

Washington Department of Fish & Wildlife  
**PRIEST RAPIDS HATCHERY**  
Funded by Grant County Public Utility District  
And  
U.S. Army Corps of Engineers

# **OPERATIONS AND MAINTENANCE ANNUAL REPORT**

Reporting Period July 1, 2013 to June 30, 2014



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# Introduction

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Priest Rapids Hatchery (PRH) was designed as a mitigation facility for fall Chinook after Priest Rapids and Wanapum Dams were constructed, and is funded by the Grant County Public Utility District (GCPUD) and by the U.S. Army Corps of Engineers (USACE) for the John Day Mitigation (JDM) portion of the production. It has been in continuous operation since September 1963, and is operated by the Washington Department of Fish and Wildlife (WDFW). It is part of the WDFW's Priest Rapids Hatchery Complex, which also includes the Ringold, Meseberg, Naches and Columbia Basin hatcheries.

The annual release goal for GCPUD in 2014 is 5.6 million sub-yearling smolts (at a target size of 50 fish per pound or fpp) or 112,000 pounds. All of the trapping, spawning and rearing takes place at Priest Rapids Hatchery. Beginning in 1992, 1.7 million sub-yearling fall Chinook (50 fpp) smolts have also been reared and released at Priest Rapids Hatchery as part of USACE John Day Mitigation. Up to 13.5 million eggs are taken annually to meet all PRH production goals and for other programs, including the 3.5 million sub-yearling smolt release program at Ringold Hatchery.

PRH is staffed with three full-time hatchery specialists, one career-seasonal (9-month) hatchery specialist, and three career-seasonal hatchery technicians. The seasonal staff are utilized during trapping, spawning, and rearing to handle heavy workloads. These seasonal employees are also required to live in the PRH bunkroom during egg and sac-fry incubation when assigned to emergency standby. This allows them to provide an immediate response to alarms, as housing for full-time employees on standby is located twenty minutes from the hatchery.

Trapping of returning fall Chinook salmon takes place approximately one mile south of the main facility, and adult fish are transported by truck to the adult holding ponds. One of the adult holding ponds is utilized for wild fall chinook which are collected from the Priest Rapids Dam off ladder adult fish trap (OLAFT) and by anglers participating in broodstock collection. Spawning occurs adjacent to the holding ponds, and eggs are transferred by buckets to the incubation room in the main hatchery building. After hatch, fish are transferred by truck to raceways, where they are introduced to feed and reared until they reach marking size. Once marking starts fish are then moved to the five rearing ponds for final rearing culminating in a June release.

In addition to the incubation room, the main building is comprised of two offices, three bathrooms, conference room, electrical room, mechanical room, fertilization room, lab room and feed room. Other buildings on station include a walk-in freezer and utility room, a large shop with two semi-open covered bays for storage and enclosed shop area. There are seven wells providing 6,650 gallons per minute of pathogen-free well water, a river-water intake, three

degassing towers, and a multitude of other plumbing and electrical buildings. Eight raceways and two holding areas used by the PUD for rearing of study fish in the base of the old adult holding pond may possibly be utilized by WDFW in the future.

## **2013 Brood Fall Chinook**

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### **Adult Holding and Egg Take**

The 2013 Priest Rapids fall Chinook adult collection at the PRH [Jackson Creek] volunteer trap consisted of 38,820 adults and 3,012 jacks. In addition, this was the fourth year that we used the OLAFT at Priest Rapids Dam and the second year to collect unmarked adults from the Angler Broodstock Collection (ABC ) program to attempt to integrate more natural origin (NOR) fish into the PRH broodstock to meet hatchery reform genetic guidelines. The adipose fin intact (NOR and unmarked hatchery fish) that came from the OLAFT and ABC program consisted of 1,174 adults. The adults retained for spawning from the volunteer trap were held in ponds 2, 3, and 4 while the fish collected from the OLAFT and ABC were combined into adult holding pond 1. A total of 1,855 males, 3,473 females, and 4 jacks were utilized for the seasons egg take. A total of 25,602 males, 4,477 females, and 2,890 jacks were surplused. The total number of marked fish recoveries (coded wire tag) was 8,424. The season's adult pond mortality totaled 923 males, 1,484 females, and 6 jacks.

Total green egg take was 13,316,000. Egg mortality from green-to-eyed stage totaled 1,541,000 (11.6%). A total of 7,958,150 eyed eggs were retained for PRH programs (GCPUD and USACE). A total of 3,739,750 eyed eggs were shipped to other facilities:

- 3,731,000 eyed eggs shipped to Bonneville Hatchery (ODFW) for USACE John Day mitigation (later shipped back to Ringold Hatchery for acclimation and release)
- 20,000 eyed eggs shipped to Pacific Northwest National Laboratory
- 40,000 non-viable eggs shipped to Pacific Northwest National Laboratory
- 19,400 eyed eggs shipped to Yakima Basin Environmental Education Program (Salmon-in-the-Classroom or "SC")
- 4,200 eyed eggs shipped to Franklin County Conservation District (SC)
- 250 eyed eggs shipped to Quincy High School (SC)
- 2,000 eyed eggs shipped to USGS

In 2013, PRH supplied 120 male and 120 female chinook carcasses to the Yakima Basin Environmental Education Program for local school science class anatomy study; the Benton and Franklin County Conservation Districts received 110 males and 110 females for the same purpose. The Shoshone-Bannock Tribe picked up 272 males, 1 female and 53 jacks for ceremonial and subsistence purposes. Priest Rapids Hatchery also supplied the Yakama Nation

and GCPUD with carcasses to use for bait to hook-and-line white sturgeon broodstock for the mid-Columbia sturgeon recovery program. GCPUD was supplied 30 females and the Yakama Nation picked up 263 males, 15 females and 22 jacks.

## **Prophylactic Treatment of Eggs and Adults**

Approximately 2,000 early arriving adults selected for spawning were injected with Liquamycin (LA-200), prior to transfer to holding ponds. The injection dose was 0.5 ml per 10 pounds body weight. Total use of Liquamycin was 3.9 liters for the season. This treatment was for the prevention of Columnaris and Furunculosis bacterial disease. Total use of Formalin on adults and eggs totaled 4,840 gallons. Formalin was used to prevent fungus on adults and eggs.

## **Rearing and Release**

Production of brood year 2013 age 0 fall Chinook smolts for GCPUD mitigation was 109,503 pounds. A total of 5,600,000 fish were released from Rearing Ponds A-E with an average size of 48.9 fish per pound (refer to chart on page 7).

Release into the Columbia River occurred between June 12 and June 25, 2014. Prior to release, 606,221 of the smolts were adipose fin clipped and coded wire tagged, while 606,243 were coded wire tagged only (GCPUD funded marking). An additional 1,000,000 were adipose clipped only (WDFW funded). In addition, 40,000 were PIT-tagged by GCPUD and 2,984 were PIT-tagged by the U.S. Fish and Wildlife Service (USFWS) for fish migration studies. Pacific Northwest National Laboratories also inserted acoustic tags into 200 fish for their migration studies. A total of 3,286,166 fish were released with no marks or tags.

In addition to GCPUD mitigation production, 1,666,713 fish were reared and released from Rearing Pond A-E between June 12 and June 25 for the USACE to fulfill a portion of their John Day Mitigation obligation. They averaged 48.9 fish per pound, for a total of 34,084 pounds released. All (100%) of the USACE fish were mass-marked (adipose fin clipped) prior to release.

The fish released at PRH are also 100 percent otolith (i.e. thermal) marked prior to ponding. This is accomplished at the green egg-to-eyed egg stage by manipulating water temperatures during incubation.

For this reporting period, the staff at PRH noticed an elevated mortality during early rearing while fish were in the new intermediate raceways. The average mortality from past years for the same rearing period has been 2%. For this season, the mortality reached 8%. PRH staff were able to meet 100% of the production targets for GCPUD and just over 98% of the production

targets for the USACE. WDFW's fish health division performed a necropsy and found no known causes for the elevated mortality.

## Summary of Adult Returns

Date of first trapping	09/11/13
Date of last trapping	12/3/13
Number of males trapped	29,634
Number of females trapped	10,250
Number of jacks trapped	3,012
Peak date of return	10/25/13
Total adult mortality	4,478

## Summary of Adults Surplused

WEEK	MALES	FEMALES	JACKS
9/16/13 – 9/22/13	1,367	10	410
9/23/13 – 9/29/13	1,389	15	355
9/30/13 – 10/6/13	1,455	1	298
10/7/13 – 10/13/13	744	21	179
10/14/13 – 10/20/13	3,021	208	328
10/21/13 – 10/27/13	3,700	486	310
10/28/13 – 11/3/13	7,681	1,902	538
10/4/13 – 11/10/13	3,765	1,217	299
11/11/13 – 11/17/13	1,581	310	131
11/18/13 – 11/24/13	449	95	39
11/25/13 – 12/1/13	234	5	1
12/2/13 – 12/3/13	216	207	2
<b>TOTAL</b>	<b>25,602</b>	<b>4,477</b>	<b>2,890</b>

## Spawning Summary

DATE SPAWNED	NUMBER OF EGGS TAKEN	NUMBER OF MALES	NUMBER OF FEMALES	NUMBER OF JACKS
10/28/13	385,000	53	97	0
10/29/13	752,000	111	195	0
10/30/13	257,000	45	83	1
10/31/13	314,000	41	80	0
11/4/13	1,635,000	218	423	1
11/5/13	1,136,000	166	302	1
11/12/13	2,741,000	373	748	0
11/13/13	1,742,000	239	461	0
11/18/13	2,387,000	336	666	0
11/19/13	780,000	113	225	1
11/25/13	1,051,000	142	275	0
12/2/13	96,000	18	28	0
<b>TOTAL</b>	<b>13,276,000</b>	<b>1,855</b>	<b>3,473</b>	<b>4</b>

NOTE: 110 non-viable females are included in this chart.

## Egg Shipment Summary

NUMBER OF EGGS	RECEIVED BY
3,731,000	Bonneville Hatchery (ODFW)
60,000	Pacific Northwest National Laboratory
2,000	USGS
250	Quincy High School
19,400	Yakima Basin Environmental Education
4,200	Franklin Conservation District
<b>3,816,850</b>	<b>TOTAL</b>

## **2013 Priest Rapids Fall Chinook (Grant County PUD and John Day Mitigation Combined)**

### **Egg Handling Record**

Number of eggs retained for rearing	7,958,150
Number of eggs shipped	3,816,850
Total egg mortality	1,541,000
Total number of eggs (adjusted egg take)	13,316,000

### **Breakdown of Therapeutics Used**

Total Formalin used	4,840 gallons
Total Liquamycin (LA-200) used on adults	3.9 liters

### **Spawn to Fry Stage**

Percent survival from green-to-eyed egg	88.4
Percent survival eyed egg-to-ponding	99.0
Total number of fry ponded	7,879,199
Total pounds of fry ponded	7,879 lbs.

### **Rearing to Fingerling Stage**

Number of sub-yearling smolts released	7,266,713
Total pounds of smolts released	148,762
Percent survival from ponding to plant	92.2
Average size (fish/lb) of smolts released	48.9

### **Food Fed and Weight Gain**

Total pounds of food fed	84,401
Conversion rate	.60 to 1
Total pounds of gain	140,883

## Length Frequency Data (at release)

Mean (mm)	92.9
Standard Deviation (mm)	6.90
Coefficient of Variation	7.40

## Stream Planting - All Brood Year 2013 Fall Chinook

POND	DATE	LOCATION	NUMBER	WEIGHT	FISH / LB.
RPE	6/12/14	Columbia R.	1,415,787	28,544	49.6
RPD	6/16/14	Columbia R	1,396,339	28,790	48.5
RPC	6/18/14	Columbia R.	1,435,043	28,874	49.7
RPB	6/23/14	Columbia R.	1,539,650	32,414	47.5
RPA	6/25/14	Columbia R.	1,479,894	30,140	49.1
	<b>TOTALS</b>		<b>7,266,713</b>	<b>148,762</b>	<b>48.9</b>

Department of Fish and Wildlife  
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 Region 3 – Multi-Regional Fish Programs  
 Priest Rapids Complex 30007011

Current as of: 5/15/2014

