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Umatilla River Fish Passage Operations Program

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Umatilla River Fish Passage Operations Program

Annual Progress Report
October 2003 - September 2004

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ABSTRACT

Threemile Falls Dam (Threemile Dam), located near the town of Umatilla, is the major collection and counting point for adult salmonids returning to the Umatilla River. Returning salmon and steelhead were enumerated at Threemile Dam from August 19, 2003 to July 8, 2004. A total of 3,388 summer steelhead (Oncorhynchus mykiss); 1,482 adult, 638 jack, and 2,150 subjack fall chinook (O. tshawytscha); 8,319 adult and 667 jack coho (O. kisutch); and 2,965 adult and 270 jack spring chinook (O. tshawytscha) were counted. All fish were enumerated at the east bank facility.

Of the fish counted, 34 summer steelhead and 31 adult and 9 jack spring chinook were hauled upstream from Threemile Dam. There were 3,166 summer steelhead; 1,076 adult, 554 jack and 2,026 subjack fall chinook; 8,213 adult and 647 jack coho; and 2,152 adult and 174 jack spring chinook either released at, or allowed to volitionally migrate past, Threemile Dam. Also, 121 summer steelhead; 388 adult and 19 jack fall chinook; and 561 adult and 29 jack spring chinook were collected for brood. In addition, 239 spring chinook were collected for the outplanting efforts in the Walla Walla Basin. There were also 25 pair hatchery steelhead adults collected for the progeny maker study.

The Westland Canal juvenile facility (Westland), located near the town of Echo at rivermile (RM) 27, is the major collection point for outmigrating juvenile salmonids and steelhead kelts. The canal was open for 184 days between January 12 and July 6, 2004. During that period, fish were bypassed back to the river 173 days and were trapped 10 days. An estimated 44 pounds of juvenile fish were transported from Westland to the Umatilla River boat ramp (RM 0.5). Approximately 84% of the juveniles transported were salmonids. No steelhead kelts were hauled from Westland this year.

The Threemile Dam west bank juvenile bypass was opened on February 10, 2004 for outmigration sampling and continued until July 7, 2004 when sampling was discontinued. The juvenile bypass ran at the 5 cfs level until the initiation of Phase I on August 15, 2004. The juvenile trap was operated by the Oregon Department of Fish and Wildlife (ODFW) under the Evaluation of Umatilla Juvenile Salmonid Outmigration Project.

INTRODUCTION

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and Oregon Department of Fish and Wildlife (ODFW) are cooperatively working to rehabilitate runs of coho, fall and spring chinook and summer steelhead in the Umatilla River Basin (Figure 1). The Bonneville Power Administration (BPA) and other federal agencies are funding several projects to accomplish that goal (CTUIR, et al. 2001). Included among these projects is Umatilla River Fish Passage Operations (formerly known as Trap and Haul, project number 198802200).

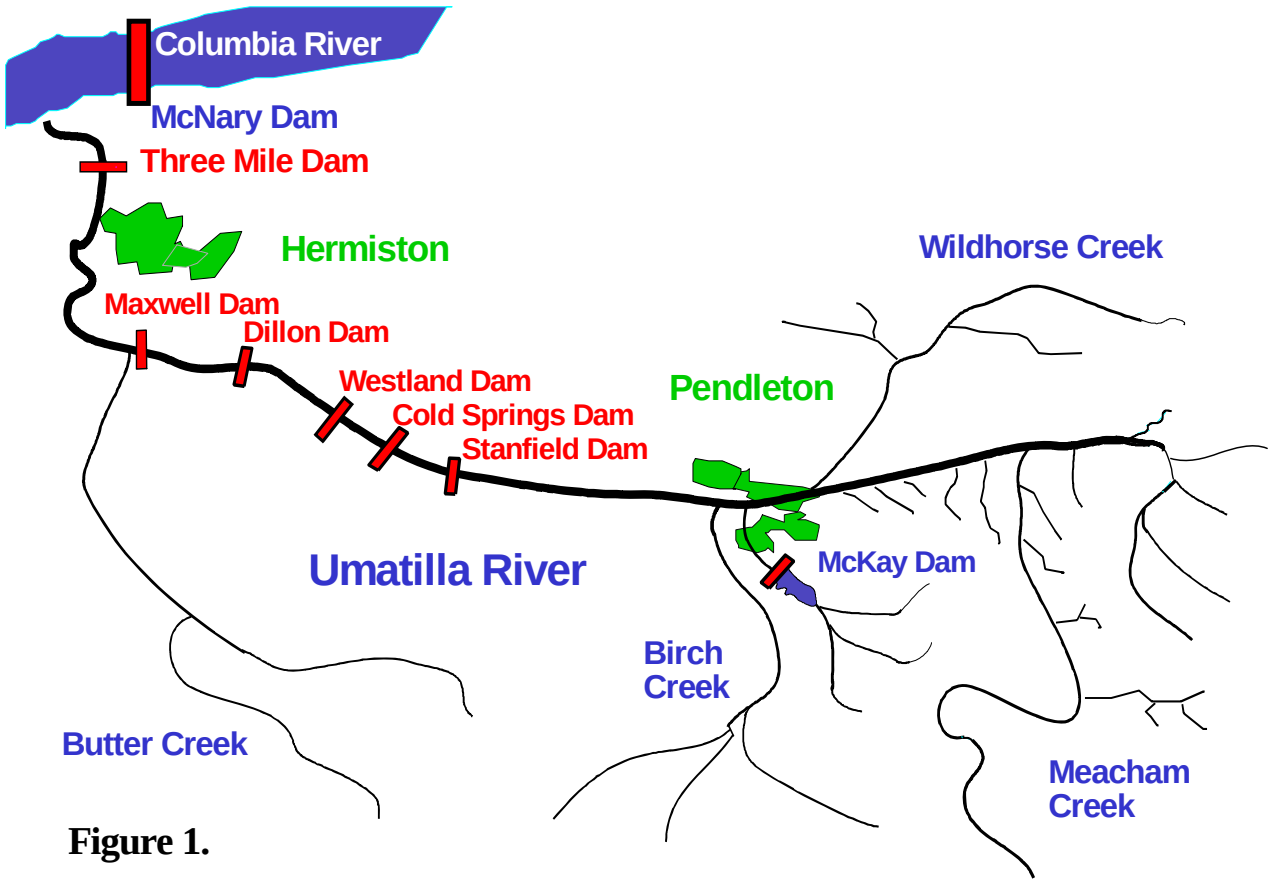

Figure 1.

The lower 32 miles of the Umatilla River historically provided obstacles to the migration of both adult and juvenile salmonids. Passage inadequacies have been identified as a major contributor to the decline of summer steelhead and extinction of salmon populations in the basin (CTUIR, et al. 2001, CTUIR & ODFW 1989, CTUIR & ODFW 1990, ODFW 1986). During both juvenile and adult migration periods, parts of the lower river between the mouth and Stanfield Dam were dewatered, stranding migrating salmonids. The U.S. Fish and Wildlife Service (USFWS)(1981) and U.S. Bureau of Reclamation (BOR)(1988) identified flows ranging from 150 cubic feet per second (cfs) to

300 cfs as being necessary for fish passage through this river reach. With implementation of the Umatilla Basin Project, the duration and extent of these low flow periods have decreased substantially from what occurred historically.

In addition to low flows, diversion structures associated with irrigation canals also provided physical barriers to passage. Adult ladder and juvenile screen and bypass improvements have been completed at most diversions in the basin. With implementation of these flow enhancement and physical passage improvements, passage conditions have improved dramatically. However, even with these improvements in place there are still periods when inadequate passage conditions may occur.

Initially, this project was implemented as the Umatilla River Trap and Haul project in 1989. The primary responsibility of the project through the early years was to capture and safely transport adult and juvenile migrants around dewatered stream reaches in the lower basin. The project has evolved with implementation of the flow enhancement and fish passage improvements in the basin. The project title changed to the Umatilla River Fish Passage Operations in 1999 to more accurately reflect the transformations which have occurred within the project and in the overall passage program in the basin. While transportation is still an important function, operation and coordination of flow enhancement efforts and passage facilities are now the major focus for the project.

The objective of the Umatilla River Fish Passage Operations Project is to maximize survival of adult and juvenile salmonids migrating through the lower Umatilla River. The project has four primary areas of responsibility to meet this objective: 1) Monitoring of flow and passage conditions in the basin; 2) Daily operation and refinement of operating criteria for passage and trapping facilities, and transportation equipment; 3) Oversight of the flow enhancement effort (Umatilla Basin Project); and 4) Coordination of the overall fish passage program. It is critical that facility operations and flow enhancement efforts are coordinated with passage requirements to ensure that optimal passage conditions exist and passage inadequacies are no longer a limiting factor to restoration efforts in the basin.

METHODS

Objective 1 - Passage Conditions Monitoring

Task 1.1 - Monitoring of River and Channel Conditions

Temperatures are monitored during the project year to help refine project operating guidelines. Temperatures for the lower Umatilla River are measured by a digital recording thermometer located at the UMAO hydromet site (RM 2). Instantaneous temperatures are measured daily at Threemile Dam during trapping operations and at loading stations and release sites with hand held thermometers.

Daily river flow is monitored at Pendleton (RM 54), Yoakum (RM 37), Dillon (RM 24.5) and Umatilla (RM 2). Daily irrigation usage is monitored for Stanfield, Westland, Feed, and West Extension canals. River flow and irrigation diversion data is provided by Oregon Department of Water Resources (OWRD) from the Hydromet flow gauging stations.

Channel conditions are monitored during the project year to ensure adequate entrance and exit conditions are present at the passage facilities. Visual observations are conducted multiple times per week to document channel morphology in association with flows to the passage facilities. Investigating fish behavior associated with current passage conditions is important in refining operating criteria for both upstream and downstream migrations.

Task 1.2 - Inspection of Passage Facilities

Table 1. Passage Facilities

Passage Facility	Function
Stanfield Canal	Adult ladder and juvenile screens
Cold Springs Canal	Adult ladder and juvenile screens
Westland Canal	Adult ladder / juvenile screens and downstream migrant trap
Maxwell Canal	Juvenile screens
Threemile Dam West Bank	Juvenile screens and downstream migrant collection facility
Threemile Dam East Bank	Adult ladder and adult enumeration and brood stock collection facility

Juvenile fish screens/bypasses and adult ladder facilities, associated with irrigation diversions within the basin, are monitored 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.

Objective 2 - Operation of Adult Trapping Facilities

Task 2.1 - Threemile Dam Adult Trapping

Threemile Dam, located approximately three miles upstream from the mouth of the Umatilla River, is the major collection and counting point for all adults returning to the Umatilla River. The main collection facility is located on the east bank and includes a vertical slot ladder, Denil steeppass, raceway type holding pond and fish handling and sorting complex (Figure 2). Fish routed through the sorting complex are anesthetized with carbon dioxide (CO2) to reduce stress during the handling process. Captured adults can be directed back into the holding pond, into recovery tanks for release upstream of the dam, to a broodstock holding and spawning facility, directly into the dam forebay, or into transport tanks for hauling.

Figure 2.

Up until the 1999/2000 return year, all adults returning to Threemile Dam were trapped. That year, criteria were outlined for volitional migration of adults past Threemile Dam with enumeration occurring through video recording. For the past three years, the Umatilla Hatchery and Basin Annual Operations Plan (AOP)(CTUIR & ODFW 2003) has identified criteria for volitional migration of adults past Threemile Dam. For 2003/2004, the AOP outlined that beginning December first; trapping was to be reduced to five day periods

with volitional migration occurring for nine day periods. As of April 15, trapping was to be reduced even more, to an as needed basis for collection of spring chinook broodstock. Trapping periods would be increased if broodstock collection goals or passage criteria were not being met.

Data collected during adult trapping operations includes date, number of fish trapped, species, age and sex composition, marks and disposition. Observations are also made of marine mammal damage, net marks, mechanical damage, and general fish condition. In addition, fork length, mid-eye/hypural plate (MEHP) length, and snouts are collected from a percentage of the fish with coded wire tags (CWT). During volitional migration periods, enumeration occurred by video camera. Data collected during volitional migration includes date, species, and number of fish moving upstream and downstream, jack or adult salmon, and wild or hatchery steelhead. General observations were also made such as time of movement and other species observed.

Fall and spring chinook salmon were classified as either adults (fork length greater than or equal to 24 inches) or jacks (fork length less than 24 inches) as outlined in ODFW sport fishing regulations. Subjack (or mini-jack) fall chinook were defined as less than 15.75 inches in fork length based upon historical length frequency data (CTUIR files). Coho adults were defined as fork length greater than or equal to 18 inches and jacks as fork length less than 18 inches based upon historical length frequency data (CTUIR files). Based on scale analysis of Umatilla River summer steelhead, adult summer steelhead were classified as either one ocean (S1, fork length less than 26 inches) or two ocean (S2, fork length greater than or equal to 26 inches) (CTUIR files). Visual determinations are made to differentiate resident rainbow trout from summer steelhead (but generally less than 18 inches). No data are collected from fish designated as resident trout.

The east bank facility is manned 24 hours a day during the adult capture season. Permanent, on-site housing is provided for watch personnel. In addition to providing security, watch personnel monitor facility operations, assist trap and haul operations, and make observations of fish activity.

The west bank at Threemile Dam also has an adult collection facility. It consists of a vertical slot ladder, a combination V-trap/holding pond, and fish loading apparatus. The trap/holding pond and fish loading complex have no enumeration or sorting capabilities. The ladder was designed with the ability to enumerate fish using video equipment.

Task 2.2 - Westland Adult Trapping

Summer steelhead kelts may be captured at the Westland Canal juvenile facility during trapping operations. The facility has the ability to bypass kelts downriver during high flows or to trap them for transport during low flow periods. It is generally operated in the bypass mode during the majority of the kelt outmigration period. Other adults (such as spring chinook) may also be captured incidentally at the facility during trapping operations and are held for transport upstream. Information collected from adults trapped at Westland includes date, species, and number.

Objective 3 - Operation of Juvenile Trapping Facilities

Task 3.1 - Westland Juvenile Facility Operation

The Westland Canal juvenile facility (Figure 3) is the major collection point for outmigrating juvenile salmonids. It is intended to be operated whenever Westland Canal is delivering water. The facility consists of rotary drum screens, fish bypass, fish trap, adult/juvenile separator (horizontal bar grader), and adult and juvenile holding ponds.

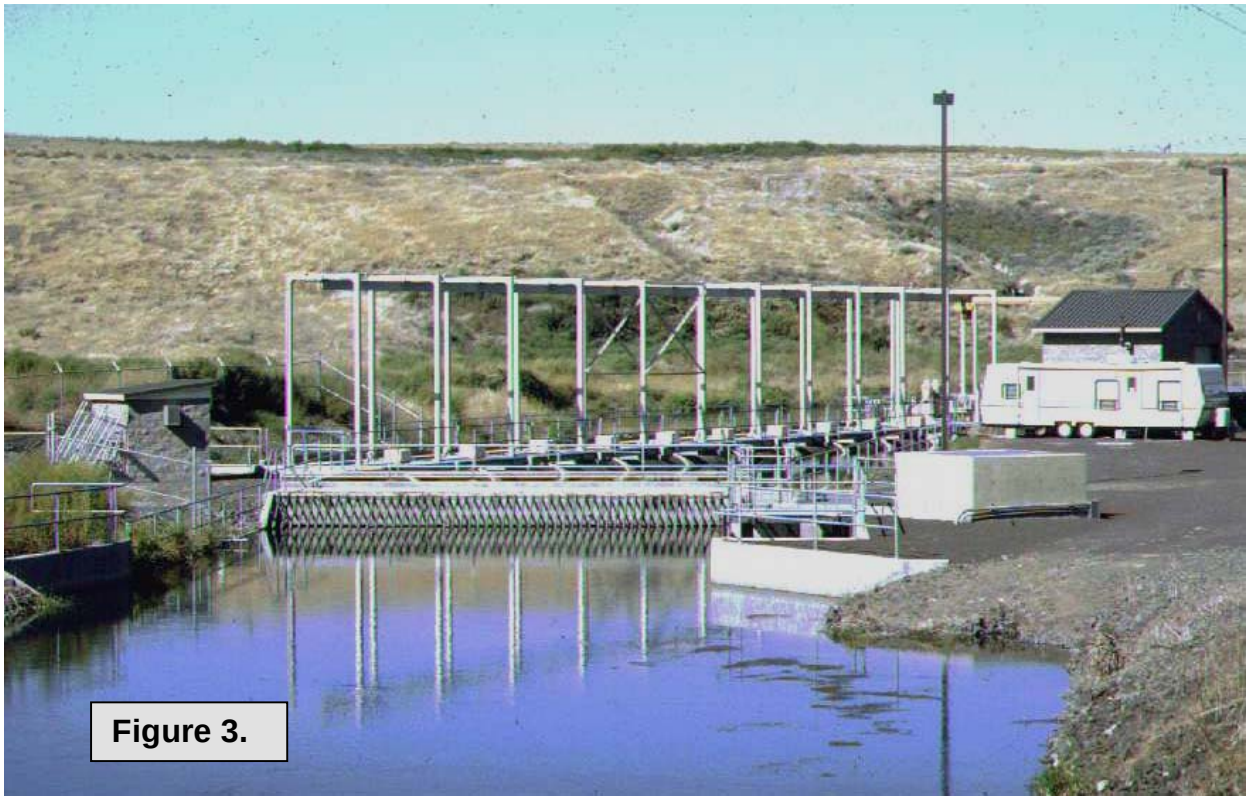

Figure 3.

During periods of flow adequate for downstream migration, the facility is designed to operate in the bypass mode. In this mode, fish that enter the irrigation canal are directed back to the river without entering the holding ponds. During periods of inadequate flow, the facility is designed to trap fish, separate juveniles from adults, and direct them to their respective holding units. Juveniles can then be loaded onto trucks or trailers for transport downstream.

Facility trapping operations are coordinated with flow augmentation releases. As river flows drop, the Westland ladder is closed and as much of the river flow as possible is diverted into the Westland Canal headworks and through the juvenile facility prior to being returned to the river. This forces outmigrants into the trapping facility and minimizes the number of fish that may become stranded in the low flow river reach below Westland Dam.

Information collected at Westland includes dates of both canal operation and facility operational modes. Because the majority of the fish are now bypassed at Westland rather than trapped, the facility is no longer manned on a 24 hour basis.

Task 3.2 - Threemile Dam Juvenile Facility Operation

A juvenile collection facility is also located at Threemile Dam on the west bank. This facility consists of rotary drum screens, fish bypass channel, fish trap, sampling station and holding tank. It is designed to bypass outmigrating juveniles during periods of adequate flow or to trap them during low flow periods. The trapping portion of this facility was designed as a sampling and evaluation station rather than a production trapping facility. The trap can be used for sampling during bypass periods but is ineffective for trapping and hauling anything but small numbers of fish.

Because of the insufficient trapping capabilities at this site, the operation of the facility is closely coordinated with the Westland facility in order to minimize the number of fish captured at Threemile Dam. Normally, the entire river flow is diverted at Westland to preclude additional downstream volitional movement for a few days prior to the river flow going to zero. This allows smolts located in the reach between Westland and Threemile dams to be bypassed at Threemile Dam prior to trapping being initiated.

Information collected at Threemile Dam west bank includes dates of both canal operation and facility operational modes. The facility is not manned on a 24 hour basis.

Task 4 - Adult and Juvenile Transportation

Task 4.1 - Threemile Dam Adult Hauling

The Fish Passage Operations program has a 3,500 gallon, 3,000 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 two 370 gallon transport tanks are mounted on dual axle trailers and are pulled by pick-up trucks. Each is equipped with both compressed oxygen aeration and a re-circulation system. Both units have an eight inch discharge opening. These transportation units are used in the Umatilla and Walla Walla basins. ODFW liberation protocols are used as the basic guideline for hauling operations.

In addition to these units, the project also has access to a Bureau of Indian Affairs 750 gallon portable fiberglass tank which can be mounted on a flatbed truck. This unit is also equipped with both compressed oxygen aeration and a re-circulation system and has a 12 inch discharge opening.

Adult transportation requirements are based on flow criteria outlined in the 1981 USFWS study and past project observations of salmon migrations in the Umatilla River. The AOP also identifies criteria for transportation of adults collected at Threemile Dam. Generally, returning adults are to be hauled whenever flows in the Umatilla River are projected to fall below 150 cfs at Dillon within 30 days. The project is also responsible for the collection and transportation of broodstock from Threemile Dam.

The AOP outlines release locations for spring chinook and steelhead adults hauled upstream from Threemile Dam. Fish are to be released at either the Pendleton boat ramp (RM 52.5) or Pendleton juvenile acclimation site (RM 56) unless flows at Pendleton drop below 250 cfs. Releases are then to be made as high in the basin as temperature differentials will allow. Summer steelhead releases are to be alternated between the various upriver release locations. It is not anticipated that fall chinook or coho would be hauled from Threemile Dam, so no release sites were identified

Returning adults are to be released at Threemile Dam whenever flows at Dillon are anticipated to remain above 150 cfs for a minimum of 30 days after release. Now that the Umatilla Basin Project (UBP) flow enhancement program is in place, flows generally remain above 150 cfs for all but the very beginning and end of the adult return season. The majority of adults entering the Umatilla River are either released at, or volitionally migrate past, Threemile Dam. The AOP identified the following groups for release at Threemile Dam regardless of flow condition; fall chinook minijacks and excess fall chinook jacks, coho adults, and coho jacks.

Task 4.2 - Westland Adult Hauling

Summer steelhead kelts and other adults may be captured at the Westland Canal juvenile facility during trapping operations. Adults entering the trap can be separated from juveniles by a horizontal bar grader and directed into an adult holding pond. Kelts can then be loaded onto tanks for hauling downstream for release at the Umatilla River boat ramp. Other adults captured incidentally at Westland, such as spring chinook, are hauled upstream to natural production areas.

Task 4.3 - Westland Juvenile Hauling

With the UBP flow enhancement program in place, spring flows are usually high enough that most juveniles are bypassed at Westland. Trapping only occurs at the very end of the outmigration season and the biomass of juveniles captured is very low. During periods when these low numbers of fish are being captured, the fish are manually loaded onto the transport trailers by dipnet.

Juvenile trapping and transportation requirements are based on flow criteria from the 1981 USFWS study and past observations of juvenile outmigration in the Umatilla River. Downstream migrants are generally trapped and hauled beginning when enhancement flows are tapered off.

The same transport units used for adults are used for hauling juveniles. ODFW liberation protocols are also used as the basic guideline for juvenile hauling operations. Data collected for each transport includes date, transport unit, number of pounds hauled, and an estimate of mortality. Umatilla Hatchery Satellite Facility Project personnel collect information related to smolt outmigration such as size and species composition. All juveniles are to be released at the Umatilla River boat ramp.

Task 4.4 - Threemile Dam Juvenile Hauling

The capability exists at the Threemile Dam west bank juvenile facility to trap and haul only small numbers of outmigrants. Fish are to be hauled when Phase I exchange flows and flow augmentation efforts are discontinued. If coordinated with trap operations at Westland Canal, few smolts are present above Threemile Dam when trapping operations begin. Any juveniles hauled from the facility are released at the Umatilla River boat ramp.

Task 4.5 - Other Hauling Operations

Fish Passage Operations personnel and equipment are available for other transportation needs related to the Umatilla Basin fisheries restoration program as long as project priorities do not preclude participation. It has become an annual practice for the project to haul excess fall chinook adults from Priest Rapids and/or Ringold Springs hatcheries to the Umatilla River for natural spawning augmentation. The AOP has identified up to 1,000 adults for transfer with releases to occur at Yoakum (RM 37) and/or the Pendleton juvenile acclimation site (RM 56).

Objective 5 – Coordination of Passage Program

Task 5.1 – Passage Facility Operation and Maintenance Oversight

The physical passage portion of the program includes juvenile fish screens, bypasses, and adult ladders. Operation of passage facilities are coordinated with the Umatilla Basin Fish Facility Operation and Maintenance crews using criteria developed by National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries – formerly National Marine Fisheries Service) as a general guideline for facility operations.

Task 5.2 – Management of McKay Fish Flow Releases

As part of the (UBP) Phase II exchange program, a portion of the water stored in McKay Reservoir is designated for fish enhancement purposes. In the spring, OWRD and BOR produce a “Beginning Storage Report” for McKay Reservoir which identifies the amount of water available in the reservoir for fisheries uses for that specific year. The project then allocates the release of this water using the timing and flow quantity prioritization guidelines outlined in the AOP.

Task 5.3 – Coordination of Exchange Program

There are two components of the fish passage program in the lower Umatilla River; flow enhancement and physical passage facilities. It is essential that operation of these components is coordinated with river conditions and diversion activities in order to maximize lower river migration conditions.

The (UBP) flow enhancement program has two components. Phase I of the UBP is comprised of a live flow exchange with West Extension Irrigation District (WEID). Phase II of the UBP has three individual components; live flow exchanges with both Hermiston (HID) and Stanfield (SID) irrigation districts and a reservoir storage exchange with SID. In all components of the UBP, Columbia River water is pumped from the McNary pool to the affected irrigation district in "exchange" for that district leaving natural Umatilla River flow instream.

Operation of this complex exchange program is coordinated by the project in conjunction with other CTUIR and ODFW staff, BOR, OWRD, and the affected irrigation districts. Criteria for operation of the flow enhancement program is based on a combination of project observations of adult and juvenile migration, UBP target flows (BOR 1988), and USFWS (1981) minimum flow recommendations.

RESULTS

Objective 1 - Passage Conditions Monitoring

Task 1.1 - Monitoring of River and Channel Conditions

Water temperature and flow, measured at the Umatilla gauging station, exhibited extreme seasonal variation throughout the project year. The lowest daily temperature recorded was 0 C (32.1 F) on January 5 through January 8, 2003. The highest daily temperature was 25.9 C (78.6 F) on July 15, 2004. Flows at the Umatilla gauging station ranged from less than 14 cfs in July to 4,630 cfs in late January.

Umatilla River flows at Dillon are affected by McKay Reservoir storage releases, irrigation withdrawals and natural flows. Flows at Dillon ranged from a low of less than 4 cfs in August to a high of 5,128 cfs in late May. Flows at Yoakum ranged from 97 to 5537 cfs and flows at Pendleton ranged from 31 to 4718 cfs. Flow and temperature information for the project year is contained in Appendix A.

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, high flows redistributed gravel bars and may potentially redirect the main channel that provides flows to the passage facilities The project observed a considerable amount of debris deposition at Threemile Dam and severe downcutting below the east ladder at Dillon Dam.

Task 1.2 - Inspection of Passage Facilities

Table 2. Passage Facilities

Passage Facility	**Function**
Stanfield Canal	Adult ladder and juvenile screens
Cold Springs Canal	Adult ladder and juvenile screens
Westland Canal	Adult ladder / juvenile screens and downstream migrant trap
Maxwell Canal	Juvenile screens
Threemile Dam West Bank	Juvenile screens and downstream migrant collection facility
Threemile Dam East Bank	Adult ladder and adult enumeration and brood stock collection facility

Five main operational concerns were observed during monitoring of the juvenile and adult passage facilities; aquatic vegetation growth in the canals, gravel and debris deposition at the facilities, bypass pipe leak at the Threemile Dam west bank juvenile facility, Maxwell Canal break and canal headgate operation coordination. A number of smaller problems were also noticed and corrected at the various sites.

Objective 2 - Operation of Adult Trapping Facilities

Task 2.1 - Threemile Dam Adult Trapping

Threemile Dam east bank ladder and adult facility was opened for the season on August 19, 2003 in conjunction with the start up of Phase I. During the project year, the ladder had to be closed down on two instances and the adult facility was closed down on one occasion. The adult facility and ladder were off from May 29 – 31, 2004 and only the adult ladder was off from June 11 – June 12, 2004 because of large amounts of organic debris in the river. The adult ladder remained open throughout the summer. However, the adult trap was closed on July 9 and remained closed until the start up of Phase I on August 16, 2004.

Starting December 6, 2003, the adult facility was generally closed for nine day periods followed by five days of trapping. The schedule was modified based on broodstock and data needs. During the periods when the adult facility was closed, the lead gate was pulled from the ladder in order to allow volitional upstream migration of adults and enumeration occurred by video counting. The adult facility was operated on this schedule until May 16, 2004 when full time trapping was restarted so adults could be collected for broodstock. The east bank ladder remained open throughout the remainder of the project year. Video enumeration was conducted from mid July through mid August in order to observe potential passage of upmigrating adult lamprey and no adult lamprey were observed during the video enumeration. However, low flow levels precluded the operation of the adult trap until the initiation of Phase I in August.

The first returning steelhead for the 2003-04 brood year was enumerated on May 10, 2003. The first returning adult salmon was recorded on September 10, 2003. A total of 3,388 summer steelhead; 1,482 adult, 638 jack and 2,150 subjack fall chinook; 8,319 adult and 667 jack coho; and 2,966 adult and 270 jack spring chinook were counted at Threemile Dam. In addition, there were 40 summer steelhead trapped that were designated as 2004 brood which will be included in the 2004/05 return summary. There were also an estimated 210 precocious spring chinook juveniles captured in the adult trap at Threemile Dam between June 11 and August 27, 2004. In addition, there were approximately 88 kelts observed at Threemile Dam during video enumeration.

Of the adult returns, 1,201 summer steelhead; 119 adult, 87 jack, and 130 subjack fall chinook; 111 adult and 43 jack coho; and 1547 adult and 36 jack spring chinook were counted by video as they passed through the east bank ladder. All other adults were enumerated during trapping operations at the east bank adult facility. The west bank adult facility was not operated again this year. Appendix B contains a daily record of adults enumerated during 2003-2004.

Summer steelhead were enumerated from May 10, 2003 to May 19, 2004. The peak return occurred during October when 33.2% (1,129 of 3,388 fish) of the total return was counted. Approximately 61% of the run were estimated to be unmarked fish. Based

on historical fork length data, 82.8% of the summer steelhead run was comprised of S1 fish and 17.2% were S2 fish.

Coho were enumerated from September 12, 2003 to December 18, 2003. Peak return month for both adults and jacks was October when 81.5% (6,783 of 8,319 fish) of the adults and 87.0% (580 of 667 fish) of the jacks were counted.

Fall chinook were enumerated from September 10, 2003 to December 5, 2003. Peak return month for adults, jacks, and subjacks was October. Of the total return, 85.2% (1,263 of 1,482 fish) of the adults, 88.0% (561 of 638 fish) of the jacks and 89.9% (1,934 of 2,150 fish) of the subjacks were counted in October.

Spring chinook were enumerated from March 27 to July 8, 2004. Peak month for both adults and jacks was May when 75.4% (2,238 of 2,966 fish) adults, 60.3% (163 of 270 fish) jacks were counted.

In addition to capturing adult salmonids, thousands of non-game fish were collected at the east bank facility during trapping operations. Major species collected were northern pikeminnow (*Ptychocheilus oregonensis*), chiselmouth (*Acrocheilus alutaceus*), and suckers (*Catostomus spp.*). Northern pikeminnows were sacrificed; all other non-game fish were released upstream of the dam. Juvenile salmonids and rainbow trout also entered the adult trap and were released back to the river. Other species encountered at Threemile Dam included pacific lamprey (*Lampetra tridentata*), smallmouth bass (*Micropterus dolomieui*), and whitefish (*Prosopium williamsoni*).

Task 2.2 - Westland Adult Trapping

No adult salmonids were captured at Westland this year.

Objective 3 - Operation of Juvenile Trapping Facilities

Task 3.1 - Westland Juvenile Facility Operation

Westland Canal was in operation for a total of 184 days between January 12 and July 15, 2004. The juvenile facility operated in the bypass mode for 173 days and in the trapping mode for 10 days. There were also days when the bypass was closed due to river conditions and sampling. They were from January 23 through January 25 and again from June 7 through June 8 when the bypass was closed and juvenile trap was opened for the ODFW juvenile outmigration project. The trap was closed and the bypass reopened on June 8 due to insufficient number of juveniles needed for their sampling. The bypass was closed for the season with the initiation of trapping on July 6.

Westland Canal opened for groundwater recharge deliveries on January 12, 2004 and switched from winter recharge to standard irrigation delivery on March 23. Natural and enhanced river flow levels were adequate to continue operation of the juvenile bypass for

downstream migration until July 6 when it was closed as fish passage flows were tapered down for the summer. The juvenile trap was opened on July 6 and hauling began on July 7. Trap and haul operations continued until the facility was closed on July 15.

A combination of extended natural flows and flow enhancement releases from McKay Reservoir resulted in relatively low numbers of juvenile salmonids being captured at the Westland facility in 2004. Non-game and warmwater fish were also collected at Westland, major species included northern pikeminnow, chiselmouth, suckers, and redside shiner (Richardsonius balteatus).

Task 3.2 - Threemile Dam Juvenile Facility Operation

The Threemile Dam west bank juvenile and bypass facility was closed with the start up of Phase I on August 15, 2003. The facility remained closed until the canal headworks were opened for outmigration monitoring on February 10, 2004 by the Umatilla Fish Passage Evaluation personnel. The juvenile bypass was also opened on February 10. The canal did not actually begin irrigation deliveries until March 24. The juvenile bypass operated at 5 cfs throughout the spring and summer until it was closed on August 16, 2004. The juvenile trap was operated until July 7, when the trapping equipment was removed for the season.

Objective 4 - Adult and Juvenile Transportation

Task 4.1 - Threemile Dam Adult Hauling

Upstream transportation of spring chinook and summer steelhead from Threemile Dam began on June 9, 2004. There were a total of 31 adult and 9 jack spring chinook and 40 2005 brood summer steelhead hauled upstream this year. No fall chinook or coho were hauled again this year.

There were 388 adult and 19 jack fall chinook transferred to the Threemile Dam Fall Chinook Holding and Spawning Facility for broodstock. In addition, 121 summer steelhead were hauled to Minthorn for brood and 561 adult and 29 jack spring chinook were transported to the South Fork Walla Walla Spring Chinook Holding and Spawning Facility for brood. In addition, there were 25 pairs of hatchery steelhead collected for the Progeny Marker study. There were also 219 adult and 20 jack spring chinook that were hauled to the South Fork facility for outplanting into the Walla Walla River.

There were 60 loads of fish transported by the project from Threemile Dam on 56 days during 2003/2004. The 3,500 gallon tanker was used on 17 trips, 3,000 gallon tanker was used for 13 trips, and one of the 370 gallon trailer units was used for 30 trips. The 750 gallon flatbed mounted tank was not used this year.

Summer steelhead adults were hauled upstream from Threemile Dam on 11 days between June 15 and August 27, 2004. There were also 20 trips made to Minthorn holding

pond with brood between September 18, 2003 and April 20, 2004. Spring chinook were hauled upstream from Threemile Dam on 11 days between June 9 and July 8, 2004. There were also 27 trips made to the South Fork facility between April 20 and June 15 with spring chinook broodstock and adults for Walla Walla River outplanting.

Three upriver release sites were used during 2003/2004, Thornhollow (RM 73.5), ODFW Boat ramp (RM 56.0) and Bear Creek (RM 87). Adult transport information, including dates, temperatures, liberation units used and release sites is included in Appendix C.

There were 1,969 summer steelhead; 957 adult, 467 jack and 1,896 subjack fall chinook; 8,102 adult and 604 jack coho; and 602 adult and 138 jack spring chinook trapped that were subsequently released into the forebay at Threemile Dam. In addition, 1,201 steelhead; 119 adult, 87 jack, and 130 subjack fall chinook; 111 adult and 43 jack coho; and 1,547 adult and 36 jack spring chinook volitionally migrated upstream through the east bank fish ladder.

Summer steelhead adults were trapped and released into the forebay at Threemile Dam on 186 days between May 10, 2003 and May 19, 2004. Fall chinook were released at Threemile Dam on 62 days between September 10, 2003 and December 5, 2003. Coho were released at Threemile Dam on 66 days between September 12, 2003 and December 18, 2003. Spring chinook were released at Threemile Dam on 50 days between March 27 and June 6, 2004.

There was only one day of volitional migration and video counting that occurred in October. Volitional migration occurred on a regular schedule from December 6, 2003 to May 29, 2004. Summer steelhead were counted volitionally passing the Threemile Dam ladder on 83 days from December 6, 2003 to May 15, 2004. Coho volitionally passed through the Threemile Dam ladder on December 7 and December 8. Spring chinook were counted volitionally passing the Threemile Dam ladder on 24 days between March 27 and May 16, 2004. Table 1 includes release location and number by species.

Table 3. Number of Adults Released at each location in 2003-2004.

Release Site	Total Released	Summer Steelhead	Spring Chinook	Fall Chinook	Coho
ODFW boat ramp	41	15	26	0	0
Bear Creek	6	3	3	0	0
Thornhollow	18	7	11	0	0
SFWW Brood Pond	590	0	590	0	0
SFWW Outplants	239	0	239	0	0
Minthorn Brood Pond	121	121	0	0	0
3MD Brood Pond	457	50	0	407	0
3MD Forebay – Volitional	3,274	1,201	1,583	336	154
3MD Forebay – Trapped	14,745	1,979	740	3,320	8,706
Total	19,491	3,376	3,192	4,063	8,860

Task 4.2 - Westland Adult Hauling

No summer steelhead kelts or spring chinook fallbacks were hauled from Westland this year.

Task 4.3 - Westland Juvenile Hauling

McKay water releases and extended natural flows through the spring and into the early summer limited the number of juveniles captured at Westland in 2004. The project hauled four loads of juveniles from Westland on four days between July 7 and July 15, 2004. One of the 370 gallon liberation units was used for all the loads. An estimated 44 pounds of fish were hauled from the facility. All juveniles hauled from Westland were released at the Umatilla River boat ramp (RM 0.5). Juvenile transportation information is located in Appendix D.

Based on species composition sampling conducted by Umatilla Hatchery Satellite Facility personnel, approximately 84% of the fish transported from Westland were juvenile salmonids. Species composition information is included in Table 4.

Table 4. Species composition of fish sampled at Westland in 2004.

Date	Number Sampled	No/lb	Hatchery Production			Natural Production			Other
			Coho	Chinook	STS	Coho	Chinook	STS	
7-07	81	32.4	0	27	0	1	40	8	5
7-09	170	11.6	0	32	0	3	92	9	34
7-12	280	12.2	0	21	0	3	199	16	41
7-15	136	38.2	0	5	0	29	60	14	28
Total	667	15.3	0	85	0	36	391	47	108

Task 4.4 - Threemile Dam Juvenile Hauling

No juveniles were trapped and hauled by the project from the Threemile Dam west bank juvenile facility during the project year. Summer fish enhancement flows provided this year allowed the juvenile bypass to continue running all summer.

Task 4.5 - Other Hauling Operations

In the fall of 2003, the project hauled excess fall chinook adults to the Umatilla River for natural spawning augmentation. The project transported 737 adult fall chinook from Ringold Springs Hatchery and released them directly into the Umatilla River at Yoakum (RM 37). The fish were hauled in three trips between November 5 and November 13, 2003. There were no observed mortalities from the Ringold releases. Both the 3,500 and 3,000 gallon tanker units were used on the three days of transport.

The project was also involved in the Walla Walla spring chinook outplanting program. The project hauled adults from Threemile Dam to the South Fork facility and

subsequently outplanted the survivors. Transport information for the efforts listed in this section is included in Appendix C.

Objective 5 – Coordination of Passage Program

Task 5.1 – Passage Facility Operation and Maintenance Oversight

The project coordinated with Umatilla Basin Fish Facility Operations and Maintenance personnel on both daily operations and facility maintenance of ladder and screens sites throughout the project year.

Task 5.2 – Management of McKay Fish Flow Releases

As part of the Umatilla Basin Project (UBP) Phase II exchange program, a portion of the water stored in McKay Reservoir is designated for fish enhancement purposes. Releases of fish storage water began on September 22, 2003. Flows were initiated at 100 cfs and increased to 150 cfs on September 29 in conjunction with irrigation storage releases being discontinued. Releases remained at that level until November 22. Flows were then reduced by 30 cfs per day until releases reached 10 cfs on November 26. Storage water is released into lower McKay Creek throughout the winter and spring as needed to maintain a minimum flow level of 10 cfs to sustain juvenile production in the lower McKay Creek.

In the spring, fish storage releases were started June 21, 2004. The quantity released was determined by the amount needed, in conjunction with live flow exchanges, to maintain a minimum of 150 cfs at the Dillon gauge. Flows were tapered down at a rate of 25 cfs per day from 150 cfs on July 4 to 30 cfs on July 9 and remained at that level throughout the summer. Fish water releases from McKay Reservoir were continued at that rate until flow releases were increased in September of 2004 to attract returning fall adults.

Task 5.3 – Coordination of Exchange Program

Phase I of the UBP was started August 15, 2003 to increase flows for returning fall adult salmonids. It operated until October 24 when the exchange with WEID was discontinued in conjunction with the end of the WEID irrigation season. The exchange restarted June 19, 2004 and operated as needed to maintain UBP target flows until July 2, when exchanges were discontinued for the summer.

The Phase II exchange with HID began November 2, 2003 and ran off and on as needed to maintain UBP target flows until May 5, 2004. The SID Phase II exchange was initiated June 18. Initially, water was pumped to SID in exchange for live flow. Pumping continued through the summer in exchange for SID storage water in McKay Reservoir to be used for fish passage releases.

DISCUSSION

Task 1 - Passage Conditions Monitoring

Task 1.1 - Monitoring of River and Channel Conditions

A temperature recorder has been in place at the Umatilla Hydromet gauging station since the fall of 2001. The reliability of the new temperature recorder station has eliminated the concerns associated with past use of the field recorder at Threemile Dam. Between natural flows and fish enhancement flow releases, flows were continuous from Threemile Dam to the mouth throughout the project year. However, high temperatures in the summer at the UMAO gauging station suggest that the released 30 cfs flow level may not provide thermal refuge in the lower Umatilla River.

The accuracy and timeliness of flow data from the Hydromet gauging stations continues to be sufficient for most passage decisions. Rating of the gauging stations were performed in a timely manner. Gauging stations were generally rated prior to the initiation of McKay storage releases making it easier to follow protected enhancement flows.

The Dillon gauge site continues to be the most important location for making fish passage decisions. Due to the fact, that Dillon is located downstream of the major diversions and at what is generally the low flow point of the river. Decisions of when to implement UBP exchanges, when to augment stream flows for passage, whether to trap or bypass smolts, where to release adults, how to operate fish passage facilities, and at what flows adults and juveniles can effectively migrate are all made based on information from this gauging station. The number and location of the Hydromet gauging stations may need to be reevaluated in order to better manage summer flow levels. Preliminary discussions suggested installing gauging stations around Maxwell Canal and above Threemile Dam to better assess the amount of water available for both WEID and fish passage at Threemile Dam.

There are concerns with the amount of protected fish water reaching the UMAO gauging station. The Threemile Dam trap was shut down due to insufficient flows to operate both the ladder and the trap. The adult ladder remained open throughout the summer. Fluctuating forebay water levels made it difficult to account for what amount of water was going through the ladder. The Oregon Water Resources Department took some measurements within the ladder and downstream of Threemile Dam and data suggested that flows through the ladder and downstream of Threemile Dam were significantly lower than amount of fish water that should be available at the point in the river. Possible solutions such as leave WEID on exchange if fish water is being released, release more fish water, add additional gauges, and to conduct a summer hydrologic study have been considered in order to address summer fish water. .

Task 1.2 - Inspection of Passage Facilities

Table 5. Passage Facilities

Passage Facility	**Function**
Stanfield Canal	Adult ladder and juvenile screens
Cold Springs Canal	Adult ladder and juvenile screens
Westland Canal	Adult ladder / juvenile screens and downstream migrant trap
Maxwell Canal	Juvenile screens
Threemile Dam West Bank	Juvenile screens and downstream migrant collection facility
Threemile Dam East Bank	Adult ladder and adult enumeration and brood stock collection facility

Five main operational concerns were observed during monitoring of the juvenile and adult passage facilities; aquatic vegetation growth in Maxwell and Stanfield Canals, gravel and debris deposition at the passage facilities, bypass pipe leak at the Threemile Dam west bank juvenile facility, Maxwell Canal break and canal headgate operation coordination.

Aquatic vegetation in Maxwell Canal continues to be a major problem for both HID and fish passage. The district has discontinued use of aquatic herbicides upstream of the screens and has to rely on mechanical means to contain this growth which is not nearly as efficient. The canal became choked with weeds to a point where flows could not be maintained. The bypass is located approximately one mile from the headworks, there are concerns with the time and distance smolts have to travel to reach the bypass. Low velocities intensify these concerns. Also, the canal elevation could not be maintained which precluded operation of the bypass and resulted in the screens operating well below submergence criteria again this summer.

In addition, Maxwell Canal headgates broke during a high flow event that occurred at the end of May allowing water to flow into the canal unregulated until the trash rack plugged full of debris then forcing water to exit via the wasteway upstream of the fish screens. Temporary headgate boards were installed in order to reduce the amount of water entering the Canal.

High flows during late January and early February deposited large amounts of gravel and debris at a most of the passage facilities. In addition, high flows in June also resulted in large amounts of debris accumulation at all the passage facilities. This resulted in most of the ladders being shut down for short durations in order to remove debris and gravel. The Umatilla Basin Fish Facility Operations and Maintenance personnel responded to these instances in a timely manner, limiting the amount of time the facilities had to be shut down.

During the first high water event of the year, a power failure at Feed Canal occurred on January 30, rendering the drum screens inoperable. Heavy debris build-up on the screens caused flows to overtop the screens. As a result, the headgates were closed down keeping the forebay watered-up until power was restored to the site. It is evident that

there is a need for back up power at Feed Canal especially during extreme weather conditions. Back up power will keep the screens operational and potentially prevent fish from overtopping the screens.

A leak was detected coming from the bypass pipe at the WEID Canal juvenile bypass system on February 12. Following the observation, the headgates were closed and the forebay was drained on February 17 when a fish salvage was conducted by the ODFW Umatilla Outmigration project which resulted in a total of 5 juvenile salmonids and several non-salmonids being collected. The leak was repaired and the headworks and bypass were reopened on February 24. They remained open until the start up of Phase I on August 16, 2004.

Boyd's hydropower facility resulted in less than optimal passage conditions during peak migratory periods. For the last two years, the entire flashdam remained in during the early spring when adult steelhead and spring chinook were moving through the system even though the facility did not operate the entire project year. A section of the flashdam needs to be taken out to facilitate adult passage through the site whenever Boyd's is not in operation. In addition, there appears to be a shortage of maintenance during high flow events that deposit large amount of debris on the trash racks. There were instances during the spring when large amounts of debris plugged the trashracks for weeks. Coordination between the operators and Fish Facility Operations needs to take place to ensure that steps can be taken to provide better passage conditions.

There continues to be a problem with the dewatering of canals. Ice accumulation on the fish screens at Feed Canal and vegetation growth in Maxwell and Stanfield canals resulted in canals having to be shut down. However, the canals are not lowered slowly and flushed to allow juveniles adequate time to exit before dewatering. To ensure the juveniles are not stranded during the dewatering of canals and possible canal breaks, irrigation districts need to coordinate with the UPFO&M and UFPO staffs.

A few coho fry were observed behind the screens at WEID. It is unknown how those fish got behind the screens. ODFW Passage Evaluation personnel and Fish Passage Operations looked into potential avenues for those fish that got behind the screens. However, no juveniles were observed behind the screens throughout the remainder of the sampling time period. The small size of the fry may have allowed them to get through behind the screens.

The McKay Creek fish barrier was lowered during the high flows in May. Excessive debris buildup submerged the weir allowing water to overtop the pickets. The main river channel is solely located on the east bank resulting in the majority flow directed to only a small portion of the barrier. Gravel work will be necessary to disperse the flow and debris across the barrier. Continued gravel maintenance at the site will prevent large amounts of gravel deposition from occurring upstream of the barrier.

The severe down cutting of the river channel downstream of the east side ladder at Dillon Dam that occurred last year still poses a concern regarding the elevated differential

across the fish entrance of the ladder. Low flow levels may preclude adults from passing through the site effectively.

There continues to be a need to update the passage facilities operational criteria developed by NOAA Fisheries. Changes have been made to the criteria at a number of facilities without being formalized. It is important that these criteria be reviewed and updated.

Task 2 - Operation of Adult Trapping Facilities

Task 2.1 - Threemile Dam Adult Trapping

With only one major exception, the Threemile Dam east bank ladder and adult facility both performed satisfactorily again during the 2003/2004 season. Extremely high numbers of coho stressed both the facility and personnel limitations this year. In order to prevent operational and logistical problems the trap was shut down. The lead gate was pulled on October 8 and the fish were estimated via video counting from approximately noon on October 8 until noon October 9 for an approximate 24 hour period. Trapping was restarted at noon on October 9 for the remainder of the fall adult return season.

Few high magnitude flow events and debris loads were experienced this year which resulted in the ladder being open most of season. The Threemile east bank adult ladder was shut down due to river conditions from May 24 to May 29. The east bank ladder was also shut down on June 11 through June 12 in order to prevent large amounts of debris from accumulating in the ladder.

Debris and silt in the forebay can restrict flows to the ladder and adult facility and limit the ability to release fish directly into the river at the site. Again this year, there was a lesser amount of silt and debris accumulation in the dam forebay. A combination of forebay dredging and the lack of high flow events minimized siltation problems.

Volitional migration of adults began in December 2003. At that time, a five day trapping/ nine day volitional migration rotation was implemented after the majority of the fall run was over. This schedule was adjusted as needed based on steelhead broodstock collections and CWT recoveries. Video/trapping rotations continued until May 16, 2004. At that time, continuous trapping was reinitiated due to passage criteria and brood collection needs. However, video enumeration was reinitiated from May 24 through May 29 in order to enumerate fish during the time period when the trap was not operable due to high debris loads in the river.

This was the third subsequent year that steelhead adults were enumerated by brood year in the late spring. In previous years, all steelhead captured prior to the trap being closed in the early summer were considered to be of that brood year. This year attempts were made to segregate these fish between 2004 and 2005 brood years. Coloration and condition are used as indicators for making these brood year determinations. Again, numbers seen this year were significantly higher than observed in

previous years. The run timing of summer steelhead adults appears to overlap between subsequent brood years. Advanced entry of summer steelhead adults into the Umatilla River may illustrate that these fish are taking advantage of the optimum passage conditions present in the spring.

Enumeration during the winter and spring using video counting was generally a success. Identification could generally be made of adipose clipped versus unmarked steelhead and jack versus adult spring chinook. During low visibility periods, mark identification on summer steelhead could not always be determined and these steelhead were listed in the records as being of unknown origin. One high turbidity period occurred during the late spring taping this year making visual identifications of adult passage impossible. No attempts were made to determine sex or actual marks from the videotape. Sex ratio and mark group composition for each species were estimated from data collected during trapping operations.

There was a significant amount of downstream movement past the counting station again this year. This occurred with both steelhead and spring chinook. However, with the timing of the lead gate change of operation for a low movement period (noon) the double counting of adults located in the area between the counting station and the lead gate is minimized. Also, kelts are generally identifiable. This allows kelts to be recorded separately and not mis-classified as fallbacks.

A total of 32.0% of the steelhead run, 1.7% of the coho, 7.8% of the fall chinook, and 49.0% of the spring chinook were video counted. The high percentage of summer steelhead and spring chinook video taped is consistent with the project objective to maximize the periods of volitional migration for both species. The small percentage of coho and fall chinook taped is reflective of starting the video period after the majority of the fall run has returned.

Again this year, a high incidence of mechanical damage to the head and jaw areas of spring chinook was observed by the project at Threemile Dam. Numerous reports and observations of fish jumping in bedrock areas of the lower river and at Brownell Dam have been documented in past years. The project supports the removal of the Brownell Dam since it is no longer operating as a diversion structure.

Due to the large number of fall chinook subjacks collected the past few years, the AOP requires that only a subsample of the CWT subjacks be sacrificed. The size of the subjacks was larger this year also. Historically, the size range for subjacks was set at less than 15 inches (380mm). Due the large size range of subjacks the past few years, the length for subjacks has been adjusted to 400mm.

Significant numbers of spring chinook "minijacks" were captured in the Threemile Dam trap. These fish are confirmed to be from the current year releases. All the CWT subjacks were sacrificed in order to determine origin. The rest were released into the forebay at Threemile Dam. None were transported upstream. These fish were not included in the spring chinook return counts. However, these fish will be included in next year's counts and incorporated into the database.

The high water events at the end of the brood collection schedule created uncertainties regarding the ability to meet outplant and brood collection goals. Heavy silt and debris loads in late May prevented the use of the trap and collection of adults. Also, late in the adult return season there tends to be higher incidence of head burns, snout damage, seal bites, and lower jaw damage on spring chinook adults resulting in few adults available for collection. However, the brood collection goal for spring chinook was met while the outplant goals fell short.

Task 2.2 - Westland Adult Trapping

The combination of extended natural and enhanced flows the last few years have resulted in the Westland bypass being open until early summer. This allows kelts to volitionally migrate out of the system and none were captured at Westland again this year.

Task 3 - Operation of Juvenile Trapping Facilities

Task 3.1 - Westland Juvenile Facility Operations

There were few problems at the Westland juvenile collection facility. Problems noted in earlier years with fluctuating canal forebay elevations and the bypass outfall have ceased to be a concern due to frequent sensor maintenance and increased experience in operating the automated headgate system.

A combination of extended natural flows and flow augmentation allowed the facility to be operated in the bypass mode until July 6. This allowed the majority of the juvenile outmigration to be bypassed at Westland. Maintaining McKay Reservoir storage releases into the summer is now the standard operating procedure except for all but the driest years. This permits Westland to be operated primarily in the bypass mode during the juvenile outmigration period and the majority of the smolts will be able to migrate volitionally. The number of juveniles trapped at Westland continues to be low and trap and haul operations are more than adequate for assisting this late outmigration component under this current scenario.

Fish passage storage releases were tapered down in 25 cfs increments from 100 cfs on July 6 to 30 cfs on July 9 and remained at that level throughout the summer. The ladder and bypass were closed July 6 as flows were reduced to minimize the number of juveniles below Westland Dam. Even though flows continued to crest Westland Dam, the minimal depth of the spill seems to be a deterrent to juveniles. In combination with the large flow volume entering Westland Canal, most juveniles are thought to enter the canal where they can be captured

With the low number of juveniles being trapped at Westland and no adults being captured, the trapping facility is operated without the separator and adult holding pond being used. All fish that enter the facility are trapped in the juvenile holding pond where they are more readily accessed.

The decision to discontinue trapping is based on the low number of salmonids in combination with a significant increase in non-salmonids. This condition is usually signaled by an increase in the poundage of fish hauled from the facility towards the end of the trapping period. This increase in poundage is almost exclusively comprised of larger sized non-salmonids. In addition, the decision also includes an assessment of the number of sub-yearling coho and juvenile summer steelhead present in the trap which are probably rearing in this area and not migrating downstream.

Poor water quality conditions are generally observed every year during trapping at Westland. However, the low numbers of juveniles being trapped lessen the constraints of the facility and the site is adequate for current operations.

Task 3.2 - Threemile Dam Juvenile Facility Operations

The ideal passage condition for the west bank juvenile bypass would be to operate it at the 35 cfs level. However, the facility continues to be utilized annually by the Evaluation of Umatilla Juvenile Salmonid Outmigration Project To facilitate the monitoring program, the headworks and juvenile facility were opened on February 10, four weeks before WEID began irrigation deliveries, and the bypass has to be operated at the reduced 5 cfs level. Outmigration monitoring continued until July 7 when the trapping equipment was removed for the summer. The juvenile bypass flow remained at the 5 cfs level until the start up of Phase I on August 16. Numbers of salmonids observed at the facility just prior to closure were extremely low.

Task 4 - Adult and Juvenile Transportation

Task 4.1 - Threemile Dam Adult Hauling

Project hauling equipment was generally adequate for adult transport needs in 2003/2004. The flatbed mounted, 750 gallon tanker was not used this year. The small exit ports on the trailers still require the use of the 3,500 and 3,000 gallon tanker units to haul adult Chinook salmon.

The UBP flow enhancement effort has substantially reduced the number of fish that need to be transported upstream from Threemile Dam. With the exception of brood, adults were only hauled from June 9 to July 8. Fish were either released at, or volitionally migrated past Threemile Dam the rest of the year. All adults were hauled to ODFW boat ramp, Bear Creek and/or Thornhollow for release as per criteria. Condition of adults at release generally appeared good at all sites. There were no transport mortalities observed on the fish hauled from Threemile Dam.

The use of McKay Reservoir storage releases in the fall and spring for adult passage is anticipated to continue in the future for all but the driest years. This will permit the majority of adults to migrate volitionally. The number of adults requiring transportation on an annual basis should continue to remain low under this operating scenario.

As noted in past annual reports, a decision has been reached to discontinue transporting early fall returning adult steelhead, fall chinook and coho (late August/early September). Even though the 30 day, 150 cfs criteria is not met when these fish return, only small numbers are generally trapped and fall flow enhancement efforts usually increase flows to criteria levels within one or two weeks.

No lower river release sites were used for fish hauled from Threemile Dam this year. The Yoakum site was used for the fall chinook hauled from Ringold Springs Hatchery. Yoakum is the only suitable lower river adult release site available. This site is located on private property and can only be used with advance permission. Release conditions at the site during low flows are marginal. The Pendleton boat ramp is no longer available due to overpass construction. The release site located at the Pendleton acclimation facility (ODFW) was used on three separate dates in early June. With the limited numbers of adults currently being hauled, the available release sites should meet project needs. This assumes that access will continue to be available at Yoakum.

Task 4.2 - Westland Adult Hauling

No adults were hauled from Westland this year.

Task 4.3 - Westland Juvenile Hauling

Due to the extended flow enhancement efforts, only small numbers of juveniles were trapped again this year at Westland. The use of McKay Reservoir storage releases to extend the spring/summer passage period for juveniles is anticipated to continue in the future for all but the driest years. This will maximize instream migration of juveniles and minimize transportation. The number of juveniles requiring transportation on an annual basis should continue to remain low under this operating strategy.

The small numbers of fish being trapped at Westland eliminates the need for a fish pump; all fish are loaded using dipnets. The Pescalator fish pump is still stationed at Westland and would be available for use by another project in the Columbia Basin.

Task 4.4 - Threemile Dam Juvenile Hauling

Summer fish enhancement flows provided this year allowed the juvenile bypass to continue running all summer. The trap was not turned on and no juveniles were transported from the facility.

Task 4.5 - Other Hauling Operations

Fish Passage Operations personnel and equipment were used again in 2003 to transport fall chinook adults from Ringold Springs Hatchery to the Umatilla River. The NOAA Fisheries requires that these fish not be outplanted until November to minimize

straying concerns. This year, with the limited number of fall chinook available, adults were hauled starting November 5 to November 13 and were directly released into the river. This eliminated the intermediate step of holding adults at Threemile Dam. Fish availability and return timing to Priest Rapids and Ringold Springs hatcheries will determine whether fish are hauled in October, November, or both.

The adults transported from Ringold Springs this year comprised approximately 40.7% of the adult fall chinook spawning population in the Umatilla River. This program continues to be an effective tool for utilizing surplus hatchery adults and for supplementing the natural fall chinook population in the Umatilla River. The handling and transportation aspects appear to have little or no adverse impact on natural spawning success.

The project also transported spring chinook from Threemile Dam to the South Fork Walla Walla holding and spawning facility and outplanted the survivors as part of the Walla Walla outplanting efforts. More detailed discussion of this activity can be found in the Walla Walla Fish Passage Operations annual report.

Transport survival for both these efforts was very good again this year. There were no observed mortalities out of the 737 fall chinook adults released in November and none from the spring chinook transports.

Objective 5 - Coordination of Passage Program

Task 5.1 – Passage Facility Operation and Maintenance Oversight

The project coordinates with Umatilla Basin Fish Facility Operations and Maintenance personnel on both daily operations and facility maintenance of ladder and screen sites. The Umatilla Basin Fish Facility Operations and Maintenance staff is a well established crew and has been working together for a number of years. The expertise illustrated by the crew makes coordination of facility O&M requirements a task easily undertaken.

Task 5.2 – Management of McKay Fish Flow Releases

The summer of 2004 was the second occasion that releases of storage water from McKay Reservoir for fish were made all summer. Releases were maintained at 30 cfs until September 14. This resulted in summer instream flows being maintained throughout the lower Umatilla River. These summer flows were aimed at attracting upmigrating adult Pacific lamprey (*Lampetra tridentata*) and summer steelhead and, potentially, provide flow for juvenile production in the river below Westland Canal. However, no fish were observed during the video enumeration that was conducted from July 12 through August 16.

These summer releases also allowed the continued operation of the Threemile Dam ladder through the summer and into the fall. The ladder was operated with the lead gate

out and the trap off through the summer until flows increased with the start up of Phase I in mid-August 2004.

The timing and magnitude of the fall McKay Reservoir fish passage flow releases remains similar to past years. No fall chinook adults were captured until September 10; however, the first post-summer steelhead was trapped August 27. These releases resulted in observed flows below Threemile Dam in excess of 150 cfs in late September. Releases were increased in mid September from 30 cfs to 125 cfs on September 14 and remained at that level until late fall. Historically, fall flows have been in the range of 150 cfs. This reduction in the fall flow level is due to the fact that McKay Reservoir did not fill in 2003 and less water available for fisheries enhancement use. This resulted in lower river flows approaching an excess of 200 cfs by the end of October. No significant returns of any species were noted in September. Tributary entry of all species appears to be based on inherent biological timing as long as flow and temperature conditions do not preclude entry. This factor may be most important for summer steelhead, as adults have been captured during every month for the past few project years.

Flow releases into lower McKay Creek below McKay Reservoir were continued year around. Fall enhancement flows were tapered down from 150 cfs to 10 cfs in late November. A minimum flow of 10 cfs was maintained all winter to sustain juvenile production in the stream reach. Historically, significant numbers of juvenile steelhead and coho, as well as a few bull trout (*Salvelinus confluentus*) were found rearing in lower McKay Creek. Potentially, these winter releases could impact the ability of the reservoir to fill to capacity which would result in less water available for passage during critical migration periods.

It has become standard practice to extend spring passage releases into July. Natural spring flows maintained the river at levels above target levels until late June. Water was released from McKay Reservoir beginning June 21 to maintain a target flow level of 150 cfs at Dillon through the end of June. McKay Reservoir releases were decreased in 25 cfs increments from 150 cfs on July 4 to 30 cfs on July 9 and remained at that level throughout the summer of 2004.

The AOP outlines priority flow timing and levels for use of stored water. Water releases during the late spring/early summer from McKay Reservoir provides both juvenile and adult passage benefits. It extends the natural upstream migration period for spring chinook and provides a longer period for volitional outmigration of both natural and hatchery fall chinook juveniles. It also significantly reduces the reliance on artificial transportation for both adults and juveniles.

Last year, changes made in the “Beginning Storage Report” resulted in less water available for fisheries use. These changes were made in late spring restricting the flexibility for the project to balance flow releases between the spring and fall. This resulted in a later initiation of fish enhancement flows in the fall of 2003.

Task 5.3 – Coordination of Exchange Program

The Phase I exchange with WEID was conducted during both the fall and spring this past year. The summer start date for the Phase I exchange continues to be mid-August to match fall chinook migration timing in the mainstem Columbia River. The exchange was initiated August 15, 2003 but only a few fall chinook, summer steelhead and coho were captured prior to mid September when enhancement flows were initiated. Tributary entry of all species appears to be based on an inherent biological timing as long as flow and temperature conditions do not preclude entry. Low flows and high temperatures may have deterred entry of adult upmigrants into the Umatilla River until the contribution of Phase I in the lower Umatilla River. Increase in returns numbers did not occur until enhancement flows were released.

The Phase I exchange was reinitiated in June and discontinued on July 2, 2004 as per UBP criteria. Investigations still need to made into the operation of Phase I to provide instream flows all summer below Threemile Dam. This would allow year round opportunity for steelhead entry into the Umatilla River, provide attraction flows for upmigrating lamprey, and minimize problems with protecting summer fish flows when WEID would be diverting water from the river.

Development of an annual operating plan for the UBP is useful as an operating guideline for the complex exchange program. The BOR completed the AOP in the summer of 2004. Annual operating plans are an extremely useful tool which have been used for basin fish management decisions for many years and would provide a similar benefit for water management.

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Appendices

Appendix A. 2003-2004 Umatilla River Water Parameter Data.

Appendix A. September/October 2003

DATE	UMAO TEMPERATURES F	C	FLOW @ PENDLETON	FLOW @ YOAKUM	SFC FLOWS	CSC FLOWS	WLC FLOWS	FLOW @ DILLON	FLOW @ UMATILLA
1-Sep-03	70.2	21.2	33	159	0	0	125	4	63
2-Sep-03	69.9	21.0	33	157	0	0	125	4	58
3-Sep-03	70.4	21.3	34	154	1	0	122	8	57
4-Sep-03	71.0	21.7	32	159	16	0	115	13	53
5-Sep-03	71.9	22.2	31	156	20	0	123	7	55
6-Sep-03	72.5	22.5	31	167	20	0	129	5	56
7-Sep-03	69.4	20.8	32	169	10	0	135	6	53
8-Sep-03	67.0	19.4	48	173	2	0	131	21	68
9-Sep-03	64.1	17.8	59	139	1	0	114	20	114
10-Sep-03	63.5	17.5	57	123	1	0	101	14	110
11-Sep-03	65.4	18.6	52	111	0	0	90	8	98
12-Sep-03	65.1	18.4	48	116	1	0	82	5	75
13-Sep-03	64.6	18.1	46	119	0	0	80	8	62
14-Sep-03	64.1	17.8	45	124	0	0	84	11	71
15-Sep-03	64.0	17.8	43	115	0	0	93	9	73
16-Sep-03	62.1	16.7	43	115	0	0	95	8	66
17-Sep-03	61.9	16.6	47	117	0	0	99	8	64
18-Sep-03	62.1	16.7	50	139	13	0	101	9	63
19-Sep-03	62.9	17.2	46	140	17	0	102	11	63
20-Sep-03	63.2	17.3	45	128	16	0	101	11	68
21-Sep-03	63.2	17.3	45	126	16	0	101	9	66
22-Sep-03	62.9	17.2	45	140	17	0	102	65	64
23-Sep-03	63.0	17.2	44	230	26	0	102	122	63
24-Sep-03	62.7	17.1	42	233	28	0	102	82	114
25-Sep-03	63.4	17.4	41	244	26	0	112	86	146
26-Sep-03	65.0	18.3	40	236	18	0	118	88	159
27-Sep-03	65.1	18.4	41	223	0	0	118	93	180
28-Sep-03	64.5	18.1	41	230	0	0	120	97	187
29-Sep-03	63.4	17.4	42	216	0	0	103	102	183
30-Sep-03	61.8	16.6	44	188	0	0	30	137	207
1-Oct-03	61.3	16.3	47	192	0	0	26	138	219
2-Oct-03	61.5	16.4	45	191	0	0	26	135	218
3-Oct-03	61.4	16.3	45	190	0	0	25	133	218
4-Oct-03	61.5	16.4	43	190	0	0	26	133	218
5-Oct-03	62.8	17.1	43	190	0	0	26	132	218
6-Oct-03	63.1	17.3	42	186	0	0	26	132	221
7-Oct-03	63.2	17.4	41	183	0	0	24	135	221
8-Oct-03	61.2	16.2	44	183	0	0	21	142	231
9-Oct-03	59.3	15.2	43	183	0	0	25	146	230
10-Oct-03	57.5	14.2	46	186	0	0	31	144	233
11-Oct-03	55.7	13.2	48	188	0	0	36	150	227
12-Oct-03	54.6	12.6	53	193	0	0	36	153	237
13-Oct-03	55.0	12.8	55	196	0	0	36	154	237
14-Oct-03	56.2	13.4	54	195	0	0	35	155	239
15-Oct-03	54.7	12.6	59	200	0	0	34	158	242
16-Oct-03	53.8	12.1	64	205	0	0	34	164	252
17-Oct-03	54.5	12.5	62	205	0	0	34	163	251
18-Oct-03	56.1	13.4	57	200	0	0	34	159	245
19-Oct-03	57.9	14.4	56	197	0	0	34	155	243
20-Oct-03	59.0	15.0	56	198	0	0	34	155	239
21-Oct-03	60.3	15.7	54	197	0	0	31	158	236
22-Oct-03	60.8	16.0	52	195	0	0	29	158	236
23-Oct-03	59.4	15.2	53	194	0	0	29	157	230
24-Oct-03	55.9	13.3	55	196	0	0	30	161	232
25-Oct-03	53.0	11.7	56	196	0	0	30	NA	234
26-Oct-03	51.8	11.0	56	196	0	0	29	NA	237
27-Oct-03	51.7	11.0	56	196	0	0	29	NA	238
28-Oct-03	55.0	12.8	55	200	0	0	28	NA	233
29-Oct-03	55.3	12.9	57	200	0	0	28	161	230
30-Oct-03	51.0	10.5	64	208	0	0	29	171	236
31-Oct-03	46.0	7.8	63	206	0	0	19	181	251

Appendix A. 2003-2004 Umatilla River Water Parameter Data.

Appendix A. (continued) November/December 2003

DATE	UMAO TEMPERATURE F	C	FLOW @ PENDLETON	FLOW @ YOAKUM	SFC FLOWS	CSC FLOWS	WLC FLOWS	FLOW @ DILLON	FLOW @ UMATILLA
1-Nov-03	43.1	6.2	63	207	0	0	13	188	268
2-Nov-03	43.13	6.2	62	207	0	0	12	189	268
3-Nov-03	44.1	6.7	64	208	0	0	6	197	268
4-Nov-03	44.5	6.9	65	208	0	0	NA	200	287
5-Nov-03	42.4	5.8	66	207	0	0	0	201	275
6-Nov-03	40.3	4.6	66	207	0	0	0	201	272
7-Nov-03	39.3	4.1	65	207	0	0	0	200	270
8-Nov-03	41.1	5.0	66	210	0	0	0	201	272
9-Nov-03	42.5	5.8	66	210	0	0	0	200	272
10-Nov-03	43.6	6.5	67	211	0	0	0	200	271
11-Nov-03	46.8	8.2	75	218	0	0	0	200	270
12-Nov-03	47.0	8.3	81	227	0	0	0	212	277
13-Nov-03	45.1	7.3	71	218	0	0	0	217	281
14-Nov-03	43.1	6.2	68	217	0	0	0	215	278
15-Nov-03	43.6	6.5	67	214	0	0	0	212	277
16-Nov-03	44.0	6.7	71	218	0	0	0	212	275
17-Nov-03	45.2	7.3	86	228	0	0	0	215	275
18-Nov-03	47.9	8.8	88	241	0	0	0	223	292
19-Nov-03	48.1	8.9	85	235	0	0	0	219	296
20-Nov-03	45.0	7.2	93	244	0	0	0	224	295
21-Nov-03	42.4	5.8	89	241	0	0	0	223	302
22-Nov-03	41.0	5.0	87	228	0	0	0	216	298
23-Nov-03	40.0	4.5	84	198	0	0	0	196	277
24-Nov-03	41.0	5.0	84	171	0	0	0	176	248
25-Nov-03	41.9	5.5	85	143	0	0	0	154	220
26-Nov-03	42.6	5.9	85	116	0	0	0	128	195
27-Nov-03	41.7	5.4	86	101	0	0	0	111	175
28-Nov-03	42.4	5.8	84	97	0	0	0	107	165
29-Nov-03	44.6	7.0	148	119	0	0	0	120	169
30-Nov-03	45.8	7.6	350	364	0	0	0	255	262
1-Dec-03	45.6	7.5	295	339	0	0	0	259	461
2-Dec-03	44.7	7.1	345	357	0	0	0	261	416
3-Dec-03	44.4	6.9	352	369	0	0	0	292	467
4-Dec-03	42.6	5.9	336	358	0	0	0	294	449
5-Dec-03	41.9	5.5	305	333	0	NA	0	302	428
6-Dec-03	42.2	5.7	328	327	0	NA	0	277	391
7-Dec-03	42.4	5.8	445	423	0	NA	0	358	453
8-Dec-03	43.1	6.2	429	437	0	NA	0	389	557
9-Dec-03	42.3	5.7	371	393	0	NA	0	349	523
10-Dec-03	41.9	5.5	333	361	0	NA	0	307	474
11-Dec-03	41.4	5.2	306	340	0	NA	0	285	441
12-Dec-03	41.5	5.3	289	315	0	NA	0	262	399
13-Dec-03	42.5	5.8	466	370	0	NA	0	276	400
14-Dec-03	43.4	6.3	1389	1108	0	NA	0	984	898
15-Dec-03	41.8	5.4	1098	983	0	103	0	1028	1319
16-Dec-03	41.7	5.4	815	714	0	189	0	678	879
17-Dec-03	41.8	5.5	615	586	0	218	0	466	608
18-Dec-03	41.0	5.0	504	531	0	189	0	364	461
19-Dec-03	40.9	5.0	436	478	0	154	0	314	391
20-Dec-03	41.3	5.2	410	453	0	122	0	297	379
21-Dec-03	41.5	5.3	409	448	0	136	0	294	364
22-Dec-03	42.1	5.6	426	454	0	153	0	295	329
23-Dec-03	42.4	5.8	428	461	0	153	0	314	343
24-Dec-03	42.3	5.7	429	462	0	153	0	334	344
25-Dec-03	41.8	5.4	461	479	0	179	0	339	344
26-Dec-03	40.8	4.9	464	487	0	193	0	337	333
27-Dec-03	39.7	4.3	427	466	0	171	0	333	333
28-Dec-03	39.7	4.3	400	448	0	135	0	340	335
29-Dec-03	38.7	3.7	376	436	0	118	0	353	367
30-Dec-03	34.4	1.3	327	397	0	20	0	528	378
31-Dec-03	32.8	0.4	298	370	0	NA	0	397	420

Appendix A. 2003-2004 Umatilla River Water Parameter Data.

Appendix A. (continued) January/February 2004

DATE	UMAO TEMPERATURE F	C	FLOW @ PENDLETON	FLOW @ YOAKUM	SFC FLOWS	CSC FLOWS	WLC FLOWS	FLOW @ DILLON	FLOW @ UMATILLA
1-Jan-04	33.5	0.8	286	125672	0	NA	NA	380	406
2-Jan-04	34.3	1.3	280	349	0	NA	NA	375	386
3-Jan-04	35.9	2.2	270	336	0	NA	NA	356	374
4-Jan-04	34.0	1.1	264	326	0	NA	NA	327	364
5-Jan-04	32.1	0.0	228	235	0	NA	NA	222	358
6-Jan-04	32.1	0.0	199	241	0	NA	NA	208	358
7-Jan-04	32.1	0.0	227	300	0	NA	NA	219	362
8-Jan-04	32.1	0.0	270	395	0	NA	NA	258	387
9-Jan-04	32.2	0.1	438	410	0	NA	NA	289	669
10-Jan-04	32.6	0.3	864	923	0	NA	NA	603	666
11-Jan-04	32.7	0.4	845	828	0	NA	NA	886	1019
12-Jan-04	33.0	0.6	718	717	0	0	NA	811	1007
13-Jan-04	36.0	2.2	618	635	0	NA	NA	718	824
14-Jan-04	38.0	3.3	540	629	0	57	0	608	706
15-Jan-04	38.6	3.6	495	621	0	103	22	531	587
16-Jan-04	39.0	3.9	617	699	0	131	25	552	577
17-Jan-04	40.3	4.6	818	924	0	188	25	701	727
18-Jan-04	40.2	4.5	758	896	0	201	25	701	787
19-Jan-04	40.0	4.4	633	784	0	213	43	579	676
20-Jan-04	40.4	4.7	540	687	0	218	53	464	564
21-Jan-04	41.1	5.0	469	614	0	217	52	378	454
22-Jan-04	41.8	5.4	425	563	0	218	27	337	360
23-Jan-04	41.7	5.4	457	550	0	212	NA	334	380
24-Jan-04	41.0	5.0	1513	1363	0	219	NA	886	644
25-Jan-04	39.3	4.0	1349	1481	0	191	36	1237	1641
26-Jan-04	40.4	4.7	969	1090	0	208	58	746	1047
27-Jan-04	41.3	5.2	803	913	0	215	61	597	788
28-Jan-04	43.2	6.2	886	892	0	217	61	542	659
29-Jan-04	44.3	6.8	4718	4480	0	225	61	3085	2069
30-Jan-04	43.7	6.5	4634	5537	0	97	61	4791	4630
31-Jan-04	41.3	5.2	2235	3430	0	209	61	3222	3333
1-Feb-04	41.3	5.2	1670	2282	0	219	61	1773	2175
2-Feb-04	40.9	5.0	1320	1727	0	219	62	1144	1624
3-Feb-04	40.4	4.6	1045	1418	0	224	61	830	1263
4-Feb-04	41.4	5.2	918	1203	0	212	62	648	1028
5-Feb-04	41.7	5.4	822	1075	0	218	63	543	849
6-Feb-04	41.4	5.2	743	975	0	218	63	507	707
7-Feb-04	41.1	5.0	734	975	0	219	64	603	689
8-Feb-04	41.8	5.4	683	922	0	213	64	568	646
9-Feb-04	41.4	5.2	623	852	0	221	63	508	583
10-Feb-04	41.2	5.1	580	795	0	217	63	454	528
11-Feb-04	41.5	5.3	549	757	0	224	63	408	474
12-Feb-04	41.1	5.1	521	623	0	228	62	378	425
13-Feb-04	40.8	4.9	497	596	0	224	62	353	392
14-Feb-04	41.5	5.3	481	579	0	223	61	331	371
15-Feb-04	42.2	5.7	481	575	0	223	61	321	359
16-Feb-04	42.7	5.9	505	587	0	226	57	325	370
17-Feb-04	43.0	6.1	1086	1171	0	222	61	752	675
18-Feb-04	43.7	6.5	1326	1525	0	220	63	1108	1177
19-Feb-04	44.5	6.9	1408	1690	0	225	63	1322	1448
20-Feb-04	43.7	6.5	1282	1579	0	222	63	1262	1435
21-Feb-04	43.4	6.3	1098	1392	0	226	63	1056	1257
22-Feb-04	43.2	6.2	995	1231	0	221	63	896	1087
23-Feb-04	43.4	6.3	931	1101	0	224	63	770	950
24-Feb-04	44.3	6.8	937	1065	0	225	63	722	864
25-Feb-04	43.5	6.4	951	1082	0	224	63	743	891
26-Feb-04	42.6	5.9	934	1034	0	146	63	703	853
27-Feb-04	44.6	7.0	934	1026	0	190	63	688	822
28-Feb-04	46.8	8.2	914	1010	0	224	63	682	820
29-Feb-04	46.5	8.1	869	953	0	223	63	640	782

Appendix A. 2003-2004 Umatilla River Water Parameter Data.

(continued) March/ April 2004

DATE	UMAO TEMPERATURE F	C	FLOW @ PENDLETON	FLOW @ YOAKUM	SFC FLOWS	CSC FLOWS	WLC FLOWS	FLOW @ DILLON	FLOW @ UMATILLA
1-Mar-04	46.1	7.8	803	883	0	223	63	581	718
2-Mar-04	45.2	7.3	736	825	0	223	63	528	655
3-Mar-04	44.5	7.0	678	777	0	223	63	469	594
4-Mar-04	44.4	6.9	693	770	0	224	63	449	566
5-Mar-04	44.3	6.8	777	834	0	227	63	500	598
6-Mar-04	43.9	6.6	866	890	0	224	63	547	639
7-Mar-04	46.0	7.8	867	898	0	224	63	576	695
8-Mar-04	48.9	9.4	940	950	0	225	63	600	692
9-Mar-04	50.5	10.3	1468	1400	0	232	63	903	908
10-Mar-04	47.9	8.8	1965	2166	0	224	63	1759	1669
11-Mar-04	46.1	7.8	1864	2059	0	225	63	1811	1917
12-Mar-04	47.0	8.3	1740	1799	0	224	63	1492	1668
13-Mar-04	47.7	8.7	1856	1883	0	230	63	1528	1601
14-Mar-04	47.0	8.3	1734	1796	0	226	63	1516	1691
15-Mar-04	47.8	8.8	1770	1779	0	228	63	1429	1546
16-Mar-04	48.2	9.0	1730	1746	0	230	63	1433	1592
17-Mar-04	50.0	10.0	1857	1853	0	230	63	1504	1581
18-Mar-04	49.7	9.8	1965	2078	0	230	65	1774	1792
19-Mar-04	48.0	8.9	2001	2310	0	227	73	2064	1976
20-Mar-04	46.2	7.9	1826	1956	0	226	77	1792	1906
21-Mar-04	47.5	8.6	1577	1629	0	226	77	1360	1514
22-Mar-04	50.0	10.0	1700	1683	0	228	77	1364	1420
23-Mar-04	51.6	10.9	1922	2029	0	227	87	1714	1666
24-Mar-04	49.1	9.5	1961	2217	0	224	105	1985	1916
25-Mar-04	47.5	8.6	1795	1883	0	223	105	1672	1778
26-Mar-04	47.6	8.7	1656	1696	0	221	110	1386	1482
27-Mar-04	48.7	9.3	1500	1577	0	224	114	1250	1354
28-Mar-04	49.6	9.8	1306	1418	0	224	114	1074	1212
29-Mar-04	50.7	10.4	1227	1331	0	226	130	942	1057
30-Mar-04	52.7	11.5	1540	1564	4	223	149	1050	1078
31-Mar-04	49.3	9.6	1845	1965	32	210	164	1529	1525
1-Apr-04	47.9	8.8	1475	1700	38	198	172	1343	1525
2-Apr-04	48.5	9.2	1092	1394	67	198	185	964	1132
3-Apr-04	50.0	10.0	979	1186	71	195	192	757	896
4-Apr-04	51.7	10.9	1015	1141	80	204	192	673	734
5-Apr-04	53.4	11.9	1188	1308	88	215	191	766	801
6-Apr-04	52.5	11.4	1203	1362	90	203	194	842	941
7-Apr-04	53.7	12.0	1243	1395	99	191	193	873	959
8-Apr-04	54.0	12.2	1216	1372	94	198	197	871	930
9-Apr-04	53.9	12.2	1168	1301	89	202	204	808	844
10-Apr-04	54.1	12.3	1100	1225	89	200	205	730	756
11-Apr-04	54.7	12.6	1051	1156	88	204	205	666	680
12-Apr-04	55.5	13.0	1049	1112	89	214	205	610	596
13-Apr-04	55.9	13.3	1131	1165	90	218	196	630	588
14-Apr-04	54.6	12.6	1111	1167	89	220	185	651	660
15-Apr-04	52.0	11.1	1130	1242	84	207	176	717	710
16-Apr-04	51.0	10.6	959	1144	81	215	173	641	735
17-Apr-04	52.9	11.6	906	1024	76	NA	NA	543	569
18-Apr-04	53.9	12.2	850	975	73	NA	NA	560	570
19-Apr-04	53.6	12.0	814	942	72	119	166	581	572
20-Apr-04	54.4	12.4	831	939	73	116	165	550	550
21-Apr-04	53.1	11.7	925	1043	74	117	165	578	621
22-Apr-04	51.7	10.9	1153	1376	73	167	158	792	846
23-Apr-04	53.2	11.8	1263	1535	73	216	154	900	1001
24-Apr-04	52.5	11.4	1189	1506	72	216	151	882	1062
25-Apr-04	54.5	12.5	1112	1368	72	210	152	756	957
26-Apr-04	56.7	13.7	1109	1265	72	203	166	665	833
27-Apr-04	58.5	14.7	1118	1265	77	202	178	630	737
28-Apr-04	55.2	12.9	1267	1371	80	209	179	741	798
29-Apr-04	54.6	12.5	1145	1317	79	209	186	690	838
30-Apr-04	56.5	13.6	1033	1210	82	204	192	603	710

Appendix A. 2003-2004 Umatilla River Water Parameter Data.

Appendix A. (continued) May/June 2004

DATE	UMAO TEMPERATURE F	C	FLOW @ PENDLETON	FLOW @ YOAKUM	SFC FLOWS	CSC FLOWS	WLC FLOWS	FLOW @ DILLON	FLOW @ UMATILLA
1-May-04	58.9	15.0	1010	1161	88	203	196	576	631
2-May-04	61.5	16.4	1018	1138	89	202	197	553	608
3-May-04	62.7	17.0	1048	1147	94	214	197	560	588
4-May-04	62.7	17.1	1043	1135	102	217	193	550	566
5-May-04	60.6	15.9	971	1073	54	72	189	634	597
6-May-04	58.0	14.5	854	960	46	1	188	657	700
7-May-04	58.5	14.7	747	866	103	0	183	548	563
8-May-04	60.5	15.8	690	804	100	NA	181	491	497
9-May-04	60.4	15.8	636	753	94	NA	184	450	459
10-May-04	59.1	15.1	599	687	72	NA	188	398	392
11-May-04	55.8	13.2	625	728	76	NA	184	414	369
12-May-04	55.4	13.0	1056	1166	79	NA	180	676	540
13-May-04	54.5	12.5	1528	1872	77	NA	177	1540	1396
14-May-04	55.6	13.1	1195	1622	77	NA	176	1359	1422
15-May-04	56.6	13.6	969	1354	82	NA	172	1047	1145
16-May-04	55.8	13.2	1003	1336	79	NA	168	976	1023
17-May-04	56.9	13.8	997	1336	80	NA	170	1006	1103
18-May-04	57.8	14.4	1036	1364	94	NA	179	929	697
19-May-04	56.4	13.6	1310	1864	82	NA	180	1572	1410
20-May-04	58.3	14.6	1473	1961	86	NA	185	1660	1582
21-May-04	58.5	14.7	1569	2177	88	NA	192	1932	1736
22-May-04	56.7	13.7	1468	2222	80	NA	193	2087	1920
23-May-04	54.7	12.6	1701	2420	79	NA	189	2039	1810
24-May-04	53.5	11.9	3076	5309	71	0	184	5076	3624
25-May-04	54.6	12.5	2260	4680	75	NA	174	4600	3956
26-May-04	56.0	13.3	2099	4036	82	NA	166	3950	3363
27-May-04	55.4	13.0	2306	3874	71	NA	161	3736	3076
28-May-04	54.7	12.6	3367	4603	60	NA	154	4194	3359
29-May-04	52.7	11.5	3703	5520	58	NA	145	5128	4187
30-May-04	53.9	12.2	2332	4204	67	NA	142	3836	3725
31-May-04	55.2	12.9	2001	2772	80	NA	150	2290	2447
1-Jun-04	57.1	14.0	1558	2255	91	NA	169	1705	1912
2-Jun-04	59.7	15.4	1146	1851	97	NA	195	1238	1569
3-Jun-04	62.1	16.7	939	1513	97	NA	221	893	1213
4-Jun-04	65.2	18.4	791	1208	97	NA	231	602	848
5-Jun-04	65.9	18.8	666	1024	97	NA	237	420	617
6-Jun-04	63.9	17.7	623	931	97	NA	242	351	517
7-Jun-04	63.1	17.3	560	868	93	NA	242	299	423
8-Jun-04	63.3	17.4	684	958	88	NA	238	477	430
9-Jun-04	60.6	15.9	707	1069	88	NA	222	417	701
10-Jun-04	59.7	15.4	1318	1772	88	NA	182	1275	849
11-Jun-04	57.5	14.2	1682	2319	87	NA	159	2190	2043
12-Jun-04	57.5	14.2	1191	1861	87	NA	153	1629	1687
13-Jun-04	60.4	15.8	933	1614	87	NA	153	1328	1399
14-Jun-04	61.6	16.4	777	1262	87	NA	171	932	1068
15-Jun-04	61.9	16.6	645	1061	87	NA	203	684	729
16-Jun-04	63.6	17.5	556	914	87	NA	214	525	543
17-Jun-04	66.0	18.9	485	809	87	NA	210	413	408
18-Jun-04	68.0	20.0	430	666	50	NA	206	331	286
19-Jun-04	69.4	20.8	378	542	7	NA	209	304	278
20-Jun-04	70.1	21.2	330	484	0	NA	218	253	294
21-Jun-04	71.3	21.8	293	426	0	NA	223	199	277
22-Jun-04	73.0	22.8	276	408	3	NA	224	162	230
23-Jun-04	74.4	23.5	268	430	8	NA	229	182	218
24-Jun-04	75.1	23.9	248	423	14	NA	231	165	214
25-Jun-04	74.7	23.7	228	421	22	NA	231	165	216
26-Jun-04	73.0	22.8	213	421	22	NA	229	173	222
27-Jun-04	72.0	22.2	205	403	20	NA	222	176	239
28-Jun-04	73.5	23.1	199	385	28	NA	204	170	222
29-Jun-04	74.0	23.3	194	366	23	NA	199	152	192
30-Jun-04	74.1	23.4	180	359	24	NA	190	153	187

Appendix A. 2003-2004 Umatilla River Water Parameter Data.

Appendix A. (continued) July/August 2004

DATE	UMAO TEMPERATURES F	C	FLOW @ PENDLETON	FLOW @ YOAKUM	SFC FLOWS	CSC FLOWS	WLC FLOWS	FLOW @ DILLON	FLOW @ UMATILLA
1-Jul-04	74.5	23.6	156	355	29	NA	177	148	193
2-Jul-04	74.4	23.5	142	355	74	NA	169	142	151
3-Jul-04	73.2	22.9	139	348	103	NA	173	147	137
4-Jul-04	72.5	22.5	138	353	112	NA	177	146	143
5-Jul-04	73.2	22.9	135	351	115	NA	180	132	140
6-Jul-04	73.8	23.2	135	334	115	NA	183	107	124
7-Jul-04	71.6	22.0	132	312	64	NA	183	90	103
8-Jul-04	70.8	21.5	131	284	28	NA	183	77	76
9-Jul-04	70.6	21.5	111	250	20	NA	178	57	65
10-Jul-04	70.5	21.4	89	213	16	NA	173	54	51
11-Jul-04	71.5	21.9	86	206	14	NA	172	25	30
12-Jul-04	72.8	22.7	83	201	13	NA	167	21	29
13-Jul-04	75.7	24.3	79	204	18	NA	163	19	23
14-Jul-04	77.6	25.3	76	221	20	NA	166	21	22
15-Jul-04	78.6	25.9	73	221	23	NA	160	32	21
16-Jul-04	76.5	24.7	69	217	26	NA	159	27	31
17-Jul-04	78.4	25.8	70	213	26	NA	155	29	62
18-Jul-04	77.9	25.5	72	208	8	NA	148	33	64
19-Jul-04	76.8	24.9	79	211	3	NA	144	31	57
20-Jul-04	76.0	24.5	81	214	3	NA	147	44	46
21-Jul-04	75.0	23.9	73	198	1	NA	159	30	33
22-Jul-04	76.8	24.9	66	199	0	NA	165	24	35
23-Jul-04	77.2	25.1	64	214	0	NA	166	19	13
24-Jul-04	78.4	25.8	61	224	0	NA	168	31	26
25-Jul-04	77.6	25.3	58	223	0	NA	168	33	32
26-Jul-04	76.0	24.5	55	220	0	NA	168	28	35
27-Jul-04	76.4	24.7	54	227	0	NA	160	33	31
28-Jul-04	76.1	24.5	53	226	0	NA	159	29	37
29-Jul-04	77.6	25.3	52	225	0	NA	155	32	28
30-Jul-04	77.2	25.1	50	224	0	NA	157	29	31
31-Jul-04	76.0	24.4	48	233	0	NA	170	33	31
1-Aug-04	77.0	25.0	46	237	0	NA	182	37	41
2-Aug-04	75.6	24.2	46	243	0	NA	185	33	32
3-Aug-04	73.7	23.2	49	231	2	NA	174	37	31
4-Aug-04	74.4	23.6	53	244	18	NA	164	38	42
5-Aug-04	73.5	23.1	52	248	22	NA	159	34	34
6-Aug-04	71.4	21.9	52	252	22	NA	159	38	29
7-Aug-04	71.8	22.1	59	253	22	NA	152	49	37
8-Aug-04	71.1	21.7	56	233	23	NA	143	45	44
9-Aug-04	73.3	22.9	50	211	23	NA	137	37	29
10-Aug-04	74.9	23.8	46	204	21	NA	128	25	20
11-Aug-04	76.4	24.7	42	211	20	NA	131	26	26
12-Aug-04	77.0	25.0	40	225	21	NA	146	31	14
13-Aug-04	76.4	24.7	39	228	21	NA	155	36	31
14-Aug-04	73.8	23.2	38	213	21	NA	142	33	49
15-Aug-04	75.3	24.0	40	219	21	NA	138	40	37
16-Aug-04	74.7	23.7	38	221	21	NA	152	32	77
17-Aug-04	75.2	24.0	39	231	21	NA	155	36	88
18-Aug-04	74.6	23.7	42	233	21	NA	147	39	97
19-Aug-04	74.6	23.7	39	233	21	NA	145	37	97
20-Aug-04	74.7	23.7	37	218	21	NA	136	36	106
21-Aug-04	73.7	23.2	36	214	20	NA	132	34	103
22-Aug-04	71.0	21.7	44	225	21	NA	131	39	108
23-Aug-04	67.7	19.9	68	209	20	NA	125	44	131
24-Aug-04	67.5	19.7	78	186	19	NA	117	43	137
25-Aug-04	66.8	19.3	79	157	17	NA	108	40	149
26-Aug-04	67.5	19.7	88	142	15	NA	104	27	131
27-Aug-04	68.8	20.4	79	141	15	NA	110	25	98
28-Aug-04	69.8	21.0	71	143	6	NA	120	25	83
29-Aug-04	70.9	21.6	64	136	0	NA	124	20	77
30-Aug-04	71.3	21.8	59	154	0	NA	133	15	85
31-Aug-04	71.8	22.1	56	175	0	NA	138	23	76

Appendix B-1 2003 Fall Chinook Return Disposition

	TRAPPED				SAC/MORT				RELEASED UPSTREAM			RELEASED @ DAM				BROOD		
DATE	TOTAL	AD	JK	MJ	TOTAL	AD	JK	MJ	TOTAL	AD	JK	TOTAL	AD	JK	MJ	TOTAL	AD	JK
9-10	3	3	0	0	0				0			3	3			0		
9-11	1	0	1	0	0				0			1		1		0		
9-15	3	0	0	3	0				0			3			3	0		
9-16	2	1	0	1	1			1	0			0				1	1	
9-18	1	0	0	1	0				0			1			1	0		
9-22	1	1	0	0	0				0			0				1	1	
9-23	2	0	1	1	0				0			2		1	1	0		
9-24	1	0	0	1	0				0			1			1	0		
9-26	2	1	1	0	0				0			1		1		1	1	
9-29	105	24	33	48	6		2	4	0			75	1	30	44	24	23	1
9-30	79	29	11	39	5			5	0			45	1	10	34	29	28	1
SEP	200	59	47	94	12	0	2	10	0	0	0	132	5	43	84	56	54	2
10-01	66	22	17	27	7	1	1	5	0			41	4	15	22	18	17	1
10-02	150	65	22	63	7		2	5	0			103	26	19	58	40	39	1
10-03	186	62	37	87	11		5	6	0			173	61	31	81	2	1	1
10-04	161	30	21	110	12		1	11	0			149	30	20	99	0		
10-05	145	37	26	82	0				0			139	31	26	82	6	6	
10-06	184	55	29	100	1			1	0			164	37	28	99	19	18	1
10-07	265	69	64	132	24	1	18	5	0			228	55	46	127	13	13	
10-08	342	180	48	114	10	3	7		0			303	149	40	114	29	28	1
10-09	336	119	87	130	0				0			336	119	87	130	0		
10-10	101	27	10	64	1		1		0			97	24	9	64	3	3	
10-11	79	11	9	59	0				0			79	11	9	59	0		
10-12	56	19	9	28	0				0			53	16	9	28	3	3	
10-14	172	55	17	100	17	1	6	10	0			134	33	11	90	21	21	
10-15	140	45	19	76	13	3	1	9	0			99	15	17	67	28	27	1
10-16	73	26	5	42	1			1	0			53	8	4	41	19	18	1
10-17	86	16	7	63	1			1	0			74	7	5	62	11	9	2
10-18	134	30	10	94	5		2	3	0			112	14	7	91	17	16	1
10-19	78	14	12	52	0				0			68	5	11	52	10	9	1
10-20	109	35	12	62	17	1	5	11	0			72	15	6	51	20	19	1
10-21	147	44	22	81	13		2	11	0			113	24	19	70	21	20	1
10-22	134	30	12	92	3		2	1	0			125	25	9	91	6	5	1
10-23	82	18	12	52	2		1	1	0			74	12	11	51	6	6	
10-24	94	38	10	46	4			4	0			76	25	9	42	14	13	1
10-25	96	57	8	31	3	2	1		0			89	51	7	31	4	4	
10-26	34	8	6	20	0				0			34	8	6	20	0		
10-27	37	12	6	19	8	2	1	5	0			29	10	5	14	0		
10-28	39	12	6	21	3			3	0			23		5	18	13	12	1
10-29	77	39	4	34	4			4	0			65	31	4	30	8	8	
10-30	124	66	12	46	9			9	0			104	55	12	37	11	11	
10-31	31	22	2	7	0				0			26	18	1	7	5	4	1
OCT	3758	1263	561	1934	176	14	56	106	0	0	0	3235	919	488	1828	347	330	17
CUM/OCT	3958	1322	608	2028	188	14	58	116	0	0	0	3367	924	531	1912	403	384	19
11-01	11	6	1	4	0				0			11	6	1	4	0		
11-03	11	6	2	3	1		1		0			10	6	1	3	0		
11-04	11	6	1	4	0				0			11	6	1	4	0		
11-05	14	7	0	7	2			2	0			12	7		5	0		
11-07	2	2	0	0	0				0			2	2			0		
11-10	8	4	1	3	0				0			8	4	1	3	0		
11-12	73	42	13	18	5		4	1	0			66	40	9	17	2	2	
11-13	35	12	3	20	1		1		0			34	12	2	20	0		
11-14	12	7	0	5	0				0			12	7		5	0		
11-15	8	4	0	4	0				0			8	4		4	0		
11-16	10	5	0	5	0				0			10	5		5	0		
11-17	16	5	3	8	0				0			16	5	3	8	0		
11-18	16	5	1	10	2	1		1	0			14	4	1	9	0		
11-19	32	20	2	10	2			2	0			29	19	2	8	1	1	
11-20	25	15	1	9	2	2			0			22	12	1	9	1	1	
11-21	7	4	1	2	1		1		0			6	4		2	0		
11-28	2	0	0	2	0				0			2			2	0		
NOV	293	150	29	114	16	3	7	6	0	0	0	273	143	22	108	4	4	0
CUM/NOV	4251	1472	637	2142	204	17	65	122	0	0	0	3640	1067	553	2020	407	388	19
12-01	5	3	0	2	1	1			0			4	2		2	0		
12-02	3	2	0	1	0				0			3	2		1	0		
12-03	6	3	1	2	1			1	0			5	3	1	1	0		
12-04	4	2	0	2	1			1	0			3	2		1	0		
12-05	1	0	0	1	0				0			1			1	0		
DEC	19	10	1	8	3	1	0	2	0	0	0	16	9	1	6	0	0	0
CUM/DEC	4270	1482	638	2150	207	18	65	124	0	0	0	3656	1076	554	2026	407	388	19

Appendix B-2 2003 Coho Return Disposition

	TRAPPED			SAC/MORT			RELEASED UPSTREAM			RELEASED @ DAM			BROOD		
DATE	TOTAL	AD	JK	TOTAL	AD	JK	TOTAL	AD	JK	TOTAL	AD	JK	TOTAL	AD	JK
9-12	1	1	0	0			0			1	1		0		
9-15	1	1	0	1	1		0			0			0		
9-17	1	1	0	0			0			1	1		0		
9-18	1	1	0	0			0			1	1		0		
9-22	1	1	0	0			0			1	1		0		
9-23	1	0	1	0			0			1		1	0		
9-25	2	1	1	1		1	0			1	1		0		
9-26	3	1	2	0			0			3	1	2	0		
9-29	91	64	27	3	1	2	0			88	63	25	0		
9-30	59	32	27	3	2	1	0			56	30	26	0		
SEP	161	103	58	8	4	4	0	0	0	153	99	54	0	0	0
10-01	58	37	21	1	1		0			57	36	21	0		
10-02	80	53	27	3	2	1	0			77	51	26	0		
10-03	151	127	24	8	8		0			143	119	24	0		
10-04	128	104	24	11	9	2	0			117	95	22	0		
10-05	56	44	12	0			0			56	44	12	0		
10-06	75	48	27	0			0			75	48	27	0		
10-07	192	167	25	14	14		0			178	153	25	0		
10-08	375	334	41	14	11	3	0			361	323	38	0		
10-09	152	109	43	0			0			152	109	43	0		
10-10	46	37	9	0			0			46	37	9	0		
10-11	19	12	7	1		1	0			18	12	6	0		
10-12	16	12	4	0			0			16	12	4	0		
10-14	22	19	3	4	4		0			18	15	3	0		
10-15	22	19	3	0			0			22	19	3	0		
10-16	42	38	4	1		1	0			41	38	3	0		
10-17	37	30	7	2	2		0			35	28	7	0		
10-18	69	56	13	3	3		0			66	53	13	0		
10-19	75	71	4	0			0			75	71	4	0		
10-20	213	195	18	15	14	1	0			198	181	17	0		
10-21	1260	1189	71	33	31	2	0			1227	1158	69	0		
10-22	517	458	59	0			0			517	458	59	0		
10-23	1076	1016	60	3	1	2	0			1073	1015	58	0		
10-24	651	624	27	2	1	1	0			649	623	26	0		
10-25	285	269	16	1		1	0			284	269	15	0		
10-26	62	60	2	0			0			62	60	2	0		
10-27	24	22	2	0			0			24	22	2	0		
10-28	75	71	4	1		1	0			74	71	3	0		
10-29	561	549	12	0			0			561	549	12	0		
10-30	605	598	7	0			0			605	598	7	0		
10-31	419	415	4	0			0			419	415	4	0		
OCT	7363	6783	580	117	101	16	0	0	0	7246	6682	564	0	0	0
CUM/OCT	7524	6886	638	125	105	20	0	0	0	7399	6781	618	0	0	0
11-01	34	33	1	0			0			34	33	1	0		
11-03	13	13	0	0			0			13	13		0		
11-04	17	16	1	0			0			17	16	1	0		
11-05	22	22	0	0			0			22	22		0		
11-07	2	2	0	0			0			2	2		0		
11-10	12	12	0	0			0			12	12		0		
11-12	167	167	0	0			0			167	167		0		
11-13	194	193	1	0			0			194	193	1	0		
11-14	63	63	0	0			0			63	63		0		
11-15	18	17	1	0			0			18	17	1	0		
11-16	41	40	1	0			0			41	40	1	0		
11-17	22	22	0	0			0			22	22		0		
11-18	70	70	0	0			0			70	70		0		
11-19	207	200	7	0			0			207	200	7	0		
11-20	258	252	6	1	1		0			257	251	6	0		
11-21	72	71	1	0			0			72	71	1	0		
11-24	17	16	1	0			0			17	16	1	0		
11-28	17	16	1	0			0			17	16	1	0		
NOV	1246	1225	21	1	1	0	0	0	0	1245	1224	21	0	0	0
CUM/NOV	8770	8111	659	126	106	20	0	0	0	8644	8005	639	0	0	0
12-01	32	30	2	0			0			32	30	2	0		
12-02	97	94	3	0			0			97	94	3	0		
12-03	68	66	2	0			0			68	66	2	0		
12-04	12	11	1	0			0			12	11	1	0		
12-05	3	3	0	0			0			3	3		0		
12-07	1	1	0	0			0			1	1		0		
12-09	1	1	0	0			0			1	1		0		
12-17	1	1	0	0			0			1	1		0		
12-18	1	1	0	0			0			1	1		0		
DEC	216	208	8	0	0	0	0	0	0	216	208	8	0	0	0
CUM/DEC	8986	8319	667	126	106	20	0	0	0	8860	8213	647	0	0	0

Appendix B-3 2003-04 Summer Steelhead Return Disposition

Dates in BOLD - fish listed as hatchery brood were either released into Pond # 3 at 3MD for Progeny Marker study or transported to Minthorn Springs holding facility.

	TRAPPED				SAC/MORT			RELEASED UPSTREAM			RELEASED @ DAM				BROOD		
DATE	TOTAL	UNK	H	W	TOTAL	H	W	TOTAL	H	W	TOTAL	UNK	H	W	TOTAL	H	W
5-10	1	0	1	0	0			0			1		1		0		
5-19	1	0	0	1	0			0			1			1	0		
MAY	2	0	1	1	0	0	0	0	0		2	0	1	1	0	0	0
6-15	1	0	1	0	0			1	1		0				0		
6-17	1	0	1	0	0			1	1		0				0		
6-19	1	0	0	1	0			1		1	0				0		
6-22	2	0	2	0	0			2	2		0				0		
6-24	9	0	8	1	0			9	8	1	0				0		
6-26	7	0	7	0	0			7	7		0				0		
6-27	2	0	2	0	0			2	2		0				0		
6-30	2	0	2	0	0			2	2		0				0		
JUNE	25	0	23	2	0	0	0	25	23	2	0	0	0	0	0	0	0
CUM/JUN	27	0	24	3	0	0	0	25	23	2	2	0	1	1	0	0	0
7-3	3	0	3	0	1	1		2	2		0				0		
7-6	1	0	1	0	0			1	1		0				0		
JUL	4	0	4	0	1	1	0	3	3	0	0	0	0	0	0	0	0
CUM/JUL	31	0	28	3	1	1	0	28	26	2	2	0	1	1	0	0	0
8-27	1	0	1	0	0			1	1		0				0		
AUG	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
CUM/AUG	32	0	29	3	1	1	0	29	27	2	2	0	1	1	0	0	0
9-10	6	0	3	3	2	2		0			4		1	3	0		
9-11	1	0	0	1	0			0			1			1	0		
9-12	2	0	1	1	0			0			2		1	1	0		
9-15	4	0	3	1	1	1		0			3		2	1	0		
9-18	3	0	1	2	0			0			1			1	2	1	1
9-26	3	0	1	2	1	1		0			2			2	0		
9-29	21	0	8	13	0			0			18		8	10	3		3
9-30	12	0	6	6	1		1	0			8		3	5	3	3	
SEP	52	0	23	29	5	4	1	0	0	0	39	0	15	24	8	4	4
CUM/SEP	84	0	52	32	6	5	1	29	27	2	41	0	16	25	8	4	4
10-01	19	0	12	7	0			0			16		9	7	3	3	
10-02	24	0	12	12	0			0			14		9	5	10	3	7
10-03	27	0	9	18	0			0			27		9	18	0		
10-04	46	0	16	30	0			0			40		12	28	6	4	2
10-05	41	0	18	23	0			0			38		15	23	3	3	
10-06	57	0	17	40	0			0			55		15	40	2	2	
10-07	53	0	27	26	4	3	1	0			46		21	25	3	3	
10-08	99	0	49	50	2	2		0			95		45	50	2	2	
10-09	113	113	0	0	0			0			113	113			0		
10-10	18	0	6	12	0			0			17		5	12	1	1	
10-11	19	0	7	12	0			0			17		5	12	2	2	
10-12	12	0	7	5	0			0			10		5	5	2	2	
10-14	14	0	7	7	0			0			14		7	7	0		
10-15	35	0	13	22	0			0			35		13	22	0		
10-16	16	0	8	8	0			0			16		8	8	0		
10-17	14	0	6	8	0			0			14		6	8	0		
10-18	17	0	11	6	0			0			17		11	6	0		
10-19	16	0	7	9	0			0			16		7	9	0		
10-20	38	0	19	19	0			0			34		19	15	4		4
10-21	50	0	23	27	0			0			50		23	27	0		
10-22	39	0	18	21	0			0			39		18	21	0		
10-23	53	0	27	26	0			0			53		27	26	0		
10-24	57	0	26	31	0			0			57		26	31	0		
10-25	52	0	13	39	0			0			52		13	39	0		
10-26	12	0	4	8	0			0			12		4	8	0		
10-27	9	0	3	6	0			0			9		3	6	0		
10-28	13	0	5	8	0			0			13		5	8	0		
10-29	44	0	11	33	0			0			44		11	33	0		
10-30	93	0	35	58	0			0			93		35	58	0		
10-31	29	0	9	20	0			0			29		9	20	0		
OCT	1129	113	425	591	6	5	1	0	0	0	1085	113	395	577	38	25	13
CUM/OCT	1213	113	477	623	12	10	2	29	27	2	1126	113	411	602	46	29	17

Appendix B-3 2003-04 Summer Steelhead Return Disposition

Dates in BOLD - fish listed as hatchery brood were either released into Pond # 3 at 3MD for Progeny Marker study or transported to Minthorn Springs holding facility.

	TRAPPED				SAC/MORT			RELEASED UPSTREAM			RELEASED @ DAM				BROOD		
DATE	TOTAL	UNK	H	W	TOTAL	H	W	TOTAL	H	W	TOTAL	UNK	H	W	TOTAL	H	W
11-01	8	0	3	5	0			0			8		3	5	0		
11-03	6	0	3	3	0			0			6		3	3	0		
11-04	13	0	7	6	0			0			13		7	6	0		
11-05	9	0	1	8	0			0			9		1	8	0		
11-07	1	0	1	0	0			0			1		1		0		
11-10	7	0	1	6	0			0			5		1	4	2		2
11-12	40	0	13	27	2	2		0			35		10	25	3	1	2
11-13	33	0	9	24	0			0			33		9	24	0		
11-14	14	0	3	11	0			0			14		3	11	0		
11-15	6	0	3	3	0			0			6		3	3	0		
11-16	4	0	4	0	0			0			4		4		0		
11-17	11	0	6	5	0			0			11		6	5	0		
11-18	12	0	5	7	0			0			12		5	7	0		
11-19	28	0	11	17	0			0			28		11	17	0		
11-20	18	0	7	11	0			0			18		7	11	0		
11-21	3	0	1	2	0			0			3		1	2	0		
11-24	4	0	1	3	0			0			2		1	1	2		2
11-28	6	0	1	5	0			0			6		1	5	0		
NOV	223	0	80	143	2	2	0	0	0	0	214	0	77	137	7	1	6
CUM/NOV	1436	113	557	766	14	12	2	29	27	2	1340	113	488	739	53	30	23
12-01	29	0	10	19	0			0			18		6	12	11	4	7
12-02	23	0	7	16	0			0			20		4	16	3	**3**	
12-03	18	0	6	12	0			0			18		6	12	0		
12-04	35	0	14	21	0			0			34		13	21	1	**1**	
12-05	14	0	8	6	0			0			14		8	6	0		
12-06	4	0	1	3	0			0			4		1	3	0		
12-07	2	0	0	2	0			0			2			2	0		
12-08	7	0	3	4	0			0			7		3	4	0		
12-09	5	0	1	4	0			0			5		1	4	0		
12-10	6	0	4	2	0			0			6		4	2	0		
12-11	2	0	0	2	0			0			2			2	0		
12-12	2	0	0	2	0			0			2			2	0		
12-13	1	0	1	0	0			0			1		1		0		
12-17	36	0	7	29	0			0			29		4	25	7	3	4
12-18	54	0	17	37	0			0			52		15	37	2	2	
12-19	17	0	4	13	0			0			17		4	13	0		
12-20	20	0	7	13	0			0			20		7	13	0		
12-21	22	0	10	12	0			0			22		10	12	0		
12-22	25	0	8	17	0			0			25		8	17	0		
12-23	16	0	9	7	0			0			16		9	7	0		
12-24	7	0	2	5	0			0			7		2	5	0		
12-25	6	0	2	4	0			0			6		2	4	0		
12-26	7	0	1	6	0			0			7		1	6	0		
12-27	3	0	1	2	0			0			3		1	2	0		
12-28	3	0	0	3	0			0			3			3	0		
DEC	364	0	123	241	0	0	0	0	0	0	340	0	110	230	24	13	11
CUM/DEC	1800	113	680	1007	14	12	2	29	27	2	1680	113	598	969	77	43	34
1-04	1	0	0	1	0			0			1			1	0		
1-16	4	0	0	4	0			0			4			4	0		
1-17	10	0	2	8	0			0			10		2	8	0		
1-18	9	0	1	8	0			0			9		1	8	0		
1-19	4	0	2	2	0			0			4		2	2	0		
1-20	8	0	3	5	0			0			8		3	5	0		
1-21	11	0	3	8	0			0			11		3	8	0		
1-22	5	0	1	4	0			0			5		1	4	0		
1-23	11	0	4	7	0			0			11		4	7	0		
1-24	7	0	2	5	0			0			7		2	5	0		
1-28	38	0	12	26	0			0			17		9	8	21	3	18
1-29	69	0	27	42	0			0			65		23	42	4	4	
1-30	7	1	1	5	0			0			7	1	1	5	0		
JAN	184	1	58	125	0	0	0	0	0	0	159	1	51	107	25	7	18
CUM/JAN	1984	114	738	1132	14	12	2	29	27	2	1839	114	649	1076	102	50	52

Appendix B-3 2003-04 Summer Steelhead Return Disposition

Dates in BOLD - fish listed as hatchery brood were either released into Pond # 3 at 3MD for Progeny Marker study or transported to Minthorn Springs holding facility.

	TRAPPED				SAC/MORT			RELEASED UPSTREAM			RELEASED @ DAM				BROOD		
DATE	TOTAL	UNK	H	W	TOTAL	H	W	TOTAL	H	W	TOTAL	UNK	H	W	TOTAL	H	W
2-01	2	2	0	0	0			0			2	2			0		
2-03	1	0	0	1	0			0			1			1	0		
2-04	12	5	2	5	0			0			12	5	2	5	0		
2-05	44	7	16	21	0			0			44	7	16	21	0		
2-06	66	2	25	39	0			0			66	2	25	39	0		
2-07	46	0	12	34	0			0			46		12	34	0		
2-08	27	1	8	18	0			0			27	1	8	18	0		
2-09	19	0	6	13	0			0			14		6	8	5		5
2-11	19	0	4	15	0			0			19		4	15	0		
2-12	4	0	1	3	0			0			0				4	1	3
2-13	8	0	6	2	0			5	5		2			2	1	1	
2-14	10	0	4	6	0			0			10		4	6	0		
2-15	15	0	5	10	0			0			15		5	10	0		
2-16	24	0	8	16	0			0			24		8	16	0		
2-17	18	0	4	14	0			0			18		4	14	0		
2-18	5	0	3	2	0			0			5		3	2	0		
2-20	6	4	0	2	0			0			6	4		2	0		
2-21	6	3	1	2	0			0			6	3	1	2	0		
2-22	4	0	1	3	0			0			4		1	3	0		
2-24	28	0	12	16	0			0			25		12	13	3		3
2-25	13	0	5	8	0			0			13		5	8	0		
2-27	15	0	8	7	0			0			15		8	7	0		
2-28	10	0	5	5	0			0			10		5	5	0		
2-29	11	0	5	6	0			0			11		5	6	0		
FEB	413	24	141	248	0	0	0	5	5	0	395	24	134	237	13	2	11
CUM/FEB	2397	138	879	1380	14	12	2	34	32	2	2234	138	783	1313	115	52	63
3-01	4	0	2	2	0			0			4		2	2	0		
3-02	6	0	2	4	0			0			6		2	4	0		
3-03	5	0	3	2	0			0			5		3	2	0		
3-04	5	0	3	2	0			0			5		3	2	0		
3-05	11	0	4	7	0			0			11		4	7	0		
3-06	7	0	2	5	0			0			7		2	5	0		
3-07	14	0	6	8	0			0			14		6	8	0		
3-08	25	0	13	12	0			0			18		11	7	7	2	5
3-09	15	0	7	8	0			0			13		6	7	2	1	1
3-11	14	0	4	10	0			0			5		2	3	9	2	7
3-12	8	0	2	6	0			0			8		2	6	0		
3-13	8	1	4	3	0			0			8	1	4	3	0		
3-14	22	0	13	9	0			0			22		13	9	0		
3-15	8	0	4	4	0			0			8		4	4	0		
3-16	16	0	4	12	0			0			16		4	12	0		
3-17	39	0	20	19	0			0			39		20	19	0		
3-18	38	1	12	25	0			0			38	1	12	25	0		
3-19	41	15	8	18	0			0			41	15	8	18	0		
3-20	1	0	0	1	0			0			1			1	0		
3-21	8	2	0	6	0			0			8	2		6	0		
3-22	0	0	0	0	0			0			0				0		
3-23	0	0	0	0	0			0			0				0		
3-22	39	0	17	22	0			0			29		15	14	10	2	8
3-23	44	0	13	31	0			0			34		10	24	10	3	7
3-24	56	0	17	39	0			0			55		16	39	1	1	
3-25	32	0	15	17	0			0			30		13	17	2	2	
3-26	43	0	18	25	0			0			42		17	25	1	1	
3-27	31	0	9	22	0			0			31		9	22	0		
3-28	44	0	15	29	0			0			44		15	29	0		
3-29	31	0	18	13	0			0			31		18	13	0		
3-30	34	0	17	17	0			0			34		17	17	0		
3-31	29	0	14	15	0			0			29		14	15	0		
MAR	678	19	266	393	0	0	0	0	0	0	636	19	252	365	42	14	28
CUM/MAR	3075	157	1145	1773	14	12	2	34	32	2	2870	157	1035	1678	157	66	91

Appendix B-3 2003-04 Summer Steelhead Return Disposition

Dates in BOLD - fish listed as hatchery brood were either released into Pond # 3 at 3MD for Progeny Marker study or transported to Minthorn Springs holding facility.

	TRAPPED				SAC/MORT			RELEASED UPSTREAM			RELEASED @ DAM				BROOD		
DATE	TOTAL	UNK	H	W	TOTAL	H	W	TOTAL	H	W	TOTAL	UNK	H	W	TOTAL	H	W
4-01	9	0	1	8	0			0			9		1	8	0		
4-02	16	0	7	9	0			0			16		7	9	0		
4-03	24	0	8	16	0			0			24		8	16	0		
4-04	12	0	5	7	0			0			12		5	7	0		
4-05	20	0	6	14	0			0			13		5	8	7	1	6
4-06	26	0	6	20	0			0			26		6	20	0		
4-07	21	0	6	15	0			0			21		6	15	0		
4-08	18	0	4	14	0			0			18		4	14	0		
4-09	25	0	7	18	0			0			23		5	18	2	2	
4-10	20	0	5	15	0			0			20		5	15	0		
4-11	17	0	3	14	0			0			17		3	14	0		
4-12	7	0	1	6	0			0			7		1	6	0		
4-13	7	0	1	6	0			0			7		1	6	0		
4-14	13	0	2	11	0			0			13		2	11	0		
4-15	10	0	4	6	0			0			10		4	6	0		
4-16	16	0	7	9	0			0			16		7	9	0		
4-17	5	0	0	5	0			0			5			5	0		
4-18	1	0	0	1	0			0			1			1	0		
4-20	7	0	1	6	0			0			2		1	1	5		5
4-21	6	0	1	5	0			0			6		1	5	0		
4-22	3	0	1	2	0			0			3		1	2	0		
4-23	1	0	0	1	0			0			1			1	0		
4-24	5	0	0	5	0			0			5			5	0		
4-25	3	0	0	3	0			0			3			3	0		
4-26	2	0	1	1	0			0			2		1	1	0		
4-27	1	0	0	1	0			0			1			1	0		
4-28	3	0	0	3	0			0			3			3	0		
4-29	2	0	0	2	0			0			2			2	0		
APRIL	300	0	77	223	0	0	0	0	0	0	286	0	74	212	14	3	11
CUM/APRL	3375	157	1222	1996	14	12	2	34	32	2	3156	157	1109	1890	171	69	102
5-04	1	0	0	1	0			0			1			1	0		
5-05	2	0	0	2	0			0			2			2	0		
5-07	1	0	0	1	0			0			1			1	0		
5-11	1	0	0	1	0			0			1			1	0		
5-14	2	0	0	2	0			0			2			2	0		
5-15	2	0	1	1	0			0			2		1	1	0		
5-17	1	0	0	1	0			0			1			1	0		
5-18	1	0	0	1	0			0			1			1	0		
5-19	2	0	0	2	0			0			2			2	0		
MAY	13	0	1	12	0	0	0	0	0	0	9	0	1	12	0	0	0
CUM/MAY	3388	157	1223	2008	14	12	2	34	32	2	3165	157	1110	1902	171	69	102

Appendix B-4 2004 Spring Chinook Return Disposition

	TRAPPED			SAC/MORT			RELEASED UPSTREAM			RELEASED @ DAM			BROOD		
DATE	TOTAL	AD	JK	TOTAL	AD	JK	TOTAL	AD	JK	TOTAL	AD	JK	TOTAL	AD	JK
3-27	1	1	0	0			0			1	1		0		
3-29	2	2	0	0			0			2	2		0		
3-30	1	1	0	0			0			1	1		0		
3-31	2	2	0	0			0			2	2		0		
MAR	6	6	0	0	0	0	0	0	0	6	6	0	0	0	0
4-02	1	1	0	0			0			1	1		0		
4-09	1	1	0	0			0			1	1		0		
4-12	1	1	0	0			0			1	1		0		
4-14	2	2	0	0			0			2	2		0		
4-15	5	5	0	0			0			5	5		0		
4-16	10	10	0	0			0			10	10		0		
4-17	3	3	0	0			0			3	3		0		
4-18	2	2	0	0			0			2	2		0		
4-20	14	14	0	0			0			0			14	14	
4-21	13	13	0	0			0			0			13	13	
4-22	30	30	0	0			0			6	6		24	24	
4-23	25	25	0	0			0			6	6		19	19	
4-24	28	28	0	0			0			6	6		22	22	
4-25	32	32	0	0			0			21	21		11	11	
4-26	81	81	0	0			0			33	33		48	48	
4-27	72	72	0	0			0			57	57		15	15	
4-28	73	73	0	0			0			73	73		0		
4-29	86	86	0	0			0			86	86		0		
4-30	66	66	0	0			0			66	66		0		
APR	545	545	0	0	0	0	0	0	0	379	379	0	166	166	0
CUM/APR	551	551	0	0	0	0	0	0	0	385	385	0	166	166	0
5-01	55	55	0	0			0			55	55		0		
5-02	59	59	0	0			0			59	59		0		
5-03	58	57	1	0			0			2	2		56	55	1
5-04	36	35	1	0			0			9	9		27	26	1
5-05	138	137	1	2	2		0			47	47		89	88	1
5-06	165	165	0	0			0			68	68		97	97	
5-07	191	188	3	2	1	1	0			153	153		36	34	2
5-08	66	66	0	0			0			66	66		0		
5-09	110	110	0	0			0			110	110		0		
5-10	65	65	0	0			0			65	65		0		
5-11	45	44	1	0			0			45	44	1	0		
5-12	119	118	1	0			0			119	118	1	0		
5-13	86	83	3	0			0			86	83	3	0		
5-14	241	238	3	0			0			241	238	3	0		
5-15	293	283	10	0			0			293	283	10	0		
5-16	190	172	18	0			0			190	172	18	0		
5-17	104	87	17	1		1	0			29	25	4	74	62	12
5-18	97	71	26	6		6	0			37	17	20	54	54	
5-19	90	76	14	2		2	0			34	23	11	54	53	1
5-20	52	40	12	4		4	0			16	13	3	32	27	5
5-21	48	32	16	4		4	0			23	16	7	21	16	5
5-22	46	30	16	0			0			32	16	16	14	14	
5-24	47	27	20	9		9	0			25	14	11	13	13	
MAY	2401	2238	163	30	3	27	0	0	0	1804	1696	108	567	539	28
CUM/MAY	2952	2789	163	30	3	27	0	0	0	2189	2081	108	733	705	28
6-02	70	37	33	7		7	0			45	19	26	18	18	
6-03	108	61	47	2		2	0			47	23	24	59	38	21
6-04	26	18	8	1		1	0			19	12	7	6	6	
6-06	27	18	9	0			0			24	15	9	3	3	
6-09	18	15	3	0			13	10	3	0			5	5	
6-11	10	8	2	1		1	6	5	1	0			3	3	
6-15	9	8	1	0			7	6	1	0			2	2	
6-17	2	1	1	0			2	1	1	0			0		
6-18	3	3	0	0			3	3		0			0		
6-21	2	1	1	0			2	1	1	0			0		
6-23	1	1	0	0			1	1		0			0		
6-25	1	0	1	0			1		1	0			0		
6-28	2	2	0	0			2	2		0			0		
JUN	279	173	106	11	0	11	37	29	8	135	69	66	96	75	21
CUM/JUN	3231	2962	269	41	3	38	37	29	8	2324	2150	174	829	780	49
7-06	3	2	1	1	1		2	1	1	0			0		
7-08	2	2	0	1	1		1	1		0			0		
JUL	5	4	1	2	2	0	3	2	1	0	0	0	0	0	0
CUM/JUL	3236	2966	270	43	5	38	40	31	9	2324	2150	174	829	780	49

Dates in BOLD - fish listed as brood went to SFWW for Walla Walla outplanting.
4-26 fish were collected for both brood (N = 8) and outplanting (N=40)
5-6 fish were collected for both brood (N = 37) and outplanting (N = 60)
5-20 fish were collected for both brood (N = 21) and outplanting (N=11)
6-03 fish were collected for both brood (N = 51) and outplanting (N = 8)
6-04 fish were collected for both brood (N = 3) and outplanting (N = 3)

Appendix C. 2003 - 2004 Adult Transportation Summary

DATE	LOADING SITE	LOADING TEMP	RELEASE SITE	RELEASE TEMP	NUMBER HAULED	MORTS	LIBERATION UNIT
09/18/03	3MD	59	MINTHORN	51	2	0	TRAILER
09/29/03	3MD	60	MINTHORN	60	3	0	TRAILER
10/02/03	3MD	58	MINTHORN	55	9	0	TRAILER
10/04/03	3MD	60	MINTHORN	58	3	0	TRAILER
11/05/03	RINGOLD	58	YOAKUM	42	100	0	CTUIRTANKER
11/05/03	RINGOLD	58	YOAKUM	42	170	0	ODFWTANKER
11/07/03	RINGOLD	58	YOAKUM	41	140	0	ODFWTANKER
11/07/03	RINGOLD	58	YOAKUM	41	162	0	CTUIRTANKER
11/10/03	3MD	41	MINTHORN	50	2	0	TRAILER
11/12/03	3MD	42	MINTHORN	50	3	0	TRAILER
11/13/03	RINGOLD	58	YOAKUM	41	100	0	ODFWTANKER
11/13/03	RINGOLD	58	YOAKUM	41	65	0	CTUIRTANKER
12/01/03	3MD	46	MINTHORN	44	11	0	TRAILER
12/17/03	3MD	42	MINTHORN	48	5	0	TRAILER
1/28/04	3MD	41	MINTHORN	44	19	0	TRAILER
2/09/04	3MD	40	MINTHORN	42	5	0	TRAILER
2/12/04	3MD	41	MINTHORN	42	4	0	TRAILER
2/24/04	3MD	40	MINTHORN	43	3	0	TRAILER
3/08/04	3MD	44	MINTHORN	48	7	0	TRAILER
3/09/04	3MD	44	MINTHORN	48	2	0	TRAILER
3/11/04	3MD	43	MINTHORN	45	8	0	TRAILER
3/22/04	3MD	44	MINTHORN	47	8	0	TRAILER
3/23/04	3MD	45	MINTHORN	48	8	0	TRAILER
4/05/04	3MD	48	MINTHORN	48	6	0	TRAILER
4/09/04	3MD	46	MINTHORN	48	2	0	TRAILER
420/04	3MD	52	MINTHORN	51	5	0	TRAILER
4/20/04	3MD	52	SFWW	47	14	0	CTUIRTANKER
4/21/04	3MD	52	SFWW	47	13	0	CTUIRTANKER
4/22/04	3MD	50	SFWW	46	25	0	CTUIRTANKER
4/23/04	3MD	51	SFWW	45	19	0	ODFWTANKER
4/24/04	3MD	51	SFWW	43	22	0	ODFWTANKER
4/25/04	3MD	56	SFWW	51	11	0	CTUIRTANKER
4/26/04	3MD	54	SFWW	48	48	0	ODFWTANKER
4/27/04	3MD	56	SFWW	51	15	0	CTUIRTANKER
5/03/04	3MD	62	SFWW	50	56	0	CTUIRTANKER
5/04/04	3MD	63	SFWW	50	26	0	CTUIRTANKER
5/05/04	3MD	60	SFWW	50	89	0	CTUIRTANKER
5/06/04	3MD	59	SFWW	52	97	0	CTUIRTANKER
5/07/04	3MD	58	SFWW	52	36	0	CTUIRTANKER
5/17/04	3MD	57	SFWW	50	73	0	CTUIRTANKER
5/18/04	3MD	58	SFWW	50	54	0	CTUIRTANKER
5/19/04	3MD	56	SFWW	50	52	0	CTUIRTANKER
5/20/04	3MD	58	SFWW	49	32	0	ODFWTANKER
5/21/04	3MD	58	SFWW	46	21	0	CTUIRTANKER
5/22/04	3MD	59	SFWW	48	14	0	CTUIRTANKER
5/24/04	3MD	58	SFWW	50	13	0	CTUIRTANKER

Appendix C. 2003 - 2004 Adult Transportation Summary

DATE	LOADING SITE	LOADING TEMP	RELEASE SITE	RELEASE TEMP	NUMBER HAULED	MORTS	LIBERATION UNIT
6/02/04	3MD	59	SFWW	51	18	0	CTUIRTANKER
6/03/04	3MD	60	SFWW	51	59	0	ODFWTANKER
6/04/04	3MD	64	SFWW	53	6	0	ODFWTANKER
6/06/04	3MD	63	SFWW	52	3	0	ODFWTANKER
6/09/04	3MD	65	ODFWBR	55	15	0	ODFWTANKER
6/09/04	3MD	65	SFWW	52	5	0	ODFWTANKER
6/11/04	3MD	58	SFWW	52	3	0	ODFWTANKER
6/11/04	3MD	58	ODFWBR	55	9	0	ODFWTANKER
6/15/04	3MD	62	ODFWBR	55	17	0	ODFWTANKER
6/15/04	3MD	63	SFWW	52	2	0	ODFWTANKER
6/17/04	3MD	58	THORNHOLLOW	59	4	0	TRAILER
6/18/04	3MD	64	THORNHOLLOW	61	6	0	TRAILER
6/21/04	3MD	70	THORNHOLLOW	62	2	0	TRAILER
6/23/04	3MD	72	THORNHOLLOW	68	2	0	TRAILER
6/25/04	3MD	73	THORNHOLLOW	68	2	0	TRAILER
6/28/04	3MD	73	THORNHOLLOW	66	2	0	TRAILER
7/01/04	3MD	74	BEAR CR.	58	3	0	TRAILER
7/06/04	3MD	75	BEAR CR.	58	3	0	TRAILER
7/08/04	3MD	68	BEAR CR.	58	1	0	TRAILER
8/10/04	SFWW	53	SFWWR	54	118	0	CTUIRTANKER
8/10/04	SFWW	53	SFWWR	53	115	0	CTUIRTANKER
8/24/04	3MD	66	BEAR CR.	58	2	0	TRAILER

Appendix D. 2004 Juvenile Transportation Summary

DATE	LOADING SITE	LOADING TEMP	RELEASE SITE	RELEASE TEMP	POUNDS HAULED	LIBERATION UNIT
7/07/04	Westland	64	Umatilla BR	67	3	Trailer
7/09/04	Westland	65	Umatilla BR	68	14	Trailer
7/12/04	Westland	64	Umatilla BR	70	23	Trailer
7/15/04	Westland	64	Umatilla BR	74	4	Trailer

URBR - Umatilla River Boat Ramp

APPENDIX E: 2003-2004 UMATILLA HATCHERY AND BASIN AOP

currently unavailable