

Priest Rapids Complex John Day Mitigation Operations and Maintenance Annual Report Reporting Period July 1, 2010 to June 30, 2011



by Mike Lewis, Glen Pearson,
and Mike Erickson



Washington Department of
FISH AND WILDLIFE
Fish Program
Hatcheries Division

STATE OF WASHINGTON
DEPARTMENT OF FISH AND WILDLIFE

**PRIEST RAPIDS COMPLEX
JOHN DAY MITIGATION**

**OPERATIONS AND MAINTENANCE
ANNUAL REPORT**
July 1, 2010 – June 30, 2011



Prepared For
U.S. Army Corps of Engineers

By

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Introduction

The U.S. Army Corps of Engineers (USACE) is required to provide mitigation for the loss of fall Chinook salmon spawning habitat caused by the inundation associated with the construction and operation of John Day and The Dalles dams. Specifically, the USACE funds hatchery production of upriver-bright (URB) and tule fall Chinook smolts to replace lost natural production. This hatchery production is known as John Day/The Dalles Mitigation (JDM).

In 1992, the Washington Department of Fish and Wildlife (WDFW) and the USACE, in agreement with Grant County Public Utility District (GCPUD), began rearing and releasing 1.7 million JDM fall Chinook salmon at the Priest Rapids Hatchery (PRH). USACE funding for this program initially was limited to purchasing fish food.

In 1996, a cooperative agreement was signed by USACE, WDFW, the National Marine Fisheries Service (NMFS) and U.S. Bureau of Reclamation (USBR) to share the facilities at Ringold Springs Rearing Facility (RSRF) to increase JDM fall Chinook salmon releases upstream of McNary Dam and the Snake River. The USACE agreed to provide funds to transfer 3.5 million (M) pre-smolts from Bonneville Hatchery (operated by Oregon Dept. of Fish & Wildlife) and to acclimate and release them at RSRF. Subsequent releases demonstrated that RSRF could successfully rear fall Chinook smolts for the JDM program. The RSRF program continues today at the existing capacity, which ranges from 3.5 to 5.5M fall Chinook smolts, depending on fish size. However, the abundant gravity water supply will support substantially more capacity and is currently being studied by USACE for expansion.

In May 2008, Washington, Oregon, Idaho, federal fishery agencies, and the treaty tribes agreed to a new, *U.S. v. Oregon* 10-year Columbia River Fish Management Plan (CRFMP), which is a detailed harvest and hatchery fish production plan. The CRFMP parties jointly develop harvest sharing and hatchery management plans that are entered as orders of the court and are binding on the parties.

In 2009, the WDFW entered into a new funding agreement with the USACE for the production of upriver bright (URB) fall Chinook salmon at both PRH and RSRF. WDFW will produce JDM fish for USACE provided adequate funding, eggs and PRH hatchery space are available annually. Current goals at PRH include rearing and releasing approximately 1.7M smolts on-station. Also, the Hatchery Scientific Review Group (HSRG) finalized their work on the mainstem Columbia River and recommended that the PRH broodstock be used for the RSRF program rather than Bonneville Hatchery mid-Columbia bright fall Chinook. PRH has been trapping adults, spawning, incubating and transferring approximately 3.7M eyed eggs to Bonneville Hatchery for the RSRF program since the fall of 2008.

Project Location



Figure 1. Project Area Map.

The Hanford Reach is a 56-mile segment of the Columbia River located between the upstream end of McNary Dam reservoir and Priest Rapids Dam. It is the only sizeable unimpounded reach of the mainstem Columbia River upstream of Bonneville Dam. Fall Chinook salmon continued to successfully use Hanford Reach spawning and rearing habitat as other production areas became inundated by reservoirs. The Hanford Reach contains the most significant area of URB fall Chinook salmon production in the mainstem Columbia River and are considered a higher quality food fish compared to the lower Columbia River tule fall Chinook salmon.

Broodstock collection, adult holding, spawning, incubation, rearing, and release occur at the PRH on the Columbia River at river mile (RM) 397. Release of sub-yearling smolts from the RSRF is at river mile (RM) 352.

Facilities



Figure 2. RSRF shop and residence, 9-acre pond, vinyl raceways, and fish trap.

The RSRF 9-acre earthen rearing pond gravity water supply is primarily from the “18-inch Diversion” and “Lower Diversion”, which divert spring water collected in the ditch along the upstream side of the Ringold Road visible in Fig. 2. The pond has one outlet with direct discharge into the hatchery creek (visible at right). Visible above the 9-acre pond are the 14 vinyl raceways. The gravity water supply for the vinyl raceways comes from the “Main Diversion”, which also diverts from the collection ditch above the county road. The raceways can provide reuse for the 9-acre pond or discharge directly into the hatchery outlet creek. These ponds are in need of replacement.



Figure 3. RSRF 9-acre pond, outlet structure, fish trap, 2 concrete raceways and 32 blue round tanks.

RSRF's adult fish trap consists of two picket weirs constructed in the hatchery outlet creek (visible in Fig. 3). The downstream weir has a vee-shaped fish entrance which allows upstream movement of fish while preventing downstream movement.

Two concrete raceways are located next to an array of blue plastic round tanks. The concrete raceways were constructed with USACE funding following the signing of the 1996 cooperative agreement. The original purpose was to study the relative smolt-to-adult survival of fall Chinook produced in concrete raceways compared to the 9-acre earthen rearing pond. These raceways are still used primarily for fall Chinook and the round tanks are primarily used for warm water species. The water supply for all these rearing vessels comes from the Lower Diversion.



Figure 4. RSRF – Walter’s Ponds and the 5-Acre Pond (upper left), USBR Ringold irrigation wasteway (center), and the five Meseberg warmwater ponds (right).

Ringold’s 5-acre rearing pond is a horseshoe-shaped earthen pond. The gravity water supply, known as the “Steelhead Diversion”, is also located next to the county road, but is separate from the RSRF Main Diversion and Lower Diversion. This pond has a concrete flume downstream of the outlet structure which allows the use of an electronic fish counter for enumerating steelhead smolts at release.

The Meseberg Warm Water facility has 5 rearing ponds. The water supply for these ponds comes from the Lower Diversion. Two of these ponds are lined and the others have earth bottoms.



Figure 5. Priest Rapids Hatchery and the original spawning channel.

The original spawning channel at PRH was constructed to voluntarily attract adult fall Chinook and provide natural spawning habitat. Fish failed to use the channel as designed and this resulted in modifications to the channel and ultimately 5 rearing ponds were constructed in the upper end of the channel. These ponds are used today for Grant County PUD's mitigation obligation as well as rearing 1.7M fall Chinook for the USACE.

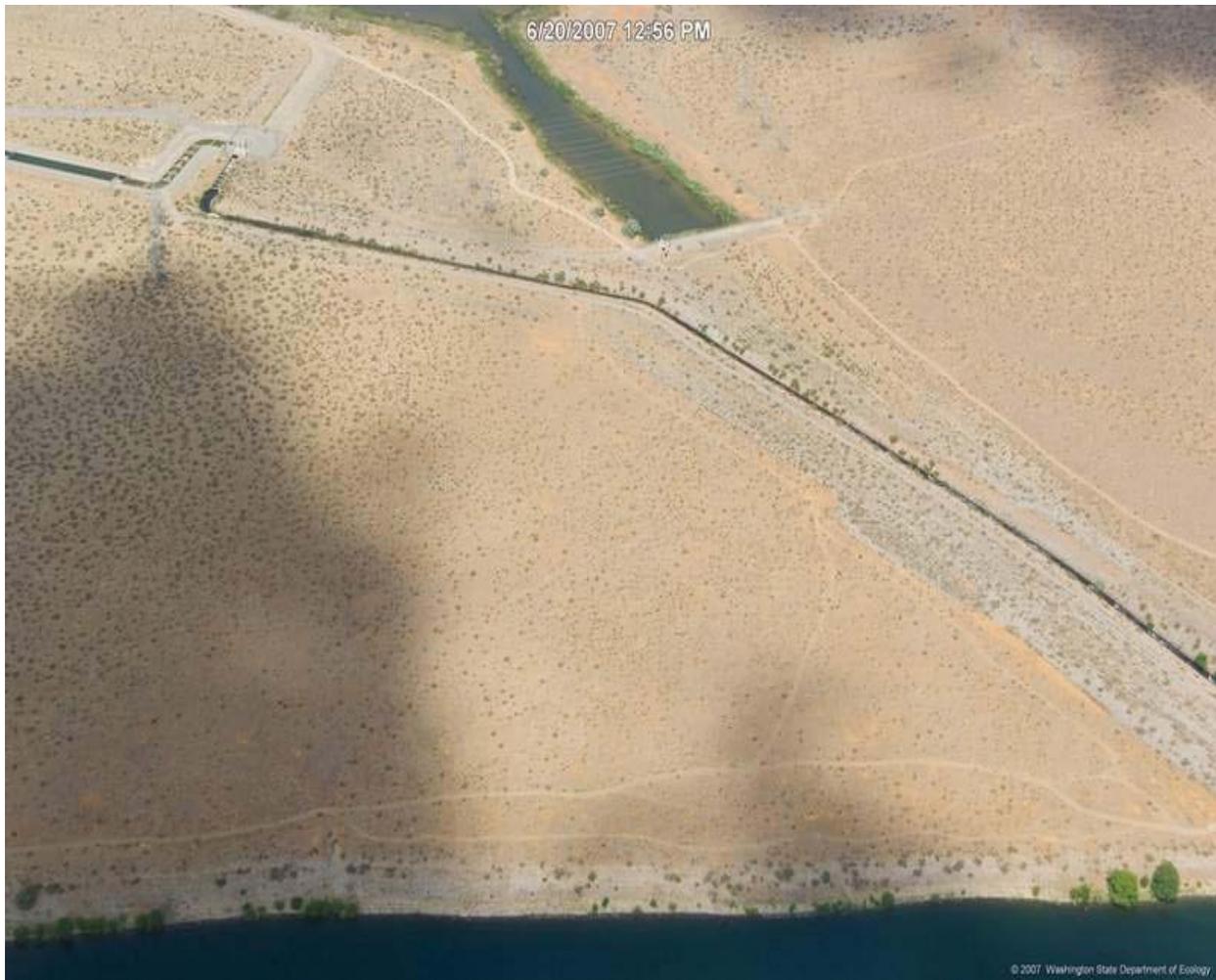


Figure 6. Existing volunteer trap at Priest Rapids Hatchery on Jackson Creek outlet channel.

The adult volunteer trap at PRH is located on the Jackson Creek hatchery outlet channel about one mile from the Columbia River and consists of a barrier weir at the upper end and a finger weir at the lower end.



Figure 7. Jackson Creek (hatchery outlet and adult volunteer channel) at Columbia River mile 397.

Fish Culture Activities (PRH)

Adult Trapping and Brood Stock

The 2010 trapping season occurred at two locations: 1) the Jackson Creek volunteer trap, and 2) at the Priest Rapids Dam Off-Ladder Adult Fish Trap (OLAFT), which is located on the east side of the dam. The OLAFT's primary function is to conduct research for migrating adult salmon and steelhead, however it is also being used to trap natural-origin broodstock for the hatchery.

The 2010 PRH fall Chinook collection at the volunteer trap consisted of 16,621 adults and 2,682 jacks (Appendix 1). Fish were held in two channel ponds and the season mortality was 1,649 (9.9%).

The 2010 PRH fall Chinook collection at the OLAF T consisted of 162 adults and 6 jacks. These fish were held in the same ponds with the hatchery volunteer returns and the season mortality was 12 fish (7.4%).

Total egg take was 12.9M green eggs. A total of 7.0M eyed eggs were retained for all the PRH programs, including the 1.7M smolt on-site JDM production. A total of 3.7M eyed eggs were shipped to Bonneville Hatchery for the RSRF JDM program.

Table 1. Spawning Summary.

DATE SPAWNED	NUMBER OF EGGS TAKEN	NUMBER OF MALES	NUMBER OF FEMALES	NUMBER OF JACKS
10/25/10	288,565	86	83	1
11/01/10	1,334,849	186	356	5
11/08/10	2,015,686	266	526	2
11/09/10	2,405,697	320	636	7
11/15/10	3,362,900	400	889	14
11/16/10	565,042	45	153	3
11/22/10	2,605,589	359	746	26
11/30/10	321,393	94	94	6
TOTAL	12,889,721	1,756	3,485	64

NOTE: 176 non-viable females are included in this table.

Rearing Summary

In addition to GCPUD hatchery production, 1,719,992 USACE - JDM fish were reared and released from the channel ponds June 15 - 23, 2011. They averaged 46.6 fish per pound (FPP), for a total of 36,910 pounds planted. These fish were adipose fin-clipped and 998 fish were PIT tagged by USFWS prior to release. Predation from birds was typical, with hazing efforts doing little to deter aggressive feeding behavior. Fish loss due to bird predation was estimated at 7,560.

Table 2. Production Summary

Fry Poned

Total number of fry poned	1,725,167
Total pounds of fry poned	1,725 lbs.

Rearing to Fingerling Stage

Number of sub-yearling smolts released	1,719,992
Total pounds released	36,910
Percent survival from ponding to release	97.7
Average size (fish/lbs.)	46.6

Food Fed and Weight Gain

Total pounds of food fed	20,407
Conversion rate	0.58 to 1
Total pounds gained	35,185

Length Frequency Data (Average)

Mean (mm.)	92.44
Standard Deviation	8.43
Coefficient of Variation	9.13

Fish Health Summary

On March 25, 2011, the Fish Health Specialist (FHS) examined 8 fish from channel pond 6. No external lesions or parasites were observed. Gills were clear of bacteria or parasites and internal organs were normal. The overall diagnosis was that the BY10 fish were “healthy”.

On April 18, 2011, the FHS examined 10 fish from channel pond 3. Five were emaciated and small, other fish were normal in size. Gills were normal without bacteria or parasites. Smaller fish had very little to no body fat, in contrast to large fish. Overall diagnosis of fish was “in general, healthy”. It was recommended to monitor mortality more closely.

On June 6, 2011, the FHS examined 9 fish from channel pond 3, the last health check before release. No external parasites were found. A few fish with external fungus and tail fin erosion were observed. Gills were clear of bacteria or parasites and internal organs were normal. The overall diagnosis of fish was “healthy” and the FHS recommended to release fish as planned.

Release Summary

Fish releases occurred between June 15 and June 23, 2011. Table 3 provides data specific to rearing pond, dates, number of fish released, weight of the fish, and fish size. All fish released from PRH are volitionally released through the hatchery outlet channel (i.e. Jackson Creek).

Table 3. 2011 PRH Release Summary

POND	DATE	LOCATION	NUMBER	WEIGHT	FISH / LB.
C6	6/15/11	Columbia R.	1,572,800	32,903	47.8
C5	6/17/11	Columbia R.	1,083,117	23,857	45.4
C4	6/19/11	Columbia R.	1,251,433	27,087	46.2
C3	6/21/11	Columbia R.	1,402,960	30,236	46.4
C2	6/23/11	Columbia R.	1,488,080	23,682	48.5
	TOTALS		6,798,390	137,765	46.6

Note: This table includes releases for both the USACE's and GCPUD's programs.

Fish Culture Activities (RSRF)

Adult Trapping and Brood Stock

Trapping of adults was done at the hatchery on a daily basis from the first of October through the end of November, 2010 for the collection of adult fall Chinook. RSRF fish move volitionally through a picket weir (with a V-notch) into Spring Creek Channel where an upstream picket weir contains the adults. Weekly efforts (see appendix 1) to collect the adults from the trap consist of seining the fish to one corner of the trap and sorting them by gender into totes. Sampling of each fish is done by a crew checking for a coded wire tag and any visual marks. The fish are categorized as AD-ONLY, AD+CWT, CWT-ONLY and UM (unmarked). Scales and lengths were collected to be analyzed from every twentieth fish to determine the age class and to gain knowledge of an average fork length for each age class. All fall Chinook that return to RSRF are donated, meaning none of the returns are used as broodstock. Initially the preferred broodstock for the program was Bonneville Hatchery URB fall Chinook, but it was switched to Priest Rapids/Hanford Reach stock in 2008. This broodstock was selected because it had characteristics more desirable for Columbia River and the Hanford Reach.

The return of 7,644 adults and 1,305 jacks were trapped at Ringold Springs. Mortality was disposed of in the local landfill and the remainder donated. One female donated to Washington Department of Health and the rest donated by contract to Northwest Harvest.

Brood information relative to origin, fish size, and condition can be found in the 2010 M&E report.

Table 4. RSRF Trapping Summary

Adults	Males	Females	Jacks
Mortality	68	56	37
Carcass Distribution	5,898	1,622	1,268
Total	5,966	1,678	1,305

Rearing Summary

In May 2011 we received 3,624,285 Priest Rapids stock Fall Chinook at \approx 125 FPP from Bonneville Fish Hatchery. The fish were distributed into two rearing ponds, the 9-acre pond received 2,546,635 and the 5-acre received 1,077,650. The fish started their diet on Bio Clarks Fry 1.2 with an additive of TM 100 (oxytetracycline) to aid as a preventative treatment against botulism for the first 14 days. They were sampled often and a computerized growth projection program assisted in establishing the feeding rate. Fish releases occurred from the 9 and 5-acre ponds on Jun 23rd thru July 6th 2011. These fish were 100% adipose marked.

Staff put forth great efforts deterring avian predators. In addition the use of propane cannons, electric fence around the perimeter of the ponds, hand held revolvers that project screamers and bird bangers were used to help reduce avian predation as well. High losses are directly related to avian predation. Fish health has been excellent and growth has been consistent with the projected estimates.

Table 5. Production Summary

Fry Poned

Total number of fry poned	3,624,285
Total pounds of fry poned	28,994 lbs.

Rearing to Fingerling Stage

Number of fingerlings released	3,476,945
Total pounds of fingerlings released	59,979
Percent survival from ponding to release	95.9
Average size (fish/lb.) of fingerlings released	58.0

Food Fed and Weight Gain

Total pounds of food fed	23,144
Conversion rate	0.75 to 1
Total pounds of gain	30,985

Length Frequency Data (Average)

Mean (mm.)	91.80
Standard Deviation	5.651
Coefficient of Variation	6.16

Fish Health Summary

On May 31, 2011 the Fish health Specialist examined 6 fish from both the 9-acre and the 5-acre ponds. No external parasites or lesions were found. Gills were normal without bacteria or parasites and internal organs were normal. The overall diagnosis of fish was “Healthy”. It was recommended to release fish as planned.

Maintenance and Capital Projects

Work Performed by WDFW Maintenance Crew

1. Replaced the original (circa early 1960’s) RSRF wood and steel Main Diversion at RSRF with a new concrete structure. The old structure could have suffered catastrophic failure at any time.
2. Replaced and installed new doors and windows on the RSRF office.
3. The maintenance crew installed new flow meters on the water supply pipelines for all four gravity diversions.

Work Performed by the RSRF Staff

1. Spread additional gravel around trap area.
2. Cleared trees and vegetation from around RSRF’s Main Intake above-ground pipeline.
3. In-stream work removing aquatic vegetation and silt in the primary spring water collection ditch along the county road.
4. Continued noxious weed spraying efforts.
5. Applied calcium chloride in front of RSRF shop and office to control dust.
6. Supported trap bank with ecology blocks to eliminate erosion.
7. Poured concrete slab and built dividers to improve fish handling efficiency at the adult

trap.

8. Built dock on the 9-acre pond to aid in discharging fish into a deeper column of water and serve as a working platform for crew to sample fish.
9. Tractor disking of both dewatered earthen rearing ponds for disease and weed control.
10. Regular maintenance to earthen pond outlet structure drum screens and stop logs.
11. Built “hot wire” electric fence around 9-acre ponds to deter wading bird predation.

Summary

The hatchery operations during this reporting period should be considered typical for these facilities. The 2011 fall Chinook handled the release extremely well. The extremely large earthen ponds at RSRF continue to be challenging to staff in preventing avian predation. We will continue normal fish culture practices to include frequent growth sampling and monitoring feed practices, adjusting as needed.

Expenditures (PRH)

Priest Rapids Hatchery July 1, 2010 – December 31, 2010

Program 050 - 05000-Fish

Object A - Salaries and Wages

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name	Amount												

Object A - Salaries and Wages

Activity:	Period
	62,672.12

Object B - Employee Benefits

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name	Amount												

Object B - Employee Benefits

Activity:	Period
	24,096.90

Object E - Goods and Services

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name	Amount												

Object E - Goods and Services

Activity:	Period
	27,912.41

Object G - Travel

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name	Amount												

Object G - Travel

Activity:	Period
	440.77

Object J - Capital Outlays

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name	Amount												

Object J - Capital Outlays

Activity:	Period
	42.61

Program 050 - 05000-Fish

Activity:	Period
	115,164.81

Total All Activity:	115,164.81
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Expenditures (PRH)

Priest Rapids Hatchery January 1, 2011 – June 30, 2011

Program 050 - 05000-Fish

Object A - Salaries and Wages

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name													
		Amount													

Object A - Salaries and Wages

Activity:

Period
57,821.47

Object B - Employee Benefits

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name													
		Amount													

Object B - Employee Benefits

Activity:

Period
21,687.74

Object E - Goods and Services

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name													
		Amount													

Object E - Goods and Services

Activity:

129,296.38

Period

Object G - Travel

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name													
		Amount													

Object G - Travel

Activity:

Period
1,012.89

Object J - Capital Outlays

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name													
		Amount													

Object J - Capital Outlays

Activity:

Period
1,401.04

Program 050 - 05000-Fish

Activity:

Period
211,219.52

Total All Activity:

211,219.52

Budgets (RSRF)

RINGOLD SPRINGS REARING FACILITY OPERATIONS AND MAINTENANCE BUDGET REQUEST July 1, 2010 through June 30, 2011							
				Direct	Indirect	Grand Total	
A. Salaries							
	Complex Manager	.5 MM	Pos # 70068842	300	65		
	Hatchery Specialist 4	2.5 MM	Pos # 70068703	10,866	2,367		
	Hatchery Specialist 3	3.5 MM	Pos # 70068705	13,117	2,857		
	Hatchery Specialist 2	3.5 MM	Pos # 70069141	11,336	2,469		
			Salaries SubTotal	35,619	7,758		43,377
B. Benefits							
	Complex Manager	3 MM	Pos # 70068842	125	27		
	Hatchery Specialist 4	4 MM	Pos # 70068703	4,202	915		
	Hatchery Specialist 3	4 MM	Pos # 70068705	4,945	1,077		
	Hatchery Specialist 2	4 MM	Pos # 70069141	4,404	959		
			Benefits SubTotal	13,676	2,979		16,655
E. Goods and Services							
	Supplies and Materials			6,707	1,461		
	Communications			2,000	436		
	Utilities			2,731	595		
	Repairs and Maintenance			4,145	903		
	Vehicle Milage			4,500	980		
			SubTotal	20,083	4,374		
	Fish Feed			28,000	N/A		
			Goods & Services SubTotal	48,083	4,374		52,457
G. Travel							
	Lodging, Per Diem, and Mileage			0	0		
			Travel SubTotal	0	0		0
J. Capital Equipment							
	Vehicle purchase			0	N/A		
	Micro scope (Fish Health)			0	N/A		
			Capital Projects and Equipment SubTotal	0	N/A		0
K. Contract Services							
	Computer rental			0	0		
			Contract Services SubTotal	0	0		0
T. Overhead							
	21.78% of Total Excluding Fish Food and Capital Projects				15,111		
			GRAND TOTAL	97,378	15,111		112,489

Figure 9. Ringold Springs Operating Budget

Expenditures (RSRF)

Ringold Springs Rearing Facility July 1, 2010 – December 31, 2010

Program 050 - 05000-Fish

Object A - Salaries and Wages

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
													Period		
Vendor Name Amount													18,554.19		
=															

Object A - Salaries and Wages

Activity:

Object B - Employee Benefits

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
													Period		
Vendor Name Amount													7,161.44		

Activity:

Object E - Goods and Services

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
													Period		
Vendor Name Amount													4,693.91		

Activity:

Object J - Capital Outlays

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
													Period		
Vendor Name Amount													84.37		

Activity:

Program 050 - 05000-Fish

Activity: Period
30,493.91

Total All Activity: 30,493.91

Expenditures (RSRF)

Ringold Springs Rearing Facility January 1, 2011 – June 30, 2011

Program 050 - 05000-Fish

Object A - Salaries and Wages

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name Amount													

Object A - Salaries and Wages

Activity:	Period
	19,922.28

Object B - Employee Benefits

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name Amount													

Object B - Employee Benefits

Activity:	Period
	7,897.54

Object E - Goods and Services

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name Amount													

Object E - Goods and Services

Activity:	Period
	31,266.37

Object J - Capital Outlays

FM	DocDate	Cur Doc No	Ref Doc No	BT	B#	TC	Acct	EAI	PI	SO	SSO	OI	Proj	SP	PH
		Vendor Name Amount													

Object J - Capital Outlays

Activity:	Period
	39.47

Program 050 - 05000-Fish

Activity:	Period
	59,125.66

Total All Activity:	59,125.66
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Appendix 1: Weekly Escapement Estimates

Table 6. Escapement Estimates for Priest Rapids Hatchery Fall Chinook

Stock_ID	Date of report	Lethal Spawned	Adults Shipped	Mortality	On hand	Jack total	Comments
Priest Rapids	22-Sep-10	0	1223	10	911	454	First report of the season.
Priest Rapids	29-Sep-10	0	2663	85	1283	896	
Priest Rapids	6-Oct-10	0	4260	85	1858	1305	
Unknown	6-Oct-10	0	0	0	153	6	
Priest Rapids	13-Oct-10	0	5953	300	2591	1821	
Unknown	13-Oct-10	0	0	0	173	6	
Priest Rapids	20-Oct-10	0	7455	410	3576	2327	Trapped at Priest Rapids Hatchery.
Unknown	20-Oct-10	0	0	0	181	6	Trapped at Priest Rapids East Ladder.
Priest Rapids	27-Oct-10	170	8593	562	4085	2520	Trapped at Priest Rapids Hatchery.
Unknown	27-Oct-10	0	0	0	182	0	Trapped at Priest Rapids East Ladder.
Priest Rapids	3-Nov-10	687	9317	687	4049	2635	Trapped at Priest Rapids Hatchery.
Unknown	3-Nov-10	25	0	0	165	6	Trapped at Priest Rapids East Ladder.
Priest Rapids	17-Nov-10	3781	9324	1142	1957	2666	Trapped at Priest Rapids East Ladder.
Unknown	17-Nov-10	85	0	0	105	6	Trapped at Priest Rapids East Ladder.
Priest Rapids	24-Nov-10	4918	9324	1334	796	2677	Trapped at Priest Rapids East Ladder.
Unknown	24-Nov-10	132	0	6	72	6	Released above Priest Rapids Dam.
Priest Rapids	1-Dec-10	5119	9853	1649	0	2682	Trapped at Priest Rapids East Ladder.
Unknown	1-Dec-10	150	0	12	0	6	Released above Priest Rapids Dam.
Priest Rapids	8-Dec-10	5119	9853	1649	0	2682	Trapped at Priest Rapids Hatchery. Final in-season estimate.
Unknown	8-Dec-10	150	0	12	0	6	Trapped at Priest Rapids Dam East Ladder. Final in-season

Table 7. Escapement Estimates for Ringold Springs Rearing Facility Fall Chinook

Stock_ID	Date of report	Adults Shipped	Mortality	On hand	Jack total	Total Eggtake	Comments
Priest Rapids	13-Oct-10	0	0	0	0	0	First report of the season.
Priest Rapids	27-Oct-10	2606	0	0	0	0	
Priest Rapids	3-Nov-10	5232	8	0	992	0	
Bonneville	10-Nov-10	6955	9	0	0	0	First report of the season.
Priest Rapids	10-Nov-10	0	0	0	1174	0	
Bonneville	17-Nov-10	7480	37	0	0	0	
Priest Rapids	17-Nov-10	0	9	0	1265	0	
Bonneville	24-Nov-10	7522	76	0	0	0	
Priest Rapids	24-Nov-10	0	13	0	1268	0	
Bonneville	1-Dec-10	7522	84	0	0	0	
Priest Rapids	1-Dec-10	0	16	0	1268	0	
Bonneville	8-Dec-10	7551	113	0	0	0	Final in-season estimate.
Priest Rapids	8-Dec-10	0	27	0	1278	0	Final in-season estimate.
Bonneville	9-Dec-10	7523	118	0	0	0	Final in-season estimate.
Priest Rapids	9-Dec-10	0	37	0	1268	0	Final in-season estimate.



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