUD will capture and tag up to 10 adult, migratory bull trout (>400mm) at adult collection facilities and use fixed receiver stations upstream and downstream of collection facilities to examine upstream and downstream passage characteristics and incidental take. Study protocols that have been used during past radio-telemetry assessments at Wells Dam (LGL and Douglas PUD 2008) will be employed for this assessment.

If negative impacts to passage associated with Off-Project collection facilities are observed or the authorized incidental take level is exceeded during any one-year period, Douglas PUD will conduct another monitoring study in the succeeding year. If negative impacts to passage continue to be observed or the authorized incidental take level is exceeded in this second year, Douglas PUD will develop a plan, in consultation with the Aquatic SWG, to address the identified factors contributing to passage impacts or the exceedance of the allowable level of incidental take.

After year one of the new license, the implementation of this sub-objective will be integrated into the one-year telemetry monitoring program that is to be conducted every ten years (beginning in year 10 of the new license) at Wells Dam as identified in Section 4.2.1. In year 10 of the new license and every 10 years thereafter, bull trout will be captured and tagged only at Wells Dam (Section 4.2.1) since data show that bull trout passing Wells Dam are migrating back into the Methow River watershed (LGL and Douglas PUD 2008). Through the continued deployment of fixed station monitoring at off-Project adult salmon and steelhead broodstock collection facilities, these tagged bull trout will continue to provide passage and take information in support of this sub-objective throughout the term of the new license.

4.2.2.1 Progress Towards Meeting Objective 2 in 2012- Adult Bull Trout Passage Evaluation at Off-Project Collection Facilities

During 2012 Douglas PUD in consultation with the Aquatic SWG developed a study plan to assess incidental take of bull trout at the Twisp River Weir broodstock collection facility. After discussions with the Aquatic SWG and specifically with the USFWS, the parties including the USFWS signatories agreed that Douglas PUD should postpone the Off-Project Passage Evaluation until year five (2017) of the new license when the Bull Trout Passage and Enumeration Study is scheduled to take place at Wells Dam. Combining the studies would provide a more comprehensive study and potentially require less study fish than two independent studies, thereby limiting the overall impact or take associated with these studies on the bull trout population in the Methow Basin. In 2013 Douglas PUD and the Aquatic SWG will submit a letter to the FERC recommending that the Bull Trout Off-Project Collection Facility Passage Evaluation be delayed until 2017.

4.2.3 Sub-Adult Bull Trout Monitoring

While an objective of the BTMP is to identify potential Project impacts on upstream and downstream passage of sub-adult bull trout, Aquatic SWG members (including the USFWS) agree that it is not feasible to assess sub-adult passage because sub-adult bull trout have not been observed at Wells Dam. During the previous six years of bull trout data collection at Wells Dam (BioAnalyst Inc. 2004; LGL and Douglas PUD 2008), sub-adult bull trout have not been documented passing Wells Dam (based upon fishway video counts and bull trout trapping for radio-telemetry). However, it is expected that through the increased monitoring associated with the implementation of the BTMP that there may be additional encounters with sub-adult bull trout. If at any time during the new license term, sub-adult bull trout are observed passing Wells Dam in significant numbers (>10 per calendar year), the Aquatic SWG will recommend reasonable and appropriate methods for monitoring sub-adult bull trout. Specifically, Douglas PUD may modify counting activities, continue to provide PIT tags and equipment, and facilitate training to enable fish sampling entities to PIT tag sub-adult bull trout when these fish are collected incidentally during certain fish sampling operations. This activity will occur the following year of first observation of sub-adult bull trout (>10 per calendar year) and subsequently as recommended by the Aquatic SWG.

4.2.3.1 Progress Towards Meeting Objective 2 in 2012- Sub-Adult Bull Trout Monitoring

On November 10th, 2012, one sub-adult bull trout was observed at Wells Dam during window counts. The sub-adult bull trout collected from the ladder was estimated to be 12 inches or 305 mm. This is the first ever observation of a sub-adult bull trout at Wells Dam. No new sub-adult related monitoring activities were implemented or are proposed; fewer than 10 sub-adult bull trout have been observed at Wells in a single calendar year.

4.3 Implement Reasonable and Appropriate Measures to Modify the Upstream Fishway and Downstream Bypass if Adverse Impacts on Bull Trout are Identified (Objective 3)

Douglas PUD shall continue to operate the upstream fishway and downstream bypass at Wells Dam in accordance with the HCP. However, if upstream or downstream passage problems for bull trout are identified (as agreed to by the USFWS and Douglas PUD), Douglas PUD will identify and implement, in consultation with the Aquatic SWG and HCP Coordinating Committee, reasonable and appropriate options to modify the upstream fishway, downstream bypass, or operations to reduce the identified impacts to bull trout passage.

4.3.1 Progress Towards Meeting Objective 3 in 2012- Implement Reasonable and Appropriate Measures to Modify the Upstream Fishway and Downstream Bypass if Adverse Impacts on Bull trout are Identified

No new adverse impacts to bull trout were identified in 2012. As a result, Douglas PUD is not proposing to implement any new upstream fishway or downstream bypass measures to reduce new impacts to bull trout.

4.4 Investigate Entrapment or Stranding of Bull Trout during Periods of Low Reservoir Elevation (Objective 4)

During the implementation of the WBTMMP from 2004-2008, Douglas PUD, through the use of high resolution bathymetric information, hydraulic and elevation data, and backwater curves, identified potential bull trout entrapment and stranding areas in the Wells Reservoir. Although no stranded bull trout were observed in these areas during the implementation of the WBTMMP, Douglas PUD will continue to investigate potential entrapment or stranding areas for bull trout through periodic monitoring when periods of low reservoir elevation expose identified sites. During the first five years of the new license, Douglas PUD will implement up to five bull trout entrapment/stranding assessments during periods of low reservoir elevation (below 773' MSL). If no incidences of bull trout stranding are observed during the first five years of study, additional assessment will take place every fifth year during the remainder of the license term, unless waived by the Aquatic SWG. If bull trout entrapment and stranding result in take in exceedance of the authorized incidental take level, then reasonable and appropriate measures will be implemented by Douglas PUD, in consultation with the Aquatic SWG, to address the impact.

4.4.1 Progress Towards Meeting Objective 4 in 2012- Implement Reasonable and Appropriate Measures to Modify the Upstream Fishway and Downstream Bypass if Adverse Impacts on Bull trout are Identified

Stranding surveys were not conducted in 2012 since reservoir elevation did not fall below 773' MSL. Article 402 of the new FERC license requires Douglas PUD, in consultation with the Aquatic SWG and NMFS, to develop and file for approval by the FERC, a Bull Trout Stranding Survey Plan. This plan is required to be filed with the FERC by the end of October 2013.

4.5 Participate in the Development and Implementation of the USFWS Bull Trout Recovery Plan (Objective 5)

4.5.1 Monitoring Other Aquatic Resource Management Plan Activities and Predator Control Program for Incidental Capture and Take of Bull Trout

Douglas PUD will monitor activities associated with the implementation of other Aquatic Resource Management Plans (white sturgeon, Pacific lamprey, resident fish, aquatic nuisance species, and water quality) and Predator Control Program that may result in the incidental capture and take of bull trout. If the incidental take of bull trout is exceeded due to the implementation of other Aquatic Resource Management Plan activities, then Douglas PUD will develop a plan, in consultation with the Aquatic SWG, to address the identified factors contributing to the exceedance of the allowable level of incidental take. If the incidental take of bull trout is exceeded due to the implementation of the Predator Control Program, then Douglas PUD will develop a plan, in consultation with the HCP Coordinating Committee and the Aquatic SWG, to address the identified factors contributing to the exceedance of the allowable level of incidental take.

4.5.1.1 Progress Towards Meeting Objective 5 in 2012 - Monitoring Other Aquatic Resource Management Plan Activities and Predator Control Program for Incidental Capture and Take of Bull Trout

Two activities had the potential to encounter bull trout in 2012, the subyearling life history study and pikeminnow removal. The subyearling life history study is an HCP study focused on the life history and behavior of juvenile Chinook salmon in the Upper Columbia River and principally within the Wells Project. Juvenile subyearling Chinook are collected with beach seines in June and July of 2012 within the Wells Project. Although many non-target taxa were collected, no bull trout were encountered.

The HCP required predator control program, principally Douglas PUD's pikeminnow control program, did not encounter any bull trout in 2012. The pikeminnow control program uses setlines to capture pikeminnow in deep water areas of the Wells Project, over the programs existence (more than fifteen years) no bull trout have been encountered.

4.5.2 Funding Collection of Tissue Samples and Genetic Analysis

Beginning in year 10 of the new license, and continuing every 10 years thereafter for the term of the new license, Douglas PUD will, if recommended by the Aquatic SWG, collect up to 10 adult bull trout tissue samples in the Wells Dam fishway facilities over a period of one year and fund their genetic analysis. Genetic tissue collection will take place concurrent with the implementation of the bull trout radio-telemetry monitoring study. Samples will be submitted to the USFWS Central Washington Field Office in Wenatchee, Washington. Any sub-adult bull

trout collected during these activities will also be incorporated into the bull trout genetic analysis.

Beginning in year one of the new license, Douglas PUD will collect up to 10 adult bull trout tissue samples from the Twisp River broodstock collection facility over a period of one year and will fund their genetic analysis. Genetic tissue collection will take place concurrent with the implementation of the Off-Project bull trout radio-telemetry monitoring study.

4.5.2.1 Progress Towards Meeting Objective 5 in 2012 - Funding Collection of Tissue Samples and Genetic Analysis

Genetic samples were collected for all of the bull trout captured at the Twisp Weir in 2012. Samples will be analyzed if requested by the Aquatic SWG. Genetic samples will be taken at Wells Dam in year ten of the new license.

4.5.3 Information Exchange and Regional Monitoring Efforts

Douglas PUD will continue to participate in information exchanges with other entities conducting bull trout research and regional efforts to explore availability of new monitoring methods and coordination of radio-tag frequencies for bull trout monitoring studies in the Project.

Douglas PUD will make available an informational and educational display at the Wells Dam Visitor Center to promote the conservation and recovery of bull trout in the Upper Columbia River and associated tributary streams.

4.5.3.1 Progress Towards Meeting Objective 5 in 2012 - Information Exchange and Regional Monitoring Efforts

Douglas PUD participated in bull trout recovery planning meetings held by the USFWS in 2012. These meetings focused on recovery planning and genetic assignment development in the Methow, Entiat and Wenatchee river basins. In addition, information was shared with regional partners via PTAGIS, a regional PIT tag database. All PIT tag data was made publicly available through this website.

4.6 Identify Any Adverse Impacts of Project-related Hatchery Operations on Adult and Sub-adult Bull Trout (Objective 6)

4.6.1 Bull Trout Monitoring During Hatchery Activities

During the term of the new license, Douglas PUD shall monitor hatchery actions (e.g., salmon trapping, sturgeon brood stocking and capture activities) that may encounter adult and sub-adult bull trout for incidental capture and take. Actions to be monitored shall be associated with the Wells Hatchery, the Methow Hatchery, and any future facilities directly funded by Douglas PUD.

If the incidental take of bull trout is exceeded due to Douglas PUD's hatchery actions then Douglas PUD will develop a plan, in consultation with the Aquatic SWG, to address the identified factors contributing to the exceedance of the allowable level of incidental take.

4.6.1.1 Progress Towards Meeting Objective 6 in 2012 - Bull Trout Monitoring During Hatchery Activities

In 2012, the number of bull trout encountered during hatchery operation activities was comparable to previous years. Hatchery actions in 2012 were very similar to other years where broodstock are collected at Wells Dam and the Twisp Weir traps. In addition, the Twisp Weir is used to control the ratio of natural origin and hatchery steelhead and spring Chinook spawning in the upper reaches of the Twisp River. Screw traps used during HCP related smolt monitoring and evaluation activities in the Methow River Basin often encounter juvenile bull trout. All of these trapping activities are conducted by Douglas PUD's lead hatchery contractor the Washington State Department of Fish and Wildlife.

During trapping activities in 2012, sixty-nine and two adult bull trout were incidentally captured at the Twisp Weir and at Wells Dam, respectively. All of these bull trout were given a PIT tag if they did not carry an existing tag. All captured fish were released in good condition, with no lethal take observed. Captured bull trout at both facilities are within allowable take limits. Seventeen sub-adult bull trout were captured at the Twisp River screw trap and none were encountered at the Methow River screw trap at McFarland (Carlton, WA). All bull trout captured at the Twisp screw trap were given PIT tags and released in good condition. No lethal take was observed. Take limits at screw trap facilities operated by Douglas PUD and its contractors were within allowable limits in 2012.

Article 402 of the FERC license for the Wells Project requires Douglas PUD to develop, in consultation with the Aquatic SWG and the NMFS, a study plan to monitor incidental take associated with the implementation of activities at the Wells Hatchery. Douglas PUD is planning to file this study plan with the FERC for approval by the end of October 2013.

4.7 USFWS Section 7 Consultation

The PMEs contained within the BTMP were specifically developed, in consultation with the USFWS, to address potential Reasonable and Prudent Measures (RPMs) for the Project relicensing and associated section 7 consultation. All of the USFWS's potential RPMs for the Wells Project can be found in Appendix A. Each of these RPMs has been cross referenced with the specific supporting objective and PME (Sections 4.1 - 4.6) found within the BTMP. The purpose of Appendix A is to provide consistency with Douglas PUD's Aquatic Settlement Agreement and the USFWS' subsequent section 7 consultation on the relicensing of the Wells Project.

4.7.1.1 Progress Towards Meeting Objective 5 in 2012 - USFWS Section 7 Consultation

On March 16th 2012, the USFWS issued a bull trout BO related to the relicensing of the Wells Project. The BO contained various RMPs and the terms and conditions (T&Cs). These RPM's and T&Cs can be found within Appendix E of the FERC license for the Wells Project and they

are entirely consistent and cross referenced with the measures found in the BTMP, and more specifically with the measures reported within this report (2012 BTMP annual report).

4.8 Reporting

Douglas PUD will provide a draft annual report to the Aquatic SWG summarizing the previous year's activities undertaken in accordance with the BTMP. The report will document all bull trout activities conducted within the Project and describe activities proposed for the following year. Furthermore, any decisions, statements of agreement, evaluations, or changes made pursuant to this BTMP will be included in the annual report. If significant activity was not conducted in a given year, Douglas PUD will prepare a memorandum providing an explanation of the circumstances in lieu of the annual report.

4.8.1.1 Progress Towards Meeting Annual Reporting Requirements

In addition to the reporting requirements found within the Aquatic Settlement Agreement requiring the submission of annual reports for all six of the management plans including the BTMP, Article 406 of the FERC license for the Wells Project also requires Douglas PUD to submit annual reports detailing the implementation of each of the six Aquatic Settlement Agreement management plans.

In addition to the bull trout reporting requirements above, one addition bull trout reporting requirement can be found in the bull trout BO (Appendix E of the FERC license). The bull trout BO requires Douglas PUD to submit an annual take report to the Central Regional Office of the USFWS on or before April 15th of each year of the new license.

Because the measures required by the BO are entirely consistent with the measures found in the Aquatic Settlement Agreement's BTMP and because the reporting requirements for the BTMP, bull trout BO and Article 406 are consistent, the 2012 BTMP Annual Report (this report) will be used to satisfy all three of the bull trout annual reporting requirements.

5.0 REFERENCES

Baxter, C. V. and F. R. Hauer. 2000. Geomorphology, hyporheic exchange, and the selection of spawning habitat by bull trout (*Salvelinus confluentus*). Canadian Journal of Aquatic Science. 57:1470-1481.

BioAnalysts, Inc. 2004. Movement of Bull Trout within the Mid-Columbia River and Tributaries, 2001-2004. Prepared by BioAnalysts, Inc., Eagle Rock, Idaho for Public Utility District No. 1 of Chelan County, Wenatchee, WA, Public Utility District No. 1 of Douglas County, East Wenatchee, WA, and Public Utility District No. 1 of Grant County, Ephrata, WA.

Brewin, P. A. and M. K. Brewin. 1997. Distribution maps for bull trout in Alberta. Pages 206-216 in: Mackay, W.C., M. D. Brewin and M. Monita, editors. Friends of the Bull Trout Conference Proceedings. Bull Trout Task Force (Alberta), c/o Trout Unlimited Calgary, Alberta, Canada

Cavender, T. M. 1978. Taxonomy and distribution of the bull trout, Salvelinus confluentus (Suckley) from the American Northwest. California Fish and Game 64:139-174.

Douglas (Public Utility District No. 1 of Douglas County). 2004. Wells Hydroelectric Project Bull Trout Monitoring and Management Plan, 2004-2008. Public Utility District No. 1 of Douglas County, East Wenatchee, WA.

English, K. K., T. C. Nelson, C. Sliwinski, and J. R. Stevenson. 1998. Assessment of passage facilities for adult sockeye, chinook, and steelhead at Rock Island and Rocky Reach dams on the mid-Columbia River in 1997. Report to Public Utility District No. 1 of Chelan County, Wenatchee, WA.

English, K. K., C. Sliwinski, B. Nass, and J. R. Stevenson. 2001. Assessment of passage facilities for adult steelhead at Priest Rapids, Wanapum, Rock Island, Rocky Reach, and Wells dams on the mid-Columbia River in 1999. Report to Public Utility District No. 1 of Chelan County, Wenatchee, WA.

Goetz, F. 1989. Biology of Bull Trout, *Salvelinus Confluentus*: a Literature Review, USDA Forest Service, Willamette National Forest. Eugene. OR.

Kraemer, C. 1994. Some observations on the life history and behavior of the native char, Dolly Varden (Salvelinus malma) and bull trout (Salvelinus confluentus) of the North Puget Sound Region. Washington Department of Wildlife. Draft.

LGL and Douglas PUD. 2007. Wells bull trout monitoring and management plan, 2006 Annual Report. Wells Hydroelectric Project FERC No. 2149.

LGL and Douglas PUD. 2008. Bull trout monitoring and management plan, 2005-2008 final report. Wells Hydroelectric Project FERC No. 21.49. Prepared for Public Utilities District No. 1 of Douglas County. East Wenatchee, Washington.

McPhail, J. D. and J. S. Baxter. 1996. A review of bull trout (Salvelinus confluentus) life history and habitat use in relation to compensation and improvement opportunities. Fisheries management report no. 104. University of British Columbia. Vancouver, B.C.

Mongillo, P. E. 1993. The distribution and status of bull trout/Dolly Varden in Washington State. Washington Department of Wildlife. Fisheries Management Division, Report 93- 22. Olympia, Washington. 45 pp.

Pleyte, Kay A., S. D. Duncan, and R. B. Phillips. 1992. Evolutionary relationships of the fish genus Salvelinus inferred from DNA sequences of the first internal transcribed spacer (ITS 1) of ribosomal DNA. Molecular Phylogenetics and Evolution, 1(3): 223-230.

Riehle, M. W. Weber, A. M. Stuart, S. L. Thiesfeld and D. E. Ratliff. 1997. Progress report of the multi-agency study of bull trout in the Metolius River system, Oregon. In Friends of the Bull Trout Conference Proceedings. Bull Trout Task Force. Calgary, (Alberta). Pages 137-144.

Rieman, B. E., and J. D. McIntyre. 1993. Demographic and habitat requirements for conservation of bull trout. U.S. Forest Service, Intermountain Research Station. General Technical Report INT-302.

Rieman, B. E., and J. D. McIntyre. 1995. Occurrence of bull trout in naturally fragmented habitat patches of varied size. Transactions of American Fisheries Society. Vol. 124 (3): 285-296.

Rieman, B. E., D. C. Lee and R. F. Thurow. 1997. Distribution, status and likely future trends of bull trout within the Columbia River and Klamath Basins. North American Journal of Fisheries Management. 17(4): 1111-1125.

Sexauer, H. M. and P. W. James. 1993. A survey of the habitat use by juvenile and prespawning adult bull trout, Salvelinus confluentus, in four streams in the Wenatchee National Forest. Ellensburg, WA, Central Washington University.

U.S. Fish and Wildlife Service, National Marine Fisheries Service, Plum Creek Timber Company, Inc., and CH2M Hill. 2000. Final Environmental Impact Statement and Native Fish Habitat Conservation Plan – Proposed Permit for Taking of Federally Listed Native Fish Species on Plum Creek Timber Company, Inc. Lands. September, 2000.

U.S. Fish and Wildlife Service. 2002. Chapter 22, Upper Columbia Recovery Unit, Washington. 113 p. In: U.S. Fish and Wildlife Service. Bull Trout (Salvelinus confluentus) Draft Recovery Plan. Portland, Oregon.

U.S. Fish and Wildlife Service. 2008a. News Release: Status Review of Bull Trout Completed. Contacts T. Koch and J. Jewett. Portland, OR.

U.S. Fish and Wildlife Service. 2008b. Bull Trout (*Salvelinus confluentus*). 5-Year Review: Summary and Evaluation. Portland, OR.

Volk, E. C. 2000. Using otolith strontium to infer migratory histories of bull trout and Dolly Varden from several Washington State rivers. Submitted to Olympic National Park in fulfillment of Contract #2550041. Washington Department of Fish and Wildlife, Olympia.

APPENDIX A

CROSS REFERENCED UNITED STATES FISH AND WILDLIFE SERVICE (USFWS) REASONABLE AND PRUDENT MEASURES (RPMS) WITH WELLS BULL TROUT MANAGEMENT PLAN (BTMP) OBJECTIVES AND SUPPORTING PROTECTION, MITIGATION AND ENHANCEMENT MEASURES (PMES)

FWS RPM 1: FERC shall require Douglas PUD, in coordination with the Service, to provide adequate year-round passage conditions for all life history stages of bull trout at all Project facilities.

Associated BTMP Objectives and PMEs:

Objective 1: Operate the upstream fishways and downstream bypass systems in a manner consistent with the HCP (Section 4.1).

PME: Provide Upstream and downstream Passages for Adult and Sub-Adult Bull Trout (Section 4.1.1).

PME: Upstream Fishway Counts (Section 4.1.2).

PME: Upstream Fishway Operations Criteria (Section 4.1.3).

PME: Bypass Operations Criteria (Section 4.1.4).

Objective 2: Identify any adverse Project-related impacts on adult and sub-adult bull trout passage (Section 4.2).

PME: Adult Bull Trout Upstream and Downstream Passage Evaluation (Section 4.2.1).

PME: Adult Bull Trout Passage Evaluation at Off-Project Collection Facilities (Section 4.2.2).

PME: Sub-Adult Bull Trout Monitoring (Section 4.2.3).

Objective 3: Implement reasonable and appropriate options to modify upstream fishway, downstream bypass, or operations if adverse impacts on bull trout are identified and evaluate effectiveness of these measures.

FWS RPM 2. FERC shall require Douglas PUD, in coordination with the Service, to minimize the effect of spillway operations and hydrographic variation to all life history stages of bull trout at all Project facilities.

Associated BTMP Objectives and PMEs:

Objective 1: Operate the upstream fishways and downstream bypass systems in a manner consistent with the HCP (Section 4.1).

> PME: Provide Upstream and downstream Passages for Adult and Sub-Adult Bull Trout (Section 4.1.1).
>
> PME: Upstream Fishway Operations Criteria (Section 4.1.3).
>
> PME: Bypass Operations Criteria (Section 4.1.4).

Objective 3: Implement reasonable and appropriate options to modify upstream fishway, downstream bypass, or operations if adverse impacts on bull trout are identified and evaluate effectiveness of these measures (Section 4.3).

Objective 4: Periodically monitor for bull trout entrapment or stranding during low Wells Reservoir elevations (Section 4.4).

FWS RPM 3. FERC shall require Douglas PUD, in coordination with the Service, to minimize the effects of the Hatchery Supplementation Program to all life stages of bull trout.

Associated BTMP Objectives and PMEs:

Objective 2: Identify any adverse Project-related impacts on adult and sub-adult bull trout passage (Section 4.2).

> PME: Adult Bull Trout Passage Evaluation at Off-Project Collection Facilities (Section 4.2.2).

Objective 6: Identify any adverse impacts of Project-related hatchery operations on adult and sub-adult bull trout.

> PME: Bull Trout Monitoring During Hatchery Activities (Section 4.6.1).

FWS RPM 4. FERC shall require Douglas PUD, in coordination with the Service, to minimize the effects of the other Aquatic Resource Management Plans and Predator Control Program to all life stages of bull trout.

Associated BTMP Objectives and PMEs:

Objective 5: Participate in the development and implementation of the USFWS Bull Trout Recovery Plan, including information exchange and genetic analysis (Section 4.5).

> PME: Monitor other Aquatic Resource Management Plan Activities and Predator Control Program for Incidental Capture and Take of Bull Trout (Section 4.5.1).

FWS RPM 5. FERC shall require Douglas PUD, in coordination with the Service, to design and implement a bull trout monitoring program that will adequately detect and quantify Project impacts. This information will reduce uncertainty regarding Project impacts over the life of the project and shall be used to modify Project operations to the extent practicable to further minimize the manner or extent of take.

Associated BTMP Objectives and PMEs:

Refer to Wells Bull Trout Management Plan in its entirety.

Additional PMEs Proposed in the BTMP (not listed above):

> PME: Funding Collection of Tissue Samples and Genetic Analysis (Section 4.5.2).
> PME: Information Exchange and Regional Monitoring Efforts (section 4.5.3).