

**RESIDENT FISH MANAGEMENT PLAN**  
**WELLS HYDROELECTRIC PROJECT**  
**FERC PROJECT NO. 2149**

August 2008

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

## EXECUTIVE SUMMARY

The Resident Fish Management Plan (RFMP) 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 for the Wells Hydroelectric Project (Project).

To ensure active stakeholder participation and support, the Public Utility District No. 1 of Douglas County (Douglas) 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. Members of the Aquatic SWG include the U.S. Fish and Wildlife Service (USFWS), 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 Indian Nation (Yakama), and Douglas.

The National Marine Fisheries Service (NMFS) was invited to participate in the development of Aquatic Resource Management Plans, but declined because its interests are currently satisfied by the measures within the HCP.

The goal of the RFMP is to protect and enhance native resident fish populations and habitat in the Project during the term of the new license. Douglas, in collaboration with the Aquatic SWG, has agreed to implement several resident fish PMEs in support of the RFMP. The PMEs presented within the RFMP are designed to meet the following objectives:

Objective 1: Continue to provide additional benefits to resident fishery resources in the Project as a result of continued implementation of the HCP, Predator Control Programs and Douglas PUD's Land Use Policy.

Objective 2: In year 2 and every 10 years thereafter during the new license term, Douglas will conduct a resident fish study to determine the relative abundance of the various resident fish species found within the Project. The study objectives will focus on (1) identifying whether there have been major shifts in the resident fish populations resulting from the implementation of the White Sturgeon, Bull Trout, Pacific Lamprey, and Aquatic Nuisance Species (ANS) Management Plans, and (2) collecting information on resident predator fish populations found within the Wells Reservoir. The results of this study may be used to inform the implementation activities of the other Wells aquatic resource management (ANS, bull trout, Pacific lamprey, and white sturgeon) plans and HCP predator control activities.

Objective 3: If any statistically significant negative changes to native resident fish populations of social, economic, and cultural importance are identified, and are not caused by and cannot be addressed through implementation of other aquatic resource management plans or activities (white sturgeon, Pacific lamprey, bull trout, ANS, HCP, predator control), reasonable and appropriate implementation measures to address negative changes, if any, will be undertaken by Douglas.

Objective 4: In response to proposed major changes in Wells Dam operations requiring FERC approval, Douglas will assess the potential effects, if any, on Project habitat functionally related to spawning, rearing, and migration of native resident fish, in order to make informed management decisions towards the success of the RFMP. Douglas will implement reasonable and appropriate measures to address any effects on social, economic, and culturally important native species.

This RFMP is intended to be compatible with other resident fish management plans in the Columbia River mainstem. Furthermore, the RFMP is intended to be supportive of the HCP, Bull Trout Management Plan, Pacific Lamprey Management Plan and White Sturgeon Management Plan by continuing to monitor changes, if necessary, in the resident fish assemblage within the Project. The RFMP 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.

## **1.0 INTRODUCTION**

The Resident Fish Management Plan (RFMP) 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 for the Wells Hydroelectric Project (Project).

To ensure active stakeholder participation and support, the Public Utility District No. 1 of Douglas County (Douglas) 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 Indian Nation (Yakama), and Douglas.

The RFMP will direct implementation of measures to protect and enhance native resident fish populations in the Wells Reservoir. To ensure active stakeholder involvement and support, Douglas 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 for the long-term management of native resident fish populations 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 describes the relevant PMEs (Section 4) for native resident fish during the term of the new license.

## **2.0 BACKGROUND**

### **2.1 Resident Fish Species**

The resident fish assemblage present in the Wells Reservoir is composed of a diverse community of native and introduced, warm and coldwater, and recreational and non-recreational fish species. Since the construction of Wells Dam several studies have either directly (McGee 1979; Beak 1999) or indirectly (Dell et al. 1975; Burley and Poe 1994) addressed the resident fish assemblage in the Wells Reservoir.

### 2.1.1 Project Resident Fish Assessments

In assessing the occurrence of gas bubble disease in fish in the mid-Columbia River reservoirs, Dell et al. (1975) observed that the most abundant resident fish species in the Wells Reservoir were northern pikeminnow (*Ptychocheilus oregonensis*), stickleback (*Gasterosteus spp.*), and suckers (*Catostomus spp.*). They also determined that mountain whitefish (*Prosopium williamsoni*) and pumpkinseed (*Lepomis gibbosus*) were the most abundant resident game fish, although these two species accounted for less than two percent of the total 32,289 fish sampled. Overall, 27 species of resident and migratory fish were identified in the study area (Table 2.1-1).

In 1993, a one-year study was conducted to determine the relative predation by northern pikeminnow on outmigrating juvenile salmonids and to develop relative predation indices for each of the five mid-Columbia River reservoirs. During the study, incidental catch (species captured other than northern pikeminnow) was high with over 25 fish species recorded and catch dominated by Catostomidae (suckers) (Burley and Poe 1994).

**Table 2.1-1 Native and non-native resident fish species that have been documented in the Wells Reservoir from past resident fish assessments, monitoring efforts, and miscellaneous studies (Dell et al. 1975; McGee 1979; Burley and Poe 1994; Beak 1999; NMFS 2002; BioAnalyst, Inc. 2004).**

Native Species	Non-Native Species
White sturgeon <i>Acipenser transmontanus</i> *	Carp <i>Cyprinus carpio</i>
Chiselmouth <i>Acrocheilus alutaceus</i>	Black bullhead <i>Ictalurus melas</i>
Longnose sucker <i>Catostomus catostomus</i>	Brown bullhead <i>Ictalurus nebulosus</i>
Bridgelip sucker <i>Catostomus columbianus</i>	Pumpkinseed <i>Lepomis gibbosus</i>
Largescale sucker <i>Catostomus macrocheilus</i>	Bluegill <i>Lepomis macrochirus</i>
Lake whitefish <i>Coregonus clupeaformis</i>	Smallmouth bass <i>Micropterus dolomieu</i>
Prickly sculpin <i>Cottus asper</i>	Largemouth bass <i>Micropterus salmoides</i>
Threespine stickleback <i>Gasterosteus aculeatus</i>	Yellow Perch <i>Perca flavescens</i>
Burbot <i>Lota lota</i>	Black crappie <i>Pomoxis nigromaculatus</i>
Peamouth <i>Mylocheilus caurinus</i>	Walleye <i>Stizostedion vitreum</i>
Rainbow trout <i>Oncorhynchus mykiss</i>	Tench <i>Tinca tinca</i>
Mountain whitefish <i>Prosopium williamsoni</i>	
Northern pikeminnow <i>Ptychocheilus oregonensis</i>	
Redside shiner <i>Richardsonius balteatus</i>	
Dace <i>Rhinichthys spp.</i>	
Bull Trout <i>Salvelinus confluentus</i> *	

\* Individual management plans for both white sturgeon and bull trout have been developed and as such, they are not addressed in this Resident Fish Management Plan.

McGee (1979) noted that chiselmouth (*Acrocheilus alutaceus*), redbottom shiners (*Richardsonius balteatus*), and largescale suckers (*Catostomus macrocheilus*) were the most abundant non-game fish captured during Wells Reservoir surveys while pumpkinseed were the most abundant game fish caught. Similar sampling design and methodology to the 1974 study (Dell et al. 1975) were employed in order to ensure that results of the study were comparable with past observations. In total, 2,480 fish were collected during the study using live traps, beach seines and angling.

Twenty of the 27 known species previously trapped in other mid-Columbia reservoirs (Dell et al. 1975) were captured in the Wells Reservoir during the study.

In 1998, Douglas conducted an updated Wells Reservoir resident fish assessment (Beak 1999). Again, an effort was made to implement a sampling design similar to the two previous studies (1974 and 1979) so as to be consistent and allow comparisons with past results. In total, 22 species of fish were identified with 5,657 fish captured using beach seines and 716 fish observed via diving transects. Beak (1999) reported suckers (*Catostomus* spp.) as the most abundant resident fish captured in beach seining sampling in the Wells study area. These species represented 41 percent of the beach seining catch and 46 percent of the underwater dive survey count. Other abundant species in the beach seine catch were bluegill (*Lepomis macrochirus*) (32 percent), northern pikeminnow (10 percent), peamouth (*Mylocheilus caurinus*) (6 percent), and carp (*Cyprinus carpio*) (5 percent). Fifteen other species represented the remaining 7 percent of the total catch of 3,783 fish. Table 2.1-2 ranks the relative abundance of dominant fish species captured in the 1974, 1979, and 1998 Project studies and how species abundance has shifted over time.

**Table 2.1-2 Ranking of relative abundance of dominant fish species in the 1974, 1979, and 1998 Wells Reservoir resident fish assessments (Beak 1999).**

Species	1974	1979	1998
Largescale sucker <i>Catostomus macrocheilus</i>	1	4	1
Redside Shiner <i>Richardsonius balteatus</i>	3	3	3
Northern Pikeminnow <i>Ptychocheilus oregonensis</i>	2	5	4
Bluegill <i>Lepomis macrochirus</i>	16	0	2
Pumpkinseed <i>Lepomis gibbosus</i>	11	2	18
Chiselmouth <i>Acrocheilus alutaceus</i>	4	1	10

### 2.1.2 Recreational Fish Species

#### Kokanee

Landlocked sockeye (*Oncorhynchus nerka*), known as kokanee are a native fish which occur in several lakes in the mid and upper Columbia basins including Lake Wenatchee, Lake Chelan, Lake Osoyoos, and Lake Roosevelt. Although previous resident fish assessments have not detected the presence of this fish species in the Project, anecdotal information exists indicating that low numbers of kokanee may be present in the Project. These fish likely originate from Lake Roosevelt, above Grand Coulee Dam, and during periods of high spring flow are displaced downstream through Grand Coulee and Chief Joseph dams and into the Wells Reservoir.

#### Largemouth Bass

Largemouth bass (*Micropterus salmoides*) were widely introduced in Washington in the late 1800s (Wydoski and Whitney 2003). They are listed as a priority species in Washington State because of their vulnerability to habitat loss or degradation and their recreational importance (WDFW 2002). They prefer clear water habitat with mud and sand substrates, which is best suited for aquatic vegetation production (Wydoski and Whitney 2003). Little is known about the

populations in the Wells Reservoir as they are infrequently captured (Beak 1999; Duke 2001; Burley and Poe 1994).

### Mountain Whitefish

Mountain whitefish are assumed to occur in all small-order tributaries to the Methow, Okanogan, Wenatchee and Entiat rivers, and in connecting larger lake systems. They are also believed to occur in the mainstem reservoirs, although their behavior patterns are not known. They mostly inhabit riffles in summer and large pools in winter (Wydoski and Whitney 2003). Spawning typically occurs from October through December, generally in riffles, but also on gravel shoals of lake shores. Mountain whitefish feed primarily on instar forms of benthic aquatic insects, although they also occasionally eat crayfish, freshwater shrimp, leeches, fish eggs and small fish. In lakes, they feed extensively on zooplankton, particularly cladocerans. There is evidence that mountain whitefish still spawn in the lower reaches of some tributaries (NMFS 2002). Mountain whitefish appear to use the Wells Reservoir principally as a migration route between spawning areas in the Methow River and the Wells Dam tailrace (Zook 1983).

### Northern Pikeminnow

Northern pikeminnow are a slow-growing, long-lived predator native to the Columbia River basin. In summer, adult northern pikeminnow prefer shallow, low velocity areas in cool lakes or rivers. During the winter, they use deeper water and pools (Scott and Crossman 1973). Spawning occurs during the summer, in shallow water areas with gravel substrate. They tend to concentrate in tailrace areas downstream of mainstem dams during the juvenile salmonid migration period, holding in relatively slow-moving water areas (less than about 3 feet per second) near passage routes (NMFS 2002). Due to their large numbers and distribution throughout the Columbia River basin, northern pikeminnow are considered to pose the greatest predation threat to migrating juvenile anadromous salmonids (NMFS 2002).

### Resident Rainbow Trout

Rainbow trout (*Oncorhynchus mykiss*) are an inland (remains in freshwater) form of steelhead. However, some rainbow trout remain in freshwater for most of their life but undergo a physiological change to a smolt and migrate to the ocean late in life. In addition to the potential for rainbow trout to become anadromous, the progeny of steelhead are believed to have the potential to become resident rainbow (Peven 1990). Inland rainbow and juvenile steelhead are not distinguishable from each other until the steelhead undergo smoltification. The mid-Columbia River tributaries contain a mixture of resident rainbow and ocean-migrating steelhead. Resident rainbow trout are likely present in low numbers in the Wells Reservoir. During the 1998 resident fish assessment, rainbow trout consisted of 0.05 percent of the relative catch (Beak 1999).

### Smallmouth Bass

Smallmouth bass (*Micropterus dolomieu*) are a non-native game fish that have inhabited the mid-Columbia River reach since at least the 1940s. They are listed as a priority species in Washington State because of their vulnerability to habitat loss or degradation and their

recreational importance (WDFW 2002). Preferred habitat for this species includes rocky shoals, banks, or gravel bars. Adult smallmouth bass in the mid-Columbia River are most abundant around the deltas of warmer tributary rivers. In the Wells Reservoir, smallmouth bass are typically found in the lower Okanogan River and the confluence of the Okanogan and Columbia rivers (Beak 1999). They are also abundant in areas upstream of the mid-Columbia River.

Smallmouth bass were the second most abundant predator species captured in the mid-Columbia River during predator assessment sampling conducted in 1994. They were most frequently captured from forebay sampling sites (Burley and Poe 1994). Similar relative abundance estimates of smallmouth bass were observed in recent sampling programs in other mid-Columbia River reservoirs (Beak 1999; Duke 2001). They are a significant fish predator species in the Columbia River, and prey on juvenile salmonids. In the 1994 predator assessment, fish composed 87 percent of the smallmouth bass diet, with salmonids consisting of 11 percent of the prey fish.

### Walleye

Walleye (*Stizostedion vitreum*) are a cool-water, piscivorous game fish believed to have moved downstream into the mid-Columbia River reach from a population established for recreational fishing in Lake Roosevelt in the late 1950s (Zook 1983). They were the least abundant predator species captured in the mid-Columbia River in 1994 (Burley and Poe 1994). They are listed as a priority species in Washington State because of their vulnerability to habitat loss or degradation and their recreational importance (WDFW 2002).

Walleye occur throughout the mainstem reservoirs but are not typically found in the tributaries. Although suitable spawning habitat appears to be plentiful in the mid-Columbia River, peak summer temperatures in this section of river are suboptimal and appear to restrict the recruitment of subyearling walleye to the yearling age class (Zook 1983). Recruitment of walleye into the mid-Columbia River reservoirs is suspected to result from the entrainment of young fish through Grand Coulee Dam during spring run-off (Zook 1983).

### **2.1.3 Other Resident Species**

Resident, non-recreational species make up the bulk of the standing crop of fish in the Wells Reservoir. Many of these species are native to the Wells Reservoir, including burbot (*Lota lota*), chiselmouth, peamouth chub, redbelt shiner, largescale sucker, bridgelip sucker (*C. columbianus*), longnose sucker (*C. catostomus*), lake whitefish (*Coregonus clupeaformis*), Prickly sculpin (*Cottus asper*), threespine stickleback (*Gasterosteus aculeatus*), and dace species (*Rhinichthys spp.*) (See Table 2.1-1). Currently, no management actions or active fisheries for these species occur.



## **2.2 Resident Fish Habitat**

### **2.2.1 Spawning habitat**

Objectives of past resident fish studies (McGee 1979; Zook 1983; Beak 1999) did not specifically address spawning habitat but rather focused on species diversity, relative abundance and spatial distribution. Therefore, little information exists about the location and availability of spawning habitat for resident fish species in Project waters. It is likely that some resident fish species (cyprinids, catostomids, cottids) that spend their entire lives in Project waters utilize areas of the Wells Reservoir, tailrace, and lower tributaries (Methow and Okanogan rivers) to reproduce while other resident species, although present in the Wells Reservoir, utilize areas outside of the Project Boundary. Zook (1983) in his review of resident fish in the Wells Reservoir, hypothesized that some resident species such as mountain whitefish, rainbow trout, and walleye, although present, may not be successfully reproducing. Zook's review (1983) suggests that resident rainbow trout are primarily a product of residualism of hatchery-produced steelhead and that mountain whitefish appear to use the Wells Reservoir principally as a migration route between spawning areas in the Methow River and the Wells Tailrace. The report also suggests that walleye populations in the Wells Reservoir are recruited from the Lake Roosevelt population that was introduced in the late 1950s. The report also states that although spawning habitat appears to be available, evidence of successful reproduction has not been observed (Zook 1983).

Northern pikeminnow control efforts have been implemented at the Wells Reservoir starting in 1995. Part of these efforts included the identification of known spawning locations through the use of radio-telemetry. Based upon results of this study, northern pikeminnow spawning habitat is located in the Wells Reservoir near Park Island, near river mile (RM) 1.5 on the Methow River and in the Wells tailrace immediately downstream of the east bank fish ladder (Bickford and Skillingstad 2000).

### **2.2.2 Rearing habitat**

Past resident fish surveys (McGee 1979; Beak 1999) observed significant spatial trends in species distribution within the Wells Reservoir. Both McGee (1979) and Beak (1999) noted that in general, spiny ray species (centrarchids) were most abundant between RM 530 and RM 540 and in the lower Okanogan River portion of the Project. This unique area of the Wells Reservoir is shallow and broad with slower water velocities, finer substrate, warmer water temperatures, and higher turbidity (Beak 1999) and is conducive to rearing spiny ray fish species while excluding more streamlined fish that prefer fast flowing water. Both surveys also found that the more streamlined resident fish species, such as chiselmouth and redbreasted sunfish (cyprinids), were most abundant downstream of RM 530 where water velocities increased, turbidity decreased, and the amount of shallow littoral habitat decreased. Other resident fish such as various sucker species and white sturgeon are most likely distributed throughout the Wells Reservoir but reside and feed at depths near the river bottom. Migratory, cold water species such as bull trout and whitefish spawn outside of the Wells Reservoir and it is likely that the majority of juvenile fish of these species rear in tributary habitats. Sub-adult bull trout, however, have been observed passing over other mid-Columbia River dams and recent studies suggest that bull trout forage for resident species present in the Wells Reservoir (BioAnalysts Inc. 2004).

## **2.3 Management Activities Affecting Resident Fish**

### **2.3.1 Habitat Conservation Plan's Predator Control Program**

Section 4.3.3 of the Wells Anadromous Fish Agreement and Habitat Conservation Plan (HCP) includes the requirement that Douglas implement a northern pikeminnow and piscivorous bird harassment and control program to reduce the level of predation upon anadromous salmonids in the mid-Columbia Basin. The northern pikeminnow removal program includes a northern pikeminnow control program, participation in fishing derbies and tournaments and the use of long-line fishing equipment. These efforts are designed to provide an immediate and substantial reduction in the predator populations present within the waters of the Project.

Since efforts were first initiated in 1995, Douglas's northern pikeminnow removal program has captured over 134,000 northern pikeminnow (1995-2006). The continual harvest of northern pikeminnow from these waters will provide additional decreases in predator abundance. Yearly removal efforts will also keep the northern pikeminnow population in a manageable state.

The other component of the predator control program is the implementation of control measures for piscivorous birds. The focus of Douglas's piscivorous bird control program is not removal but hazing and access deterrents. Hazing includes propane cannons, pyrotechnics and the physical presence of hazing staff. Access deterrents include steel wires across the hatchery ponds and tailrace, fencing and covers for hatchery ponds, and electric fencing. When hazing and access deterrents fail, options for removal are also implemented by the US Department of Agriculture (DOA) Animal Control staff hired to conduct the hazing programs.

Although the intent of the predator control program is for the protection of anadromous salmonids, reductions in aquatic and terrestrial predator abundance within the Reservoir may benefit many native resident fish species.

### **2.3.2 Project Shoreline Management and Land Use Policy**

Douglas owns approximately 89 miles of shoreline in fee title and addresses shoreline management issues through the implementation of a strict Land Use Policy that requires formal approval of all land use activities that take place within the Project Boundary. Applications to permit activities such as construction of boat docks, piers, and landscaping are reviewed and considered for approval by Douglas after all required regulatory permits are acquired by the applicant. Additionally, when making land use or related permit decisions on Douglas owned lands that affect habitat within the Project Boundary, Douglas is required by Section 5 of the HCP to notify and consider comments from the HCP signatory parties (Douglas 2002). Shoreline management activities directly related to Project land use benefit resident fish, juvenile anadromous fish, and aquatic invertebrates and plants by minimizing impact in littoral areas within the Project Boundary.

### 3.0 GOALS AND OBJECTIVES

The goal of the RFMP is to protect and enhance native resident fish populations and habitat in the Project during the term of the new license. Douglas, in collaboration with the Aquatic SWG, has agreed to implement several resident fish PME's in support of the RFMP. The PME's presented within the RFMP are designed to meet the following objectives:

Objective 1: Continue to provide additional benefits to resident fishery resources in the Project as a result of continued implementation of the HCP, Predator Control Programs and Douglas PUD's Land Use Policy.

Objective 2: In year 2 and every 10 years thereafter during the new license term, Douglas will conduct a resident fish study to determine the relative abundance of the various resident fish species found within the Project. The study objectives will focus on (1) identifying whether there have been major shifts in the resident fish populations resulting from the implementation of the White Sturgeon, Bull Trout, Pacific Lamprey, and Aquatic Nuisance Species (ANS) Management Plans, and (2) collecting information on resident predator fish populations found within the Wells Reservoir. The results of this study may be used to inform the implementation activities of the other Wells aquatic resource management (ANS, bull trout, Pacific lamprey, and white sturgeon) plans and HCP predator control activities.

Objective 3: If any statistically significant negative changes to native resident fish populations of social, economic, and cultural importance are identified, and are not caused by and cannot be addressed through implementation of other aquatic resource management plans or activities (white sturgeon, Pacific lamprey, bull trout, ANS, HCP, predator control), reasonable and appropriate implementation measures to address negative changes, if any, will be undertaken by Douglas.

Objective 4: In response to proposed major changes at Wells Dam requiring FERC approval, the Aquatic SWG will assess the potential effects, if any, on Project habitat functionally related to spawning, rearing, and migration of native resident fish, in order to make informed management decisions towards the success of the RFMP. Douglas will implement reasonable and appropriate measures to address any effects on social, economic, and culturally important native species.

This RFMP is intended to be compatible with other resident fish management plans in the Columbia River mainstem. Furthermore, the RFMP is intended to be supportive of the HCP, Bull Trout Management Plan, Pacific Lamprey Management Plan, and White Sturgeon Management Plan by continuing to monitor changes, if necessary, in the resident fish assemblage within the Project. 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 RFMP 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 goal and objectives described in Section 3.0, Douglas, in consultation with the Aquatic SWG, shall develop and implement a resident fish management program that includes the following PME's.

#### **4.1 Implementation Of Programs that Benefit Resident Fish (Objective 1)**

##### **4.1.1 HCP Predator Control Programs**

Douglas shall continue to conduct annual predator control activities for northern pikeminnow and avian predators as outlined in the HCP (Douglas 2002). Although implementation of this program is targeted at reducing predation on anadromous species covered by the HCP, it is also anticipated to have direct benefits for resident fish species.

##### **4.1.2 Project Shoreline Management and Land Use Policy**

Douglas shall continue to implement the Douglas Land Use Policy which requires approval of all land use activities that take place within the Project Boundary. All permit activities such as construction of boat docks, piers, and landscaping within Project Boundary will be subject to review and approval by Douglas only after the applicant has received all other required regulatory permits, in addition to consideration by the HCP signatory parties and permit review by state and federal action agencies. The intent of the review and approval process captured in the Land Use Policy is to protect aquatic habitats and aquatic species that may be affected by proposed land use activities within the Project.

#### **4.2 Monitoring the Resident Fish Assemblage within the Wells Reservoir (Objective 2)**

Douglas shall conduct a resident fish study to determine the relative abundance of the various resident fish species found within the Wells Reservoir. This assessment shall occur in year 2 and every 10 years thereafter during the term of the new license. The study objectives will focus on (1) identifying whether there have been major shifts in the resident fish populations resulting from the implementation of the White Sturgeon, Bull Trout, Pacific Lamprey, and Aquatic Nuisance Species Management Plans, and (2) collecting information on resident predator fish populations found within the Wells Reservoir.

In order to maintain comparative assemblage information over time to inform Project resident fish status and trends, methodology for monitoring activities shall remain consistent with the methods described in Beak (1999). Information collected from these monitoring activities may be used to inform the implementation activities of the other Wells aquatic resource management plans and the HCP predator control activities.

#### **4.3            Actions to Address Major Shifts in Native Resident Fish Assemblage (Objective 3)**

Based upon information collected during the resident fish status and trends monitoring (Section 4.2), if any statistically significant negative changes to native resident fish populations of social, economic, and cultural importance are identified, and are not caused by and cannot be addressed through the implementation of other Aquatic Resource Management Plans or activities (white sturgeon, Pacific lamprey, bull trout, ANS, HCP, predator control), reasonable and appropriate implementation measures to address negative changes, if any, will be undertaken by Douglas.

#### **4.4            Monitoring in Response to Proposed Changes in Project Operations (Objective 4)**

If at any time during the new license term, future changes in Wells Dam operations are proposed that require FERC approval and the Aquatic SWG concludes that either reservoir or tailrace habitat within Project Boundary may be affected with regards to spawning, rearing, and migration (aquatic life designated uses) of native resident fish, an assessment will be implemented to identify potential effects, if any, in order to make informed license decisions. If the results of the assessment identify adverse effects to native resident fish species of social, economic and cultural importance, attributable to such changes in Project operations, then Douglas will consult with the Aquatic SWG to select and implement reasonable and appropriate measures to address such effects.

#### **4.5            Reporting**

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

## 5.0 REFERENCES

Beak Consultants, Inc. and Rensel Associates. 1999. Assessment of resident fish in Lake Pateros, Washington. Final Report. Prepared for Public Utility District No. 1 of Douglas County. Beak Consultants, Inc. in cooperation with Rensel Associates. Arlington, Washington.

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BioAnalysts, Inc. 2004. Movement of Bull Trout within the mid-Columbia River and tributaries, 2001-2004. Prepared 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. 2 of Grant County, Ephrata, WA.

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