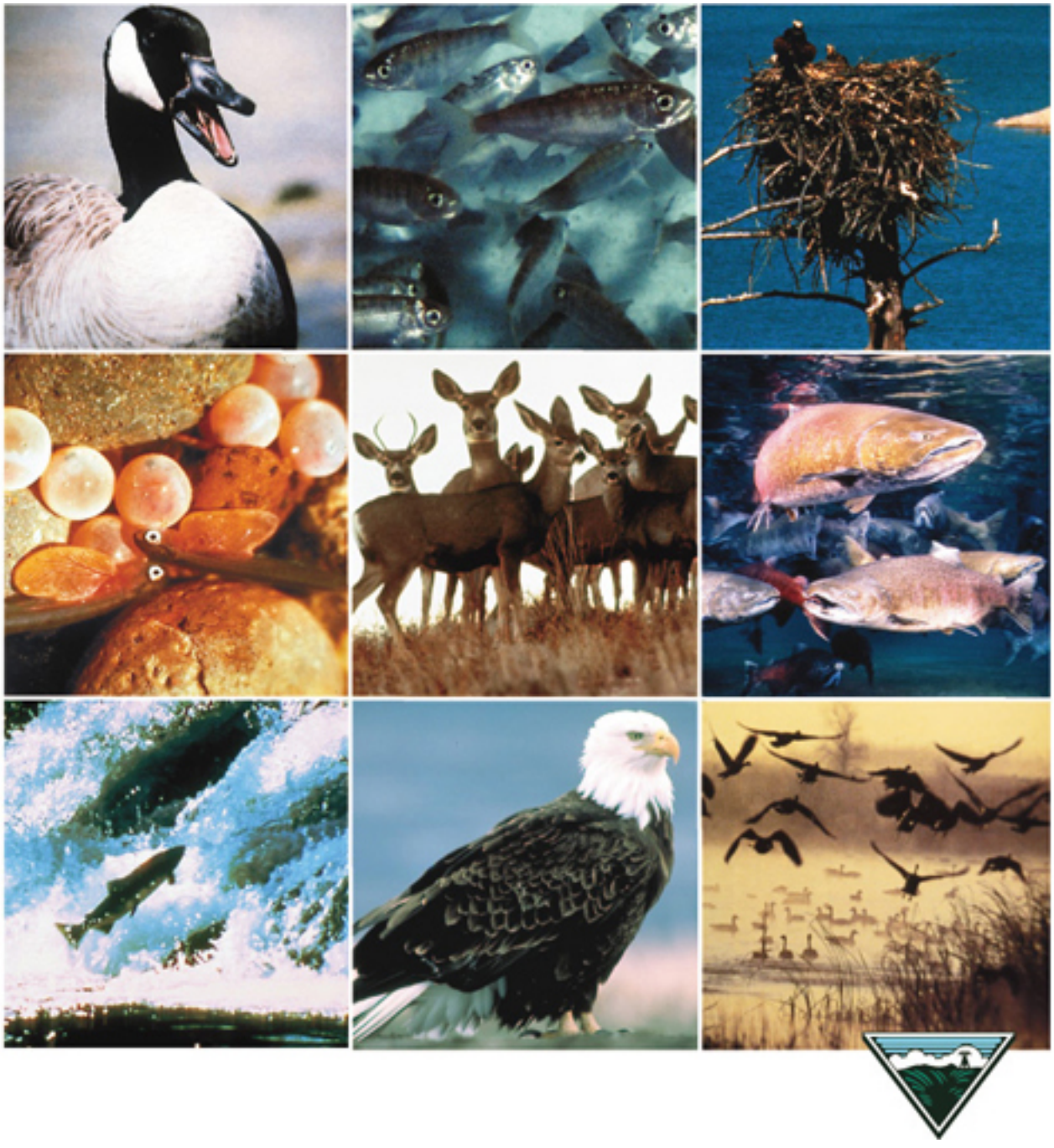
BONNEVILLE POWER ADMINISTRATION

Walla Walla River Fish Passage Operations Program

Annual Report 2004 - 2005 February 2006 DOE/BP-00012779-4



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Walla Walla River Fish Passage Operations Project
Annual Progress Report
October 2004 – September 2005

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ACRONYMS

AOP – Annual Operations Plan
AWS – auxiliary water supply
BPA – Bonneville Power Administration
COE – Army Corps of Engineers
CTUIR – Confederated Tribes of the Umatilla Indian Reservation
DOE – Washington Department of Ecology
ESA – Endangered Species Act
FACPSA – Final Amended Civil Penalty Settlement Agreement
GFID – Gardena Farms Irrigation District
HBDIC – Hudson Bay District Improvement Company
NOAA – National Oceanic and Atmospheric Administration
ODFW – Oregon Department of Fish and Wildlife
PNNL – Pacific Northwest National Laboratory
USFWS – U.S. Fish and Wildlife Service
USGS – U.S. Geological Survey
WWBNPME – Walla Walla Basin Natural Production Monitoring and Evaluation Project
WWFPO – Walla Walla Fish Passage Operations
WWRID – Walla Walla River Irrigation District

ACKNOWLEDGEMENTS

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Thanks to CTUIR staff for their cooperation and contributions in developing this report. In particular, Larry Cowapoo and Brian Conner, project technicians; Brian Zimmerman, technical oversite and report review; and Michelle Thompson, agreement administrator. Julie Burke, Celeste Reves, Brandie Bill, and Daniel Jim provided secretarial assistance.

ABSTRACT

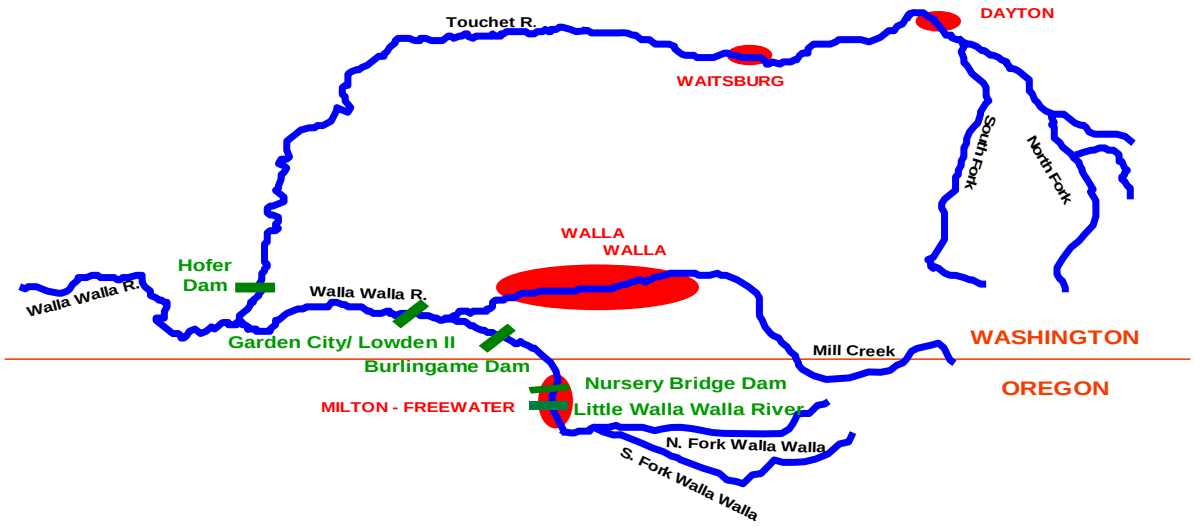
In the late 1990s, the Confederated Tribes of the Umatilla Indian Reservation, Oregon Department of Fish and Wildlife, and Washington Department of Fish and Wildlife, along with many other agencies, began implementing fisheries restoration activities in the Walla Walla Basin. An integral part of these efforts is to alleviate the inadequate fish migration conditions in the basin. The migration concerns are being addressed by removing diversion structures, constructing fish passage facilities, implementing minimum instream flow requirements, and providing trap and haul efforts when needed.

The objective of the Walla Walla River Fish Passage Operations Project is to increase the survival of migrating adult and juvenile salmonids in the Walla Walla River basin. The project is responsible for coordinating operation and maintenance of ladders, screen sites, bypasses, trap facilities, and transportation equipment. In addition, the project provides technical input on passage criteria and passage and trapping facility design and operation. Operation of the various passage facilities and passage criteria guidelines are outlined in an annual operations plan that the project develops.

During the 2004-2005 project year, there were 590 adult summer steelhead, 31 summer steelhead kelts (*Oncorhynchus mykiss*), 70 adult bull trout (*Salvelinus confluentus*); 80 adult and 1 jack spring Chinook (*O. tshawytscha*) enumerated at the Nursery Bridge Dam fishway video counting window between December 13, 2004, and June 16, 2005. Summer steelhead and spring chinook were observed moving upstream while bull trout were observed moving both upstream and downstream of the facility. In addition, the old ladder trap was operated by ODFW in order to enumerate fish passage. Of the total, 143 adult summer steelhead and 15 summer steelhead kelts were enumerated at the west ladder at Nursery Bridge Dam during the video efforts between February 4 and May 23, 2005. Operation of the Little Walla Walla River juvenile trap for trap and haul purposes was not necessary this year.

INTRODUCTION

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR), Oregon Department of Fish and Wildlife (ODFW), and Washington Department of Fish and Wildlife (WDFW) are conducting numerous fisheries activities associated with the rehabilitation of summer steelhead and bull trout populations in the Walla Walla River Basin (Figure 1) (Walla Walla Subbasin Plan 2004). In addition, reintroduction efforts are also in progress for spring chinook in the basin (COE 1997, CTUIR 1998, Zimmerman and Duke 2002). The Bonneville Power Administration (BPA) and U.S. Army Corps of Engineers (COE), along with other local, state, and federal agencies, are funding several projects related to the restoration of these populations (Walla Walla Subbasin Plan 2004). Included among these is the Walla Walla River Fish Passage Operations Project.



The Walla Walla River is heavily diverted for agricultural use. Passage constraints associated with these diversions are one of the major factors limiting fisheries restoration efforts in the basin (CTUIR & ODFW 1990, COE 1997, Zimmerman and Duke 2002). Low flows and diversion structures can delay or preclude the migration of both adult and juvenile salmonids. Fish passage improvement efforts, including maintenance of instream flows, dam removal, ditch consolidation, juvenile screens and bypasses, adult ladders, and trap and haul capabilities are being implemented to enhance passage conditions.

The Walla Walla River Fish Passage Operations Project (WWFPO) was implemented in 1998 to assist fish passage in the basin. The goal of the project is to maximize survival of migrating adult and juvenile salmonids in the Walla Walla River. The project has four primary areas of responsibility to meet this objective: 1) Monitor flow and passage conditions; 2) Operate passage facilities, trapping facilities, and transportation

equipment; 3) Provide technical input on passage improvement projects; and 4) Coordinate passage improvement efforts.

METHODS

Work Element – *Operate and Maintain Habitat/Passage*. Monitor passage conditions. There are three milestones that are address the mentioned work element.

Monitor channel conditions. The project regularly monitors channel conditions throughout the Walla Walla River (including tributaries), Mill Creek, and the lower Touchet River looking for changes in river morphology and instream structures that may potentially affect upstream and downstream migration. Regularity of monitoring is based on the occurrence of channel changing events and inspection of instream structures at varying flow levels. Channel locations that are suspected to be passage issues are generally associated with points of irrigation diversions or stream reaches with low-flow or high seepage loss. Visual monitoring is immediately conducted following events such as major changes in water diversion for irrigation, construction or removal of in-channel gravel berms or high flow events where gravel accumulation may cause fish passage problems. Specific areas of concern are identified and reported to fisheries co-managers in order that further analysis of the situation can occur and potential solutions to address the concerns can be implemented.

Monitor flow and temperature conditions. Hydrologic conditions as relates to fish passage are monitored as needed. Project staff makes visual observations of flow conditions multiple times per week to relate measured flow levels to passage conditions. In Oregon, river flows and irrigation usage are reviewed for the South Fork Walla Walla River and North Fork Walla Walla River using monthly reports on usage and river flows. Flow and diversion data for Oregon is provided monthly by the Oregon Department of Water Resources (OWRD). In addition, the local irrigation districts monitor river flow in the reach from Nursery Bridge Dam to the state line and include the data in their monthly river monitoring reports. In Washington, real-time flow data is checked daily by project staff by reviewing: 1) the United States Geological Survey (USGS) website for their gauging station located on the lower mainstem Walla Walla River (RM 18), below the confluence with the Touchet River, and 2) the Washington Department of Ecology (WDOE) website for two gauging stations located at Pepper Bridge and Beet Road. Information on the WDOE website is also in the local irrigation districts' monthly river monitoring reports. Actual data from these gauging stations is then correlated to observed flow/channel conditions to assess passage concerns at varying flow levels.

Monitor passage facility operations. Juvenile fish screens/bypasses and adult ladder facilities, located at four major diversions (Little Walla Walla River, Nursery Bridge, Burlingame, and Garden City/Lowden II) and several smaller diversions, were monitored weekly throughout the year to ensure that adequate passage conditions exist for upstream and downstream migrants. Inspections include checking for proper installation and operation of screens, gaps and holes in screens or seals, debris buildup on screens and trash racks, proper flows to smolt bypasses and adult ladders, adequate access and exit conditions at bypasses and ladders, and signs of fish activity. Insure passage facilities are being operated according to operating criteria.

Work Element – *Coordination*. Coordinate Passage Facility Operations. There is one milestone described below that addresses this work element; coordinate passage facility operations.

Coordinate Passage Facility Operations. Passage facility operations at Little Walla Walla River, Eastside Ditch, Nursery Bridge Dam, Burlingame Canal, and Garden City/Lowden II Canal are coordinated by the project with the Passage Facility O&M staffs and various agencies involved in the fish passage/flow enhancement efforts in the basin including multiple irrigation districts, US Army Corps of Engineers, US Fish and Wildlife Service, NOAA Fisheries, and Oregon and Washington fisheries and flow management agencies. The project acts as a liaison between the various entities involved in the operation and maintenance of the passage facilities as well as those involved in the flow enhancement effort to ensure adequate passage conditions exist for both upstream and downstream migration and that operational details agreed upon in the Annual Operation Plan are being followed.

The information gained from the monitoring of river conditions and facility operations are incorporated into the Walla Walla Basin Annual Operation Plan. This document attempts to coordinate river conditions, facility operations, and diversion activities to maximize passage conditions. A critical assumption in the passage program is that natural, volitional migration of upstream and downstream migrants is preferable to transportation and that higher overall survival will result if adequate natural passage conditions exist. Based on that assumption, attempts are made to maximize the time periods and optimize conditions for natural migration.

Work Element – *Trap and Haul. Little Walla Walla River Trap and Haul.* There are four milestones that address this work element; operate juvenile trapping facility, transport downstream migrants, collect data related to downstream migrant trapping operations, and collect data related to downstream hauling operations.

Little Walla Walla River Trap and Haul. A juvenile bypass and trapping facility is located at the Little Walla Walla River diversion. The facility consists of vertical plate screens along with a fish bypass and trap (Figure 2). It is designed to bypass outmigrating juveniles during periods of adequate flow or trap them during periods of low flow. Information collected at the Little Walla Walla River facility includes dates of canal operation and facility operational modes.

Figure 2.

The Little Walla Walla River juvenile trapping facility is operated as needed based on the following AOP criteria: if river flows below Nursery Bridge Dam become intermittent prior to June 15, the juvenile bypass will be closed and the trap opened. At a point during trapping when resident salmonids outnumber migratory juveniles, the trap will be shut off and the bypass reopened. If flows remain continuous in the river reach from Nursery Bridge Dam to the state line, then the trap will not be opened.

If trap and haul operations are conducted, the trap is operated on a daily basis. The Little Walla Walla River juvenile trapping facility is operated as needed based on criteria outlined in the AOP in order to collect downstream migrants for safe transport around low flow areas. Attempts will be made to segregate migratory and resident juvenile life histories. Any steelhead or chinook smolts, and all summer steelhead kelts trapped will be hauled to the lower mainstem Walla Walla for release. Bull trout, non-migratory rainbow trout, or subyearling chinook will be released at or near the facility. Fish are hauled as needed to prevent accumulation of juveniles or kelts at the facility.

Trapping data to be collected will include dates of operation, species composition of juveniles trapped at the Little Walla Walla facility, estimates of mortality, and disposition of fish trapped. Data to be collected from kelts trapped at the Little Walla Walla facility will include number, condition, and external marks. Hauling data will include dates, pounds or number hauled, estimates of mortality, and release location. Operation of the Little Walla Walla River juvenile trapping facility is conducted under guidelines developed by the project in conjunction with NOAA Fisheries and other affected agencies.

Work Element – *Enumeration of Adult Migration at Nursery Bridge*. There is only one milestone that addresses this work element;

Enumeration of adult migration. An adult trap and video counting station were incorporated into the new ladder that was constructed on the east bank at Nursery Bridge Dam in 2001. The new ladder consists of a vertical slot fishway with a video counting window located in the upper exit channel of the fishway. The adult trapping component of the ladder consists of a denil steeppass and holding pond. According to the 2004/2005 AOP, no trapping was to be conducted this year. Enumeration of adults occurred from December through June by video counting.

Data collected from the video counting includes date, species, and number of fish moving upstream and downstream, jack or adult spring chinook salmon. In addition, the number of summer steelhead kelts and migration direction for bull trout were recorded. Notations were also made of other species encountered and general fish condition.

Work Element – *Operate Nursery Bridge Dam Adult Traps*. There is only one milestone to address this work element;

Operate Nursery Bridge Dam Adult Traps. The adult traps in the new and/or old ladders at Nursery Bridge may be operated based on enumeration and/or broodstock collection needs.

Work Element – *Trap/Collect/Hold/Transport Fish-Hatchery*. Provide Transportation Assistance. There is one work element to address this work element;

Provide transportation assistance. If available outside project priority requirements, provide adult and juvenile transportation assistance for other basin project efforts on an as needed basis.

The Walla Walla Fish Passage Operations Project has a 3,500 gallon, one 3000, one 750 gallon, and two 370 gallon fish liberation units available for use. The 3,500 gallon unit is a diesel operated tractor-trailer equipped with a 12 inch discharge opening and a single holding chamber. The 3,000 gallon unit is a diesel operated tractor-trailer equipped with a 12 inch discharge opening and two holding chambers capable of isolating two groups in the same load. Both tractor-trailer units are equipped with liquid oxygen and electric aeration to reduce fish stress during transport. The 750 gallon unit is mounted on a flatbed truck and consists of a single compartment with a 12 inch discharge opening. It has both compressed oxygen and electric aeration. The two 370 gallon transport tanks are mounted on dual axle trailers and are pulled by pick-up trucks. Both are equipped with compressed oxygen aeration and a re-circulation system. Both units have an eight inch discharge opening. These transportation units are used in both the Umatilla and Walla Walla basins.

ODFW liberation protocols are used as the basic guideline for hauling operations. The 3,500 and/or 3,000 gallon unit are used to haul spring chinook adults. In addition, the 750 gallon unit may be used to haul spring chinook adults. A 12 inch discharge opening is needed for releasing fish of this size. The trailers, with eight inch discharge openings, are

adequate for hauling kelts. Transportation data collected includes date, transport unit, number of pounds or fish hauled, species composition, and an estimate of mortality.

Work Element - *Provide Technical Review*. Provide Facility Design Review. There is one milestone to address this work element;

Review designs and plans. A number of juvenile and adult passage improvement projects are being implemented, or planned for, in the Walla Walla Basin. One additional trapping facility has also been identified for development in the Walla Walla Basin. Development of these passage projects has been tasked to various engineering consulting firms by the funding agencies. The project provides technical input on both design and operating criteria for these passage facilities based on operating expertise developed with similar type projects in the Umatilla and Walla Walla basins.

Work Element – *Fish Passage Annual Operating Plan*. Annual Operations Plan.

Produce Annual Operations Plan (AOP). The project develops an annual fish passage operations plan to coordinate fish passage operations at the major diversions. The intent is to define the primary operational criteria at these sites prior to the next season to minimize in-season questions and concerns. A draft AOP is sent out to the involved irrigation districts and the BPA COTR in the late summer for comment and the final AOP for the upcoming year is completed in September and distributed to the involved parties.

RESULTS

Biological Objective - *Increase the survival of migrating juvenile and adult salmonids in the Walla Walla River.*

Work Element – *Operate and Maintain Habitat/Passage.* Monitor passage conditions.

Monitor channel conditions. Channel conditions were monitored weekly by field observations that were. The project documented in monthly reports the channel characteristics for both upstream and downstream passage conditions at the four main passage facilities as well as critical stream reaches in both the mainstem and tributary areas.

Monitor flow and temperature. Annually, water temperatures exhibit extreme seasonal fluctuations in streams that have been degraded throughout the basin. Poor land use practices have accelerated the degradation of once pristine river conditions. In the reach from Nursery Bridge Dam to the state line, water temperatures approached a low of approximately 34° in January and approached a high of 77° in July and August 2005. Below Burlingame Dam, temperatures ranged from a low of approximately 34° in January 2005 to 77° in July and August 2005.

Flows measured for the South Fork Walla Walla River and North Fork Walla Walla River are not available at this time pending retrieval issues. Flows measured at the USGS site in the lower Walla Walla River ranged from a low of 2 cfs in August of 2005 to a high of approximately 1,584 cfs in March 2005.

Flows in the reach from Nursery Bridge Dam to the state line were field measured by the local irrigation districts in October and December 2004 and again from January through August 2005. With the increased instream flow requirement of 25 cfs immediately below Nursery Bridge Dam for 2005, there was continuous flow through this stream reach again this year. However, this flow was observed at diminished levels approaching 11 cfs at the state line reach in July and August. The reduced levels are typical for the river "loss" area below Nursery Bridge to the state line. Flows are hyporheic through this reach due to the build up of substratum.

Flows were measured in the mainstem Walla Walla River below Burlingame Dam at Beet Road. Flows reached a low of approximately 16 cfs in October and November 2004 to approximately 774 cfs in late January and another similar high flow event in mid May 2005 of 737 cfs. Flows and temperatures reported for all sites have not been finalized by all parties responsible for them.

Monitor passage facility operations. A number of operational problems were observed during monitoring of the juvenile and adult passage facilities. These include inadequate bypass conditions, incorrect screen submergences, and inability to operate facilities within criteria.

Work Element – *Coordination*. Coordinate Passage Facility Operations.

Coordinate Passage Facility Operations. The project coordinated by phone or in person on a weekly basis with personnel from Hudson Bay District Improvement Company (HBDIC) and Gardena Farms Irrigation District (GFID) on both daily operations and facility maintenance throughout the project year at the Little Walla Walla River, Nursery Bridge Dam, Burlingame Canal, and Garden City/Lowden II sites.

Work Element – *Trap and Haul. Little Walla Walla River Trap and Haul.* There are four milestones that address this work element; operate juvenile trapping facility, transport downstream migrants, collect data related to downstream migrant trapping operations, and collect data related to downstream hauling operations.

Little Walla Walla River Trap and Haul. Based the established criteria and the increased minimum instream flows below Nursery Bridge Dam identified in the Amended Civil Penalty Settlement Agreement (ACPSA), the juvenile trap at Little Walla Walla River was not operated for trap and haul purposes by the project. No juveniles or kelts were transported from the Little Walla Walla River trapping facility by the project The trap was operated by the CTUIR Walla Walla Basin Natural Production Monitoring and Evaluation Project (WWBNPME) personnel for sampling and tagging. Results from that project may be found in the WWBNPME annual report. Based the established criteria and the increased minimum instream flows below Nursery Bridge Dam identified in the

Amended Civil Penalty Settlement Agreement (ACPSA), the trap was not operated for trap and haul purposes.

Work Element – Enumeration of Adult Migration at Nursery Bridge.

Enumeration of adult migration. Video enumeration occurred at the new Nursery Bridge Dam ladder from December 5, 2004 to July 1, 2005. Video enumeration occurred at the old Nursery Bridge ladder from February 4, 2005 to May 23, 2005. Species and age class data were collected, no differentiation of marks or sex were made by video observations. All adults were enumerated by video through the project year.

A total of 590 summer steelhead, 31 steelhead kelts, 70 bull trout, and 80 adult and 1 jack spring Chinook were enumerated at Nursery Bridge this project year. Of these, 143 summer steelhead and 16 kelts were enumerated at the old Nursery Bridge ladder.

Summer steelhead were enumerated from December 13, 2004 to May 31, 2005 as they passed Nursery Bridge Dam. The peak return occurred during April when 61.8% (365 of 590) of the total return was counted. Summer steelhead kelts were observed between March 9, 2005 and May 26, 2005 as they passed downstream. Peak outmigration through Nursery Bridge occurred in March when 45% (14 of 31) of the kelts were enumerated.

Spring Chinook were enumerated from May 4 to June 9, 2005 through the new Nursery Bridge ladder. Peak return month for adults and jacks was May when 92.5% (74 of 80 fish) of the adults and the only jack were counted. There were no spring chinook observed by video in the old ladder.

There were 70 bull trout enumerated at the Nursery Bridge Dam new ladder. Of these, 68 were observed moving upstream and 2 were observed moving downstream. Upstream movement was noted between December 25, 2004 and June 16, 2005. The highest monthly total for upstream movement of bull trout occurred during March when 26.4% (18 of 68 fish) were observed by video in the new ladder. Downstream movement of a bull trout occurred in both December and March for a total of 2 bull trout moving downstream past the window. There were no bull trout enumerated in the old ladder during the project year. Appendix A contains the daily adult salmonid enumeration record for Nursery Bridge Dam video taping during 2004/2005.

Work Element – *Operate Nursery Bridge Dam Adult Traps*. There is only one milestone to address this work element;

Operate Nursery Bridge Dam Adult Traps. The adult traps in either the new or old ladder at Nursery Bridge were not operated this project year.

Work Element – *Trap/Collect/Hold/Transport Fish-Hatchery*. Provide Transportation Assistance. There is one work element to address this work element;

Provide transportation assistance. One of the 370 gallon transport units were utilized by the WWBNPME project to assist in Mill Cr. fish salvage operations during the

late spring. Due to the timing of the salvage operations and available personnel, the project was unable to release personnel to assist. Results from that project may be found in the WWBNPME annual report.

Due to lack of availability, there were no spring chinook adults transported from Threemile Dam to the South Fork Walla Walla Spring Chinook Holding and Spawning facility for the Walla Walla outplanting program.

Work Element - *Provide Technical Review*. Provide Facility Design Review.

Review designs and plans. The project reviewed Mill Creek Dam and Hofer Dam passage alternatives and provided input on flow exchange options being evaluated in the COE flow enhancement study.

Work Element – *Fish Passage Annual Operating Plan*. Annual Operations Plan.

Produce Annual Operations Plan (AOP). The project produced a Walla Walla AOP for the 2005/2006 year in August 2005. This AOP, which covers the time period from October 1, 2005, to September 30, 2006, is attached as Appendix B in this report.

DISCUSSION

Work Element – *Operate and Maintain Habitat/Passage.*

Monitor Channel Conditions. River channel conditions influence the ability for passage facilities to operate within established or designed criteria. Field observations concluded that passage conditions were adequate at most passage facilities during the project year. However, passage conditions at Nursery Bridge are jeopardized by the lack of flow contributed by the main channel (thalweg) upstream of the fish exitway. Temporary gravel berms constructed in the summer washout during the first high flow event resulting in the need to conduct gravel actions aimed at restoring channel conditions during the migration of salmonids through the system. Adequate flows to the ladders allow for the passage facilities to operate within criteria. Ensuring passage conditions during the adult return season calls for adaptive management decisions anticipating gravel removal activities.

Following the construction of the new ladder at Nursery Bridge, the old ladder was only to be used during emergency situations in which the stilling basin entrance to the new ladder is not operating. Channel conditions continue to favor the location of the old ladder (west bank) due to the upstream hydrological conditions. Following a high flow event, the majority of flow is consistently focused towards the west bank. Due to the inability to secure adequate flows to the new ladder the old ladder has been utilized to provide an additional avenue of passage through the site. Instream gravel work during the adult return season will need to continue to restore channel conditions essentially providing flows to both ladders. Installing instream structures that provide adequate flow to the new ladder

under an array of flow conditions is essential in ensuring adequate passage conditions through the site.

Screening and bypass problems still exist at smaller sites in many of the Washington tributaries. There are also major adult passage concerns in Mill Creek. The U.S. Army Corps of Engineers' flood control project and irrigation diversions have combined to create multiple passage impediments in Mill Creek. Most specifically, there appears to be potential passage impediments at Gose St. bridge, in lower Mill Creek due to irrigation diversions down Yellowhawk Creek, at the Mill Creek Dam ladder, and at the Bennington Lake diversion. In addition, preliminary radio telemetry information collected by the WWBNPME project suggested that there may be passage delays at Burlingame and Nursery Bridge passage facilities. The adult passage evaluation project underway in the Walla Walla Basin may provide some answers associated with fish passage in the basin.

Monitor Flow and Temperature Conditions. Beginning in 2001, the Final Amended Civil Penalty Settlement Agreement (FACPSA) between the USFWS and the local irrigation districts required minimum instream flows to be maintained below Nursery Bridge Dam and Burlingame Dam. In addition, it requires that comprehensive flow and temperature monitoring be conducted by the local irrigation districts below Nursery Bridge and Burlingame dams. These locations are important sites for hydrological data from a passage perspective as they are located downstream of major diversions at what are two of the lowest flow points in the river. Data from these locations is a key component in decisions of whether to trap or bypass smolts and adults, how to operate fish passage facilities, and at what flows adults and juveniles can effectively migrate. Another important monitoring location is the stream reach at Detour Road as it is located downstream of the confluence of Mill Creek. Flow and temperature data for this site are monitored by WDFW and DOE but the data have not been finalized is not included in this report for that reason.

The FACPSA identified that the minimum instream flow requirements for the summer of 2002 and each summer thereafter to ensure 19 cfs below Burlingame Dam and 27 cfs below Nursery Bridge Dam until June 30 of each year, returning to 18 cfs below Burlingame Dam and 25 cfs below Nursery Bridge Dam on July 1 for the remainder of each year. There continues to be continuous flow from Nursery Bridge Dam all the way through the state line. Maintenance of minimum instream flows extends the opportunity for passage for both adults and juveniles. In addition, instream flow increases the area available for rearing of resident and non-migratory salmonid life histories. Historically, few fish would be in this river reach by mid summer and large scale salvage operations were conducted to rescue juveniles stranded in this reach. No rescue operations were performed below Nursery Bridge Dam this year.

Temperature and flow data from other, less critical, passage locations in the Walla Walla Basin are being monitored and reported by other agencies. The project continues to make field observations of flow and temperature but no longer collects or reports detailed flow and temperature field data from the Walla Walla Basin as this is redundant with other ongoing efforts in this area. The project accesses data collected and reported by the irrigation districts and other sources for hydrological information relative to passage

operations on an as needed basis. The project will continue to monitor river conditions as they relate to the operation of passage facilities and fish passage conditions. In order to make decisions related to fish passage, temperature and flow data need to be available on a real-time basis.

Monitor Passage Facility Operations. Fluctuating river flows resulted in inadequate passage conditions at Nursery Bridge. During low flows and channel altering events, the entrance gate attraction flow criteria could not be maintained at the new ladder entrances. Severe drought conditions this year resulted in low flow conditions throughout the adult return season. The location of the new ladder exitway continues to pose passage issues because it does not have the ability to receive adequate flows during fluctuating water levels. Less than adequate flows to the ladder exitway have rarely allowed the ladder to be operated within criteria. The goal is to operate the fishway to provide an approximate 1-foot differential across the fish entrances. Poor attraction flows to the ladder entrances may be a major contributor to fish passage delays at the site. High flows affect the direction of the thalweg and resultant flow contribution to the Nursery Bridge Fishway. During high flows the majority of flow is directed towards the old ladder. As flows drop the thalweg remains on the west bank limiting the amount of flow through the new ladder. Nursery Bridge new ladder continues to operate out of criteria during all but a few days when channel and flow conditions permit during the project year.

During the fall, gravel work was conducted in the stilling basin reducing the water level significantly. The previous amount of cobble and boulder in the stilling basin caused an elevated water level. The resultant low flow level following the gravel removal in the stilling basin created an elevated differential at the old ladder entrance. However, the old ladder remained open to provide passage through the site. In March 2005, the lower two baffles at the old ladder were removed reducing the differential at the old ladder entrance. Following the removal of the baffles and increased river flows ODFW observed summer steelhead adults utilizing the old ladder.

In November of 2004, the approach channel to Eastside ditch blew out and dewatered the lower end of the ditch. As a result, the flow to the Nursery Bridge ladder was essentially eliminated. The Eastside ditch wasteway provides flow to the ladder. The main channel of the river was then directed away from the approach channel toward the west bank. Gravel work was conducted below the approach channel in May 2005 to redirect flow to the new fish ladder. A channel and gravel maintenance strategy needs to be developed that would ensure adequate flows to the facility. A potential strategy for directing the thalweg towards the new fish ladder may be installing rock weirs upstream of Nursery Bridge Dam to maintain the channel on the east bank. Ensuring flows to the ladder would be an initial step in securing passage through the site. However, emergency situations do arise during high flow events and may still require gravel work to maintain passage criteria through the site.

The forebay elevations at Little Walla Walla River continue to vary year by year. Low water surface elevations decrease the amount of wetted screen surface, which may

increase velocities at the screen face above criteria levels. Secondly, the lower water surface can reduce flow to the bypass, particularly if the bypass weir gate is not adjusted accordingly. The operating criteria for the facility identify a specific water surface elevation at which the forebay should be maintained. Operating criteria for the rest of the facility were developed under the assumption that the forebay elevation would be maintained at the specified level. As a result, the Obermeyer gate was raised more than may have been needed or lowered as needed to maintain a minimum canal forebay operating elevation. As specified above, it is imperative that the facility operates within criteria to ensure adequate passage conditions. It is important to actively control the water levels to maintain optimal fish passage in the river and in the screen area. This also can be done by automation, thereby not being susceptible to the fluctuating flow levels.

Debris accumulation on the fish screens at the Little Walla Walla Canal has created a differential across the screens of over six inches. This happens in early summer with moss (algae) buildup and in the fall during heavy leaf fall. The continuous operation of the screen cleaner and various manual methods were applied to remove the debris from with the screens. Potential alternatives to cleaning the screens need to be explored in order to effectively remove debris from within the screens. Debris build up across the bypass pipe entrance continues to be a problem. The pipe entrance should be checked daily to prevent accumulation of debris and to prevent damage to fish entering the bypass pipe.

There continues to be concerns with the adequacy of the maintenance effort at the Burlingame, Little Walla Walla River, and Nursery Bridge passage facilities. Large amounts of debris were noticed at these facilities' trashracks on numerous occasions during high flow events. Removing debris from the trashracks is a daily task that is needed to prevent deleterious effects to fish moving through the system. Cleaning the trashracks at least twice a day during high flow events will prevent large amounts of debris from piling up on the trashracks.

The Burlingame Canal was closed in late December for winter maintenance. The juvenile bypass remained open and the canal drained to allow fish in the canal forebay to leave volitionally. Fish salvage was conducted on January 26 and a total of 5 salmonids were removed from the canal and released into the river during the fish salvage.

The Eastside ditch was not bermed off at the point of diversion and dewatered at the end of the irrigation season again this year. The ditch was shut off at the headgate only. This eliminates the need to put heavy equipment instream in the fall. Not berming off and dewatering ditches in the fall eliminates the problem with stranding of juveniles below the berm and provides flow to the new ladder. However, it does expose the head portions of each ditch to damage during high water events as experienced for the past few years. Instream work continues to be conducted by WWRID in the spring/summer as flows decrease in order to divert their full water right. A small gravel berm was constructed in the summer of 2004 to direct the entire river flows to Eastside ditch and Nursery Bridge ladder. However, as mentioned above flows washed out the gravel berm in October 2004 reducing the contribution of flow from Eastside's wasteway to the new ladder fish exityway. As a result, flow to the Nursery Bridge new ladder was severely reduced. Adjustments made to

the diffuser gates could not achieve the water surface differential criteria of one foot across the entrances. In addition, the majority of flow at the time was overtopping the dam crest into the stilling basin masking the attractant flow out of the stilling basin entrance. In order to provide an avenue of passage the old ladder remained open.

Work Element – *Coordination*.

Coordi*nate *Passage Facility Operations*.* The project coordinated with personnel from HBDIC and GFID on both daily operations and facility maintenance throughout the project year each week at the various facilities. The project worked with the HBDIC in using the operational guidelines developed for Nursery Bridge Fishway that were finalized in November, 2002. Facility operations at Nursery Bridge continue to be directed at attempting to fit limited flow amounts through the ladder with passage criteria designed for the site. Nursery Bridge new ladder continues to operate out of criteria during all but a few days when channel and flow conditions permit during the project year.

In past annual reports, the project addressed the need for a maintenance strategy that would ensure optimal passage conditions at the site. Approximate work zones were established by WWFPO and NOAA Fisheries for the O&M contractors at the Garden City/ Lowden II, Burlingame, Nursery Bridge Dam, and Little Walla Walla River passage facilities. Established work zones assisted co-managers in determining potential gravel work areas where removal activities are needed to restore flows for each passage facility.

There continues to be concerns regarding the O&M at the Oregon facilities, specifically Nursery Bridge Dam and Little Walla Walla River. The O&M during normal operating periods was generally adequate but during high maintenance periods (i.e., high flows or debris loads) the maintenance level many times was insufficient. Currently, HBDIC is responsible for the Oregon facilities (Little Walla Walla and Nursery Bridge Fishway) while GFID is handling the Washington facilities (Burlingame and Garden City/Lowden II). The project still recommends that the O&M contracts and staff be combined similar to the Umatilla Basin to ensure that additional staff is available during high maintenance periods or at the least that the two staffs coordinate during high maintenance periods in order to provide each other assistance. The project also recommends that quarterly technical work groups are set up to discuss and address problematic issues that may arise. It is important to conduct routine maintenance at the sites during high debris loads to minimize the stress of migrating salmonids passing through the facilities.

Work Element – *Trap and Haul. Little Walla Walla River Trap and Haul.* There are four milestones that address this work element; operate juvenile trapping facility, transport downstream migrants, collect data related to downstream migrant trapping operations, and collect data related to downstream hauling operations.

Little Walla Walla River Trap and Haul. The project did not conduct trapping operations this year at Little Walla Walla River to haul fish around dewatered areas. As outlined in the 2004/2005 AOP, the juvenile bypass was to be left open as long as flows from Nursery Bridge Dam to the state line remained continuous through June 15. With the increased minimum flow requirement of 25 cfs below Nursery Bridge Dam, flow remained continuous through this reach all year. As a result, no juvenile salmonids or steelhead kelts were hauled this year. It is anticipated that at these levels there will likely always be flow between Nursery Bridge and the state line, eliminating the need to trap at Little Walla Walla River. However, severe drought conditions during the winter and into the spring compounded with direct stream releases of juveniles may have resulted in trapping at the Little Walla Walla passage facility. The direct stream releases of juveniles may have been transported if it weren't for rain events providing adequate flows through the site.

Trapping was conducted at the Little Walla Walla River facility by the WWBNPME project for tagging and biological sampling. Sampling was conducted during the winter. During this period the facility was operated in the passive trapping mode with the bypass open.

Work Element – *Enumeration of Adult Migration at Nursery Bridge*.

Enumeration of adult migration. This was the third season that the new ladder was operational. The 2004/2005 AOP stated that no trapping would be conducted and all enumeration would be by video counting. Video enumeration started in the new ladder on December 4, 2004, and ended on June 31, 2005. The first bull trout was observed on December 25, 2004, and the first steelhead was observed on December 13, 2004. The first spring chinook was observed on May 4, 2005.

The old ladder was opened in the winter of 2004 and remained open to provide an additional avenue for upstream migrants entering the stilling basin to pass the dam. ODFW set up a camera and a DVR on February 4 in order to enumerate fish passage at the old ladder. ODFW observed an adult summer steelhead in good condition moving downstream on February 13 through the west ladder. It appeared that the adult summer steelhead was not a kelt. It is possible that this fish could have been enumerated by video previously moving through the east ladder and observed falling back through the west ladder. Following the downstream observation, there were a significant number of upstream summer steelhead migrants passing through the old ladder. A total of 365 adult summer steelhead, 16 bull trout and 11 kelts were enumerated in April. Of these, 237 adult summer steelhead and 12 bull trout were observed moving upstream through the new ladder. During that time, ODFW observed 35% (128 of 365) of the adult summer steelhead utilizing the old ladder to pass the site. It is well promulgated through monthly reports that fluctuating flow conditions influenced the ability to operate the new ladder at Nursery Bridge according to criteria. This is the second year, the project has documented that the old ladder continues to provide a vital component of fish passage during the time when adult summer steelhead are moving upstream to spawning areas. ODFW's video efforts proved to be a good assessment of fish passage through Nursery Bridge Fishway. Adult summer

steelhead passage through the old ladder continues to suggest a need to secure flows to the new ladder. However, it appears that a significant number of adults continued to use the new ladder even though the old ladder was open (Appendix A).

The first returning adult spring chinook was observed the next day following gravel removal activities on May 3 to direct flows to the new ladder. There were no adult spring chinook observed utilizing the old ladder this year. Restoring flows to the new ladder may have contributed to the adult spring chinook solely moving through the new ladder during the upstream spring migration.

In the past, intermittent flows in the reach from Nursery Bridge Dam to the state line and passage problems at Burlingame Dam were thought to preclude adults from reaching Nursery Bridge until late fall or early winter. However, the increased minimum flow levels resulting in continual flow below both Burlingame and Nursery Bridge dams and new ladders at both sites provided a passage corridor all year. Since Nursery Bridge Dam is located high in the watershed, the late arrival of summer steelhead to the trap is likely not as related to passage constraints as it is to natural migration timing into the upper watershed.

Preliminary investigations suggest that video software developed by Salmonsoft will reduce video observer time by 75% and allow the video observer to focus on just those video clips of when a fish passed the window. Reducing video observer time and improving picture quality may improve on the ability to differentiate sex, marks, and fish condition during video enumeration.

Work Element – *Operate Nursery Bridge Dam Adult Traps*. There is only one milestone to address this work element;

Operate Nursery Bridge Dam Adult Traps. The adult traps were not operated this project year. However, the traps need to be operated in order to identify potential maintenance needs and issues with daily trap operation for potential broodstock collection.

Work Element – *Trap/Collect/Hold/Transport Fish-Hatchery*. Provide Transportation Assistance.

Provide transportation assistance. The 370 gallon transport unit with the capability of pumping water from the release location allows operators the ability to temper fish within 10 degrees of the loading location reducing transport stress and resulting in overall fish survival.

Work Element - *Provide Technical Review*. Provide Facility Design Review.

Review designs and plans. The project oversight supervisor participated in a work group looking at passage conditions in Mill Creek. This includes issues in lower Mill Creek, at the Yellowhawk division works, Mill Creek Dam, and Titus Creek. Initial plans for passage improvements at Mill Creek Dam include the inclusion of a trapping or enumeration facility at that location. Also, discussions of both adult and juvenile

passage alternatives for Hofer Dam have been reinitiated. In addition, the project provided technical input on minimum flow levels and diversion rates for potential flow exchange options being evaluated in the COE flow enhancement study.

Work Element – *Fish Passage Annual Operating Plan*. Annual Operations Plan.

Produce Annual Operations Plan (AOP). Development of the AOP continues to be a progressive step in working with managers in the basin. It is modified annually to include operational changes identified as needed during the course of operations from the previous year. The major area of modification between the 2005/2006 AOP and the 2004/2005 AOP are the additions of operating the old ladder to provide additional passage through the site and that ODFW Umatilla Fish district personnel and WWFPO installed and operated the video enumeration equipment from December 2005 to June 2006 through the old ladder. Also, the addition of the shutdown procedural guidelines of the canals and ladders. As new facilities come on line, and additional information becomes available, they will be incorporated into future AOPs.

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Appendices

Appendix A. 2004-2005 Nursery Bridge Dam Fish Counts

		Number Enumerated East Ladder						Number Enumerated West ladder					
	Total		STS	Bull Trout		Spring Chinook			STS	Bull Trout		Spring Chinook	
Date	STS	STS	Kelts	Up	Down	Adults	Jacks	STS	Kelts	Up	Down	Adults	Jacks
12/13/04	1	1											
12/25/04	0			1									
12/26/04	0			1									
12/27/04	0			2									
12/28/04	1	1		1									
12/29/04	0			1	1								
12/31/04	0			1									
Dec	2	2	0	7	1	0	0	0	0	0	0	0	0
Cum/Dec	2	2	0	7	1	0	0	0	0	0	0	0	0
1/01/05	0			2									
1/06/05	0			1									
1/09/05	1	1											
1/10/05	0			1									
1/12/05	0			1									
1/18/05	0			1									
1/19/05	2	2											
1/20/05	1	1											
1/24/05	1	1											
1/27/05	2	2											
1/28/05	1	1											
1/29/05	4	4											
1/30/05	1	1											
1/31/05	2	2											
Jan	15	15	0	6	0	0	0	0	0	0	0	0	0
Cum/Jan	17	17	0	13	1	0	0	0	0	0	0	0	0
2/01/05	1	1											
2/02/05	2	2		1									
2/03/05	2	2											
2/07/05	0			1									
2/12/05	0			1									
2/13/05	0			1									
2/14/05	2	2											
2/16/05	0			1									
2/24/05	0			1									
2/26/05	0			1									
2/28/05	1	1		1									
FEB	8	8	0	8	0	0	0	0	0	0	0	0	0
FEB/CUM	25	25	0	21	1	0	0	0	0	0	0	0	0

*ODFW set up a camera and a DVR on February 4 in order to enumerate fish passage at the west ladder.
Date in bold: ODFW observed one adult summer steelhead moving downstream

		Number Enumerated East Ladder						Number Enumerated West ladder					
	Total		STS	Bull Trout		Spring Chinook			STS	Bull Trout		Spring Chinook	
Date	STS	STS	Kelts	Up	Down	Adults	Jacks	STS	Kelts	Up	Down	Adults	Jacks
3/01/05	0				1								
3/02/05	2	2											
3/03/05	7	7											
3/04/05	7	7		1									
3/05/05	7	7		2									
3/06/05	3	3		1									
3/07/05	3	1		2				2					
3/08/05	5	5											
3/09/05	18	11						7	1				
3/10/05	6	6											
3/11/05	7	7											
3/12/05	3	3											
3/13/05	9	9		2									
3/14/05	10	10		1					2				
3/15/05	4	4	1										
3/16/05	4	4		1									
3/17/05	1	1		1					1				
3/18/05	1	1		1					1				
3/19/05	1	1		1					2				
3/20/05	3	3		2									
3/21/05	2	2		1					1				
3/23/05	4	4	1										
3/24/05	1	1							2				
3/25/05	0		1										
3/26/05	1	1		1									
3/27/05	5	5		1									
3/28/05	1	1											
3/29/05	5	5											
3/30/05	21	20						1					
3/31/05	21	16	1					5					
March	162	147	4	18	1	0	0	15	10	0	0	0	0
Cum/March	187	172	4	39	2	0	0	15	10	0	0	0	0
4/01/05	57	40						17					
4/02/05	21	17		1				4					
4/03/05	35	32						3					
4/04/05	11	5						6					
4/05/05	25	19		1				6					
4/06/05	37	31		1				6					
4/07/05	11	6						5					
4/08/05	15	12						3					
4/09/05	2	2											
4/10/05	3	3											
4/11/05	3	2						1					
4/12/05	20	2						18	2				
4/13/05	8	3	1	1				5					

		Number Enumerated East Ladder						Number Enumerated West ladder					
	Total		STS	Bull Trout		Spring Chinook			STS	Bull Trout		Spring Chinook	
Date	STS	STS	Kelts	Up	Down	Adults	Jacks	STS	Kelts	Up	Down	Adults	Jacks
4/14/05	13	1						12					
4/15/05	4	1						3	2				
4/16/05	3	1		1				2					
4/17/05	12	8	1					4					
4/18/05	14	10						4					
4/19/05	10	8	1					2					
4/20/05	4	3	2	2				1					
4/21/05	9	6		1				3					
4/22/05	7	7	2	1									
4/23/05	15	4		1				11					
4/24/05	7	3						4					
4/25/05	6	3						3					
4/26/05	5	1						4					
4/27/05	3	2						1					
4/28/05	2	2											
4/29/05	2	2		1									
4/30/05	1	1		1									
APRIL	365	237	7	12	0	0	0	128	4	0	0	0	0
CUM/APRL	552	409	11	51	2	0	0	143	14	0	0	0	0
5/02/05	1	1		1									
5/04/05	4	4				1							
5/05/05	1	1	1	1		2							
5/06/05	3	3	1	3		1							
5/07/05	3	3		1									
5/08/05	4	4	1			2							
5/09/05	2	2				1							
5/10/05	2	2				3							
5/11/05	2	2											
5/12/05	3	3				3							
5/13/05	3	3		1		8							
5/14/05	0					2							
5/15/05	3	3				6							
5/16/05	2	2		2		5							
5/17/05	1	1				2			1				
5/18/05	0		1			2							
5/20/05	0					1							
5/21/05	1	1		2		2							
5/22/05	0					2							
5/23/05	0					4							
5/24/05	0					2							
5/25/05	0					5							
5/26/05	0		1	1		4							
5/27/05	0					4							
5/28/05	0					6	1						
5/29/05	1	1				3							

		Number Enumerated East Ladder						Number Enumerated West ladder					
	Total		STS	Bull Trout		Spring Chinook			STS	Bull Trout		Spring Chinook	
Date	STS	STS	Kelts	Up	Down	Adults	Jacks	STS	Kelts	Up	Down	Adults	Jacks
5/30/05	1	1				2							
5/31/05	1	1		1		1							
MAY	38	38	5	13	0	74	1	0	1	0	0	0	0
CUM/MAY	590	447	16	64	2	74	1	143	15	0	0	0	0
6/03/05	0					2							
6/04/05	0					1							
6/05/05	0			1		1							
6/07/05	0			1									
6/09/05	0					2							
6/13/05	0			1									
6/16/05	0			1									
JUNE	0	0	0	4	0	6	0	0	0	0	0	0	0
CUM/JUNE	590	447	16	68	2	80	1	143	15	0	0	0	0

DATE IN BOLD: This fish appeared to in good condiiton may be 05-06 return year.

Appendix B.

Walla Walla Basin Passage
Annual Operations Plan

October 1, 2005 - September 30, 2006

Prepared by:

Walla Walla Fish Passage Operations Project

For

Bonneville Power Administration

Table of Contents

I. Introduction

Fish restoration efforts in the Walla Walla Basin are ongoing. Part of these efforts includes improvement of fish passage conditions in the basin through facility and instream flow projects. Most of the Bonneville Power Administration (BPA) funded passage facilities are located in the upper mainstem portion of the subbasin. The major facilities specifically identified in this Annual Operations Plan (AOP) are Burlingame Ladder and Juvenile Screen Site, Nursery Bridge Ladder and Trap, Little Walla Walla River Juvenile Facility, and the Garden City/Lowden No. 2 ladder and screen. Instream flow enhancement and minimum instream flows have been established to ensure 19 cfs below Burlingame Dam and 27 cfs below Nursery Bridge Dam until June 30 of each year, returning to 18 cfs below Burlingame Dam and 25 cfs below Nursery Bridge Dam on July 1 for the remainder of each year. It is anticipated that these flow regimes will remain the same next year.

To coordinate the implementation of these passage and flow efforts, the Walla Walla Fish Passage Operations Project (WWFPO) develops an AOP. The primary purposes of this AOP are to provide facility operating guidelines and coordinate passage and instream flow enhancement efforts between the various state, tribal, and federal management entities, irrigation districts, and the WWFPO.

The primary focus of this AOP is to provide a guideline for conducting passage activities in the Walla Walla Basin with emphasis on the major BPA funded facilities and those facilities directly related to the Amended Civil Penalty Settlement Agreement (ACPSA). Conditions or biological information may dictate a need to change operations in-season from what is outlined in this document. Any entity operating under this AOP should inform the appropriate groups if operations they are conducting significantly deviate from those outlined here.

II. Trap Operations

A. Nursery Bridge

For 2005-2006, enumeration at the new fish ladder will occur by video counting. The video counting station will be operated by WWFPO in conjunction with Hudson Bay District Improvement Company (HBDIC) staff from December through June. Summer steelhead, bull trout and spring chinook will be enumerated. Additional data to be collected will be the number of steelhead kelts, direction of bull trout movement, and age class (adults and jacks) for spring chinook. Other species and life history stages video recorded will be noted. It is not anticipated that the adult trap will be operated in 2005-2006. Gravel accumulation associated with the new ladder continues to compromise fish passage at the Nursery Bridge Dam. In order to provide passage through the site it is anticipated that the old ladder at Nursery Bridge Dam will be operated in 2005-2006. For the past two years, efforts have been made to enumerate fish passage through the old ladder. ODFW Umatilla Fish district personnel and WWFPO will install and operate the video enumeration equipment from December 2005 to June 2006.

B. Little Walla Walla River

A juvenile trap is located at the Little Walla Walla River screening facility and is operated by WWFPO personnel in conjunction with HBDIC staff. Criteria for operation of the trap will remain the same as past years: if river flows below Nursery Bridge Dam become intermittent prior to June 15, the juvenile bypass will be closed and the trap opened. At a point during trapping when resident salmonids outnumber migratory juveniles, the trap will be shut off and the bypass reopened. If flows remain continuous in the river reach from Nursery Bridge Dam to the state line, then the trap will not be opened. Based on these criteria and the increased minimum instream flows below Nursery Bridge Dam identified in the ACPSA, it is not anticipated that the trap will be operated for trap and haul purposes.

If trap and haul operations are conducted, attempts will be made to segregate migratory and resident juvenile life histories. Any steelhead or chinook smolts, and all summer steelhead kelts that are trapped will be hauled to the lower mainstem Walla Walla for release. Bull trout, non-migratory rainbow trout, or subyearling chinook will be released at or near the facility. Data to be collected from juveniles trapped at the Little Walla Walla facility will include pounds transported and a subsample of species composition. Data to be collected from kelts trapped at the Little Walla Walla facility will include number hauled and any external marks.

C. Monitoring and Evaluation

One exception to the criteria listed under II.A. and II.B. is the utilization of traps at the various facilities for monitoring and evaluation (M&E) reasons. The possibility exists that the trap in either the old or new Nursery Bridge Dam ladder may be operated to capture adult steelhead and bull trout for radio tracking studies. In addition, trapping may occur at both Little Walla Walla River and Burlingame canals to capture juveniles for tagging and to collect biological data. M&E personnel are to coordinate their efforts with WWFPO, state agencies, and the appropriate O&M staffs. These facilities are designed to optimize fish passage conditions; if it is determined that M&E trapping efforts are adversely affecting fish passage then M&E efforts will be discontinued.

III. Passage Facility Operations

A. Ladders

1. Garden City/Lowden No. 2

The Garden City/Lowden No. 2 ladder is operated by WWFPO and Gardena Farms Irrigation District (GFID) personnel. Generally, the ladder will be open year-round. Operation of the ladder is determined by stream flow elevation. The intent of this ladder is to provide passage when the rubber dam is raised for irrigation diversions. The ladder is not operational in low to moderate flow conditions when the rubber dam is down. The intent is to maximize the period when the rubber dam is down, allowing fish to volitionally migrate past the structure in the natural stream channel without having to utilize the ladder.

2. Burlingame Dam

The Burlingame Ladder is operated by WWFPO and GFID personnel. The ladder will be open for fish passage year-round. When river flows drop to a point where inadequate water is available to properly maintain water levels in both the diversion and ladder, low flow panels will be installed into the ladder. With the low flow panels installed, the ladder should be operable within criteria down to the 10 cfs level which is below the minimum instream flow level identified in the ACPSA. When the canal is off during the summer low flow period, the low flow panels will be removed and the flash dam will remain in to concentrate flows in the ladder and maintain criteria.

Beginning on or near the first of September, the two short slot sections of the flash dam will be removed to provide an additional passageway for any downstream migrants. These sections will remain out through the fall as flows allow. When the canal shuts off for the winter, a complete section of the flash dam should be removed to facilitate migration through this stream reach. The middle entrance slot to the ladder should be open whenever a full section of the flash dam is out and high flows are concentrated near the ladder entrances. These higher flows wash out or mask the attraction flows coming out of the upper entrance gate. The upper entrance slot should be open whenever the flash dam is completely in or just the short slot section is removed.

3. Nursery Bridge Dam

The new Nursery Bridge Ladder is operated by WWFPO in conjunction with HBDIC personnel. The ladder will be open for fish passage year round. The ladder will be operated as determined by WWFPO staff, using the operational guidelines for the Nursery Bridge Fishway. The old ladder is still in place and will be operated when flow is adequate. Annual maintenance at Nursery Bridge Dam will be performed within the ODFW instream work window of July 1 – October 31. Any emergency instream work outside of this period will be coordinated with BPA prior to doing the

work to ensure compliance with US Fish and Wildlife Service and NOAA Fisheries Biological Opinions for this facility.

4. Little Walla Walla River

   A Denil steeppass is located at the Little Walla Walla River diversion dam and is operated by WWFPO personnel in conjunction with HBDIC staff. Between water left instream for downstream users (Eastside and Smith ditches) and minimum instream flow levels identified in the ACPSA, there is sufficient water available to operate the steeppass year round. This allows for both upstream and downstream volitional migration past the diversion structure no matter what operational status the rubber dam and Obermeyer gate are in.

B. Screens and Bypasses

1. Garden City/Lowden No. 2

   The Garden City/Lowden No. 2 juvenile screen facility is operated by WWFPO and GFID personnel. It is located at the natural stream bank line, which excludes juveniles or adults from entering any portion of the irrigation canal and precludes the need for a bypass system.

2. Burlingame Canal

   The Burlingame Canal screen/bypass facility is operated by WWFPO and GFID personnel. The facility will be operated whenever the canal is diverting water. Once flows drop to a point where the low flow panels are installed in the ladder, bypass flows will be regulated in order to maintain operation of both the ladder and screens within criteria. At the minimum flow level of 18 cfs identified in the ACPSA for the operating year; there should be enough flow available to allow for continual operation of the bypass.

3. Little Walla Walla River

   The Little Walla Walla juvenile facility consists of juvenile screens, bypass, and trap and is operated by WWFPO personnel in conjunction with HBDIC staff. Based on facility criteria outlined in Section II.B., the trap will not be operated in 2006 and the juvenile bypass will be open whenever the canal is delivering water. At the increased minimum flow of 25 cfs identified in the ACPSA, there is enough flow available for continual operation of both the bypass and steeppass.

4. Eastside Ditch

   The Eastside Ditch is operated by the Walla Walla River Irrigation District (WWRID). The bypass located at the facility will operate whenever the ditch is delivering water. During the summer period, after the seasonal gravel dam has been pushed up, the ditch will be managed to draw additional flow into the canal over that needed for

irrigation. This excess flow will be returned to the river through the ditch wasteway. This will provide better passage conditions for fish moving downstream as there will be supplemental flow for the bypass outfall. In addition, this will provide better flow to the Nursery Bridge Dam ladder and provide fish moving upstream with a passageway with concentrated flow that is not blocked by the seasonal gravel dam. The head of the ditch will no longer be bermed off at the end of irrigation season.

5. Milton Ditch

The Milton consolidation project has been completed and is online; the users that are not supplied from the new pipeline could still operate the diversion but have not done so. A mitigation plan has been forwarded to BPA that would help to ensure the users would not exercise their right to divert at that site. WWRID plans to block off the entrance to Milton ditch and consult with tribes and fishery agencies to determine if some instream restoration is beneficial at the entrance of Couse Creek and perform appropriate actions during the instream work window.

C. Facility Shutdowns/Salvage Operations

All the facilities mentioned above have periods of the year where they are shutdown for reasons such as lack of water in the river versus senior water rights, bypass flow maintenance, facility maintenance, irrigation demand, and winter weather. Any closures which will result in the stoppage of flow or dewatering of the facilities that may potentially harm or strand fish will be coordinated with WWFPO staff. Salvage operations will be scheduled as needed to rescue fish under these situations.

1. Little Walla Walla River shut down procedure.

    a. Notify the WWFPO project on intent to shut down.
    b. Coordinate shut down procedures with WWFPO project following the LWWR Operational and Maintenance Manual Section 3-4 Shut Down and Dewatering Procedures.
    c. Conduct fish salvage if needed.

2. Nursery Bridge Fishway dewatering procedure.

    a. Notify the WWFPO project of intent to shut down.
    b. Coordinate shut down procedures with WWFPO project following the Operational Guidelines for Nursery Bridge Fishway Section 5.0 Dewatering.
    c. Conduct fish salvage if needed.

3. Nursery Bridge old ladder shut down procedure.

    a. Close fish exitway gate by 90%.
    b. Allow to drain for 1to 2 hrs.
    c. Inspect for fish presence and conduct fish salvage if needed.

4. Burlingame Canal shut down procedure.

a. Notify WWFPO project of intent to shut down.
b. Close canal headgates by approximately 90%.
c. Open fish bypass fully and leave stop logs in place at access road culvert.
d. Allow bypass to flush for minimum of 48 hrs.
e. WWFPO project inspect for fish presence and coordinate complete shut down of canal.
f. conduct fish salvage if needed.

5. Burlingame Ladder shut down procedure.

a. Notify WWFPO project of intent to shut down ladder.
b. WWFPO project inspect for fish presence and coordinate complete shut down of ladder.

6. Garden City/Lowden II ladder shut down procedure.

a. Notify WWFPO project in anticipation of lowering the rubber dam and interrupting flow to the ladder.
b. WWFPO staff will inspect for fish presence and conduct fish salvage if needed.

D. Release schedules

1. STS-100,000 to be directly stream released between Mill Creek and Touchet River (Rm 23-33) in mid to late April.
2. CHS-250,000 to be directly released at Harris Park from late March to early April.