
UMATILLA HATCHERY

A COMPILATION AND SUMMARY OF
IHOT AUDITS FOR SPRING CHINOOK,
FALL CHINOOK, SUMMER STEELHEAD,
AND WINTER STEELHEAD

JULY 1998

**HATCHERY EVALUATION REPORT
SUMMARY FOR**

- Umatilla Hatchery**
- **Spring Chinook**
 - **Fall Chinook**
 - **Summer Steelhead**
 - **Winter Steelhead**

**A Summarized Compilation of Independent Audits Based on
Integrated Hatchery Operations Team (IHOT) Performance
Measures**

SUMMARY REPORT PREPARED BY:
DON SAMPSON
SAMPSEL CONSULTING SERVICES
FOR THE
NORTHWEST POWER PLANNING COUNCIL
JULY 1998

Original IHOT Audit Reports Prepared by:

Montgomery Watson
2375 130th Avenue NE
Suite 200
Bellevue, WA 98005
March 1997

BPA Project Number 95-2
Contract Number 95AC49468

CONTENTS

Section 1 Executive Summary.....	1
Section 2 Facility Description	5
Section 3 Remedial Actions	6
Section 4 Hatchery Contribution to Fisheries, Spawning Grounds and Hatcheries	16
Section 5 Annual Operating Expenditures	20

Executive Summary

This report compiles a summary of the findings of four separate Hatchery Evaluation Reports for Spring Chinook, Fall Chinook, Summer Steelhead, and Winter Steelhead at Umatilla Hatchery. The original Hatchery Evaluation Reports, prepared by Montgomery Watson, presented each species and program separately and include the complete findings. Details on the audit compliance status for each species and program are included in the original reports. The Hatchery Evaluation Reports were based upon audits conducted in 1996-1997 as part of a 2-year effort that will include 67 hatcheries and satellite facilities located on the Columbia and Snake River system in Idaho, Oregon, and Washington. The hatchery operating agencies include the U.S Fish and Wildlife Service, Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, and Washington Department of Fish and Wildlife.

The hatchery is located on the Columbia River near Irrigon in northeastern Oregon and is operated by the Oregon Department of Fish and Wildlife. The hatchery is used for egg incubation and rearing of summer steelhead, spring chinook, fall chinook, and winter steelhead.

Background

The audit is being conducted as a requirement of the Northwest Power Planning Council (NPPC) “Strategy for Salmon” and the Columbia River Basin Fish and Wildlife Program. Under the audit, the hatcheries are evaluated against policies and related performance measures developed by the Integrated Hatchery Operations Team (IHOT) in January 1995. IHOT is a multi-agency group established by the NPPC to direct the development of new basinwide standards for managing and operating fish hatcheries. The Bonneville Power Administration (BPA) contracted with Montgomery Watson to act as an independent contractor for the audit.

IHOT has established five basic policies that cover: (1) hatchery coordination, (2) hatchery performance standards, (3) fish health, (4) ecological interaction, and (5) genetics. The audit focuses on all these policies, with the exception of hatchery coordination. These policies are set forth in *Policies and Procedures for Columbia Basin Anadromous Salmonid Hatcheries (IHOT 1995)*, which is the source for the performance measures that are the basis of this audit.

The Audit Process

The audit was based on the facility management’s response to a 109-page questionnaire. This audit form was completed through a five-step process in which:

- Information was obtained from headquarters.
- The hatchery manager was asked to fill out and return the audit form.
- A 1-2 day site audit inspection visit was conducted to inspect facilities, review hatchery records, discuss audit form responses, and develop remedial action plans.
- A compliance report was developed to document the compliance status of each performance measure. This report was then shared with the hatchery manager and IHOT representative.
- This hatchery evaluation report was written to document compliance with IHOT performance measures and develop cost estimates for remedial actions when needed.

Umatilla Hatchery - Spring Chinook, Fall Chinook, Summer Steelhead and Winter Steelhead Results

The hatchery began operation in 1991 to provide salmon and steelhead for release into the Umatilla River. The Umatilla Hatchery facility includes 10 concrete Oregon ponds, 24 concrete Michigan ponds, 8 Canadian troughs, and incubation facilities. One aspect of the Umatilla Hatchery's operation is an evaluation of the results of rearing in Oregon vs. Michigan ponds. The entire hatchery water supply is groundwater.

SPRING CHINOOK

The hatchery was in general compliance with most of the performance measures. In the area of program objectives, it was not possible to evaluate compliance for smolt to adult survival because returns of fish reared at the hatchery have only recently begun, and survival data is not yet available. In the area of facilities requirements, the audit found that the hatchery was not in compliance with the recommended water temperature criteria for incubation and rearing and did not meet the monitoring requirements for chemistry, nitrite, and contaminants. The audit also found that the facility was not in compliance with monitoring requirements for the frequency of checking alarms and the criteria for verification of feed ingredients by a regional quality control officer. The hatchery has insulated feed hoppers but they are not adequate to maintain the contents at or below 80°F on very hot days. In the area of hatchery practices, the audit found that the hatchery had no written standards for incubation, written loading and flow criteria, or specific smoltification criteria. The hatchery also did not meet two IHOT criteria for disinfection of transport vehicles. In the area of genetics policy the hatchery did not have written spawning protocols or a Genetics Monitoring and Evaluation Program in place.

The specific areas in which the Umatilla Hatchery - Spring Chinook program requires remedial actions based on the IHOT performance measures are listed below. These remedial actions are listed in alphabetical order without intent of ranking or otherwise assigning priority:

- Begin routine testing of alarms using IHOT recommendations
- Develop a genetics monitoring and evaluation program in IHOT Operations Plan
- Develop smoltification goal and monitoring plan
- Develop specific incubation standards and written incubation practices for the Operations Plan
- Develop written flow and loading criteria for incubation in IHOT Operations Plan
- Develop written spawning protocols in IHOT Operations Plan
- Document adult returns
- Follow IHOT disinfection policies for transportation
- Provide rearing in the subbasin
- Conduct IHOT feed QA/QC testing
- Monitor chemistry, nitrite, and contaminants on routine basis
- Provide a second set of screens for all raceways (24 Michigan ponds and 12 Oregon ponds)

Non-compliance issues resulting from items beyond human control or Performance Measures not relevant to this hatchery were not listed above.

FALL CHINOOK

The hatchery was in general compliance with most of the performance measures. In the area of program objectives, it was not possible to evaluate compliance for smolt to adult survival because returns of fish reared at the hatchery have only recently begun, and survival data is not yet available. In the area of facilities requirements, the audit found that the hatchery was not in compliance with the recommended water temperature criteria for incubation and rearing and did not meet the monitoring requirements for chemistry, nitrite, and contaminants. The audit also

found that the facility was not in compliance with monitoring requirements for the frequency of checking alarms and the criteria for verification of feed ingredients by a regional quality control officer. The hatchery has insulated feed hoppers but they are not adequate to maintain the contents at or below 80°F on very hot days. In the area of hatchery practices, the audit found that the hatchery had no written standards for incubation, written loading and flow criteria, or specific smoltification criteria. The hatchery also did not meet two IHOT criteria for disinfection of transport vehicles. In the area of genetics policy, the hatchery did not have written spawning protocols or a Genetics Monitoring and Evaluation Program in place.

The specific areas in which the Umatilla Hatchery - URB Fall Chinook program requires remedial actions based on the IHOT performance measures are listed below. These remedial actions are listed in alphabetical order without intent of ranking or otherwise assigning priority:

- Begin routine testing of alarms using IHOT recommendations
- Conduct IHOT feed QA/QC testing
- Develop a genetics monitoring and evaluation program in IHOT Operations Plan
- Develop smoltification goal and monitoring plan
- Develop specific incubation standards and written incubation practices for the IHOT Operations Plan
- Develop written flow and loading criteria for incubation in IHOT Operations Plan
- Develop written spawning protocols in IHOT Operations Plan
- Document adult contribution
- Document adult pre-spawning survival over time
- Follow IHOT disinfection policies for transportation
- Monitor chemistry, nitrite, and contaminants on routine basis
- Provide a second set of screens for all raceways (24 Michigan ponds and 12 Oregon ponds)

Non-compliance issues resulting from items beyond human control or Performance Measures not relevant to this hatchery were not listed above.

SUMMER STEELHEAD

The hatchery was in general compliance with most of the performance measures. In the area of program objectives, it was not possible to evaluate compliance for smolt to adult survival because returns of fish reared at the hatchery have only recently begun, and survival data is not yet available. In the area of facilities requirements, the audit found that the hatchery was not in compliance with the recommended water temperature criteria for incubation and rearing and did not meet the monitoring requirements for chemistry, nitrite, and contaminants. The audit also found that the facility was not in compliance with monitoring requirements for the frequency of checking alarms and the criteria for verification of feed ingredients by a regional quality control officer. The hatchery has insulated feed hoppers, but they are not adequate to maintain the contents at or below 80°F on very hot days. In the area of hatchery practices, the audit found that the hatchery had no written standards for incubation, written loading and flow criteria, or specific smoltification criteria. The hatchery also did not meet two IHOT criteria for disinfection of transport vehicles. In the area of genetics policy, the hatchery did not have written spawning protocols or a Genetics Monitoring and Evaluation Program in place.

The specific areas in which the Umatilla Hatchery - Summer Steelhead program requires remedial actions based on the IHOT performance measures are listed below. These remedial actions are listed in alphabetical order without intent of ranking or otherwise assigning priority:

- Begin routine testing of alarms using IHOT recommendations

- Conduct IHOT feed QA/QC testing
- Develop a genetics monitoring and evaluation program in IHOT Operations Plan
- Develop smoltification goal and monitoring plan
- Develop specific incubation standards and written incubation practices for the IHOT Operations Plan
- Develop written flow and loading criteria for incubation in IHOT Operations Plan
- Document adult contribution
- Document adult pre-spawning survival
- Follow IHOT disinfection policies for transportation
- Monitor chemistry, nitrite, and contaminants on routine basis
- Provide a second set of screens for all raceways (24 Michigan ponds and 12 Oregon ponds)

Non-compliance issues resulting from items beyond human control or Performance Measures not relevant to this hatchery were not listed above.

WINTER STEELHEAD

The hatchery was in general compliance with most of the performance measures. In the area of facilities requirements, the audit found that the hatchery was not in compliance with the recommended water temperature criteria for incubation and rearing and did not meet the monitoring requirements for chemistry, nitrite, and contaminants. The audit also found that the facility was not in compliance with monitoring requirements for the frequency of checking alarms and the criteria for verification of feed ingredients by a regional quality control officer. The hatchery has insulated feed hoppers, but they are not adequate to maintain the contents at or below 80°F on very hot days. In the area of hatchery practices, the audit found that the hatchery had no written standards for incubation, rearing, written loading and flow criteria. The hatchery also did not meet two IHOT criteria for disinfection of transport vehicles.

The specific areas in which the Umatilla Hatchery - Winter Steelhead program requires remedial actions based on the IHOT performance measures are listed below. These remedial actions are listed in alphabetical order without intent of ranking or otherwise assigning priority:

- Begin routine testing of alarms using IHOT recommendations
- Conduct IHOT feed QA/QC testing
- Develop goals for green-to-eyed-egg and eyed-egg-to-fry survival
- Develop specific incubation standards and written incubation practices for the IHOT Operations Plan
- Develop written flow and loading criteria for incubation in IHOT Operations Plan
- Follow IHOT disinfection policies for transportation
- Monitor chemistry, nitrite, and contaminants on routine basis
- Provide a second set of screens for all raceways (24 Michigan ponds and 12 Oregon ponds)

Non-compliance issues resulting from items beyond human control or Performance Measures not relevant to this hatchery were not listed above.

Facility Description

Name:	Umatilla Hatchery
Stock/Species:	Spring Chinook
Operating Agency:	Oregon Department of Fish and Wildlife
Funding Agency:	Bonneville Power Administration
Location:	Near Irrigon, OR on the Columbia River
Address:	Umatilla Hatchery Oregon Department of Fish and Wildlife Route 2, Box 151 Irrigon, OR 97844
Hatchery Manager:	Mr. Jack Hurst
Phone:	(541) 922-5659
Fax:	(541) 922-5664
Purpose:	The Umatilla Hatchery was authorized under the Northwest Power Planning Council's (NPPC) Fish and Wildlife Program and began operation in 1991. Hatchery funding is provided by Bonneville Power Administration. The hatchery is used for egg incubation and rearing of spring chinook, fall chinook, and summer steelhead for release into the Umatilla River.

Production Goal:

Production goal for the Umatilla Hatchery has been reduced from original plan because of water shortage; planned for 15,000 gpm but only can produce 8,000 to 10,000. These are the FY96 production goals for the Umatilla Hatchery:

Winter Steelhead

51,000 fish @ 200/lb (235 lbs) transferred to Oak Springs Hatchery

Summer Steelhead

150,000 smolts (30,000 lbs) for acclimation and release at Bonifer and Minthorn facilities on the Umatilla River

Spring Chinook

390,000 smolts (48,750 lbs) for acclimation and release at Thornhollow and Imeqes C-mem-ini-kem facilities on the Umatilla River

URB Fall Chinook

2,682,000 subyearlings (44,700 lbs) for acclimation and release at Thornhollow and Imeqes C-mem-ini-kem facilities on the Umatilla River

Water Supply:

Pumped supply from 4 remote wells producing a total of 5,100 gpm

Facilities:

Adult Holding:	N/A
Incubation:	192 16-tray vertical incubators 30 stacks of 3, 4-tray vertical incubators
Early Rearing:	8 Canadian troughs - 576 cf
Raceways:	10 Oregon ponds - 5,972 cf each 24 Michigan ponds - 2,252 cf each
Rearing Ponds:	None
Satellite Facilities:	Acclimation and release of all stocks: Bonifer, Minthorn, Thornhollow, and Imeqes C-mem-ini-kem ponds Fall chinook broodstock holding and spawning: Three Mile Falls Dam facility

Remedial Actions

Based on the compliance status for each performance measure, remedial actions were developed. The required remedial actions are organized into five categories. The types of categories range across a spectrum from those actions that are beyond human control, to those that require a change in agency policy or procedures, to those that involve a significant capital cost to put in place. The following are the five types of remedial actions identified under phase 1 of the audit:

The Five Types of Remedial Actions

Type	Description
1	Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery
2	Remedial actions requiring changes in agency policies or procedures
3	Remedial actions requiring changes in monitoring coverage or interval
4	Remedial actions requiring significant capital expenditures
5	Remedial actions that may require significant capital expenditures but are not clearly definable at this time

Remedial Actions at Umatilla Hatchery - Spring Chinook, Fall Chinook, Summer Steelhead, and Winter Steelhead

This section presents the corrective actions required to bring the Umatilla Hatchery - Spring Chinook, Fall Chinook, Summer Steelhead, and Winter Steelhead programs into compliance with the IHOT performance measures. The remedial actions described here are suggestions developed by the Montgomery Watson Audit Team. The remedial actions and associated cost estimates have not been analyzed or prioritized by the respective operating agencies, fishery managers, or IHOT. There may be additional remedial actions, not included in this report, proposed by the respective operating agencies. For some non-compliance areas, other remedial actions could be proposed. The required remedial actions are cross-referenced to each IHOT performance measure that was not in compliance. Where appropriate, the costs associated with the remedial actions are also presented (Tables 3a, 3b, 3c, and 3d).

The cost estimates presented in this section are based on professional experience from similar projects. In most cases, only a lump-sum figure is presented and detailed take-off lists have not been prepared. The cost estimates are essentially order of magnitude estimates ($\pm 40\%$).

The suggested remedial activities may also present several levels of action. Optional actions have been listed for several problems. These optional actions are desirable for either operational or safety considerations.

Table 3a. Remedial Actions Required at Umatilla Hatchery - Spring Chinook

Remedial Action Required	Cost	PMS¹
Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery		
Improve adult returns to increase the availability of Umatilla River broodstock	----	4c
Type 2 - Remedial actions requiring changes in agency policies or procedures		
Document adult returns		4a
Modify temperature of hatchery water supply (not a problem because the hatchery meets program requirements)	----	5a, 21, 29
Begin routine testing of alarms using IHOT recommendations	----	6
No telephone pagers in use (not a problem because onsite residences are hard wired to alarms)	----	6
Interior of insulated feed hoppers exceeds 80 °F on very hot days	----	12
Develop specific incubation standards and written incubation practices for the IHOT Operations Plan	----	18
Develop written flow and loading criteria for incubation in IHOT Operations Plan	----	18
Develop smoltification goal and monitoring plan	----	22a1, 36
Provide rearing in the subbasin	----	22b
Follow IHOT disinfection policies for transportation	----	23
Develop written spawning protocols in IHOT Operations Plan	----	42
Develop a genetics monitoring and evaluation program in IHOT Operations Plan	----	43

¹ PMS are performance measures that were extracted from the IHOT 1995 report.

Remedial Action Required	Cost	PMs ¹
Type 3 - Remedial actions requiring changes in monitoring coverage or interval		
Run analysis for chemistry parameters	----	5c, 21, 29
Run analysis for nitrite	----	5f, 21, 29
Run analysis for contaminants	----	5g, 21, 29
Conduct IHOT feed QA/QC testing	----	12
Type 4 - Remedial actions requiring significant capital expenditures		
Provide a second set of screens for all raceways (24 Michigan ponds and 12 Oregon ponds)	\$18,000	10
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time		
None identified	----	

Table 3b. Remedial Actions Required at Umatilla Hatchery - URB Fall Chinook

Remedial Action Required	Cost	PMs ¹
Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery		
Improve green-egg to eyed-egg survival; smolt to fry survival, and number at release over time by continued increase in the use of Umatilla River broodstock as the run size increases	----	4d, 4f, 22a4
Type 2 - Remedial actions requiring changes in agency policies or procedures		
Document adult contribution	----	4a
Document adult pre-spawning survival over time	----	4b
Modify temperature of hatchery water supply (not a problem because the hatchery meets program requirements)	----	5a, 21, 29
Begin routine testing of alarms using IHOT recommendations	----	6
No telephone pagers in use (not a problem because onsite residences are hard wired to alarms)	----	6
Interior of insulated feed hoppers exceeds 80 °F on very hot days	----	12

¹ PMs are performance measures that were extracted from the IHOT 1995 report.

¹ PMs are performance measures that were extracted from the IHOT 1995 report.

Remedial Action Required	Cost	PMs¹
Develop specific incubation standards and written incubation practices for the IHOT Operations Plan	----	18
Develop written flow and loading criteria for incubation in IHOT Operations Plan	----	18
Develop smoltification goal and monitoring plan	----	22a1, 36
Follow IHOT disinfection policies for transportation	----	23
Develop written spawning protocols in IHOT Operations Plan	----	42
Develop a genetics monitoring and evaluation program in IHOT Operations Plan	----	43

Remedial Action Required	Cost	PMs¹
Type 3 - Remedial actions requiring changes in monitoring coverage or interval		
Run analysis for chemistry parameters	----	5c, 21, 29
Run analysis for nitrite	----	5f, 21, 29
Run analysis for contaminants	----	5g, 21, 29
Conduct IHOT feed QA/QC testing	----	12
Type 4 - Remedial actions requiring significant capital expenditures		
Provide a second set of screens for all raceways (24 Michigan ponds and 12 Oregon ponds)	\$18,000	10
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time		
None identified	----	

Table 3c. Remedial Actions Required at Umatilla Hatchery - Summer Steelhead

Remedial Action Required	Cost	PMs¹
Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery		
Modify temperature of hatchery water supply (not a problem because the hatchery meets program requirements)	----	5a, 21, 29
No telephone pagers in use (not a problem because onsite residences are hard wired to alarms)	----	6
Interior of insulated feed hoppers exceeds 80 °F on very hot days	----	12
Type 2 - Remedial actions requiring changes in agency policies or procedures		
Document adult contribution	----	4a
Document adult pre-spawning survival	----	4b
Begin routine testing of alarms using IHOT recommendations	----	6
Develop specific incubation standards and written incubation practices for the IHOT Operations Plan	----	18

¹ PMs are performance measures that were extracted from the IHOT 1995 report.

¹ PMs are performance measures that were extracted from the IHOT 1995 report.

Remedial Action Required	Cost	PMs ¹
Develop written flow and loading criteria for incubation in IHOT Operations Plan	----	18
Develop smoltification goal and monitoring plan	----	22a1, 36
Follow IHOT disinfection policies for transportation	----	23
Develop a genetics monitoring and evaluation program in IHOT Operations Plan	----	43
Type 3 - Remedial actions requiring changes in monitoring coverage or interval		
Run analysis for chemistry parameters	----	5c, 21, 29
Run analysis for nitrite	----	5f, 21, 29
Run analysis for contaminants	----	5g, 21, 29
Conduct IHOT feed QA/QC testing	----	12

Remedial Action Required	Cost	PMS ¹
Type 4 - Remedial actions requiring significant capital expenditures Provide a second set of screens for all raceways (24 Michigan ponds and 12 Oregon ponds)	\$18,000	10
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time None identified	----	

Table 3d. Remedial Actions Required at Umatilla Hatchery - Winter Steelhead

Remedial Action Required	Cost	PMS ¹
Type 1 - Non-compliance issues resulting from items beyond human control or Performance Measures not relevant for this hatchery		
Type 2 - Remedial actions requiring changes in agency policies or procedures Improve production by transferring program to Oak Springs following completion of their rearing facilities	----	4g
Develop goals for green egg to eyed egg and eyed egg to fry survival for IHOT Operations Plan	----	4d, 4e
Begin routine testing of alarms using IHOT recommendations	----	6
No telephone pagers in use (not a problem because onsite residences are hard wired to alarms)	----	6
Interior of insulated feed hoppers exceeds 80 °F on very hot days	----	12
Develop specific incubation standards and written incubation practices for the IHOT Operations Plan	----	18
Develop written flow and loading criteria for incubation in IHOT Operations Plan	----	18
Develop specific rearing standards and written rearing practices for the Operations Plan	----	19, 30
Follow IHOT disinfection policies for transportation	----	23
Type 3 - Remedial actions requiring changes in monitoring coverage or interval Run analysis for chemistry parameters	----	5c, 21, 29

¹ PMS are performance measures that were extracted from the IHOT 1995 report.

¹ PMS are performance measures that were extracted from the IHOT 1995 report.

Remedial Action Required	Cost	PMs¹
Run analysis for nitrite	----	5f, 21, 29
Run analysis for contaminants	----	5g, 21, 29
Conduct IHOT feed QA/QC testing	----	12

Remedial Action Required	Cost	PMs ¹
Type 4 - Remedial actions requiring significant capital expenditures Provide a second set of screens for all raceways (24 Michigan ponds and 12 Oregon ponds)	\$18,000	10
Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time Modify temperature of hatchery water supply (not a problem because the hatchery meets program requirements)	----	5a, 21, 29

¹ PMs are performance measures that were extracted from the IHOT 1995 report.

Hatchery Contribution to Fisheries, Spawning Grounds, and Hatcheries

This section presents the audit findings for the Umatilla Hatchery - Spring Chinook program contribution of adult fish to fisheries, local fisheries, spawning grounds, and hatcheries. Data is reported by broodyear. A broodyear refers to the adult contribution from the eggs produced from a single group of spawning adults. For some species, this may include fish caught as 2-, 3-, 4-, 5-, and 6-year old fish. Because of the return distribution and data processing delays, the complete adult contribution for a given broodyear may not be available until 4 to 5 years after the fish have been released from the hatchery.

**Table 4a. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Umatilla Hatchery - Spring Chinook**

Year	Fisheries ¹ (Broodyear)	Spawning Grounds ¹ (Broodyear)	Hatchery ¹ (Broodyear)	Total Combined Contribution ¹ (Broodyear)	Smolt to Adult Survival (percent)
1981					
1982					
1983					
1984					
1985					
1986					
1987					
1988					
1989					
1990					
1991	Complete data not available	Complete data not available	Complete data not available	Complete data not available	Complete data not available
1992	No data yet available	No data yet available	No data yet available	No data yet available	No data yet available

**Table 4b. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Umatilla Hatchery - URB Fall Chinook**

¹ Data obtained from Missing Production Groups Annual Report or from the Regional Mark Information System database.

¹ Total combined adult contribution; presented when it is not possible to subdivide the contribution into fisheries, spawning grounds, and hatchery contributions.

Year	Fisheries ¹ (Broodyear)	Spawning Grounds ¹ (Broodyear)	Hatchery ¹ (Broodyear)	Total Combined Contribution ² (Broodyear)	Smolt to Adult Survival (percent)
1981					
1982					
1983					
1984					
1985					
1986					
1987					
1988					
1989					
1990					
1991	Complete data not available	Complete data not available	Complete data not available	Complete data not available	Complete data not available
1992	No data yet available	No data yet available	No data yet available	No data yet available	No data yet available

**Table 4c. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Umatilla Hatchery - Summer Steelhead**

Year	Fisheries ¹ (Broodyear)	Spawning Grounds ¹ (Broodyear)	Hatchery ¹ (Broodyear)	Total Combined Contribution ³ (Broodyear)	Smolt to Adult Survival (percent)
1982					
1983					
1984					

¹ Data obtained from Missing Production Groups Annual Report or from the Regional Mark Information System database.

² Total combined adult contribution; presented when it is not possible to subdivide the contribution into fisheries, spawning grounds, and hatchery contributions.

¹ Data obtained from Missing Production Groups Annual Report or from the Regional Mark Information System database.

³ Total combined adult contribution; presented when it is not possible to subdivide the contribution into fisheries, spawning grounds, and hatchery contributions.

1985					
1986					
1987					
1988					
1989					
1990	Complete data not available	Complete data not available	Complete data not available	Complete data not available	Complete data not available
1991	Complete data not available	Complete data not available	Complete data not available	Complete data not available	Complete data not available
1992					

**Table 4d. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Umatilla Hatchery - Winter Steelhead (a)**

Year	Fisheries¹ (Broodyear)	Spawning Grounds¹ (Broodyear)	Hatchery¹ (Broodyear)	Total Combined Contribution⁴ (Broodyear)	Smolt to Adult Survival (percent)
1982					
1983					
1984					
1985					
1986					
1987	No information available	No information available	No information available	No information available	No information available
1988	No information available	No information available	No information available	No information available	No information available
1989	No information available	No information available	No information available	No information available	No information available
1990	No information available	No information available	No information available	No information available	No information available
1991					

¹ Data obtained from Missing Production Groups Annual Report or from the Regional Mark Information System database.

⁴ Total combined adult contribution; presented when it is not possible to subdivide the contribution into fisheries, spawning grounds, and hatchery contributions.

1992					
------	--	--	--	--	--

(a) Data determined to be unavailable following audit Oak Springs facility.

Annual Operating Expenditures

The level and detail of annual operating expenditures varies widely depending on hatchery, operating agency, and funding source. When provided, expenditures were presented in terms of personnel costs, operating costs (power, feed, and supplies), capital costs, indirect costs charged to the Federal government, third-party costs, and other costs. These cost components were summed to determine a total hatchery annual cost. Based on discussion with the hatchery manager, the percent of total hatchery costs allocated to a given program was estimated. The total hatchery costs and the percent of hatchery costs allocated to a given program were used to compute the cost of a given program. The total expenditures for the Umatilla Hatchery are presented in Table 5 by program. The detailed breakdown of program expenditures for spring chinook, fall chinook, summer steelhead, and winter steelhead at this hatchery is presented in separate tables (Tables 6a, 6b, 6c, and 6d).

Table 5. Annual Operating Expenses for All Programs - Umatilla Hatchery

Program	1994	1995	1996
1. Summer Steelhead	\$150,898	\$208,110	\$191,650
2. Spring Chinook	\$516,517	\$300,453	\$260,190
3. Fall Chinook	\$234,010	\$333,986	\$421,281
4. Winter Steelhead	\$0	\$0	\$0
5.			
Total Hatchery Costs	\$901,425	\$842,549	\$873,121

Table 6a. Detailed Expenditures at Umatilla Hatchery by Program
Summer Steelhead

Component	1994	1995	1996
Personnel Costs	\$342,901	\$344,365	\$333,483
Operational Costs	\$427,692	\$371,874	\$421,818
Capital Costs	\$300	\$0	\$0
Indirect Costs	\$130,532	\$126,310	\$117,820
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs	\$0	\$0	\$0
Total Hatchery Costs	\$901,425	\$824,549	\$873,121
Source of Funds			
100% BPA			
Program Production (lb)	28,253	28,166	28,990
Total Production (lb)	168,762	114,048	132,067
Program as Percent of Total	16.74	24.7	21.95
Program Costs	\$150,898	\$208,110	\$191,650

¹ When it was not possible to obtain a detailed cost breakdown from an agency or third party, the undivided costs were entered here.

Table 6b. Detailed Expenditures at Umatilla Hatchery by Program
Spring Chinook

Component	1994	1995	1996
Personnel Costs	\$342,901	\$344,365	\$333,483
Operational Costs	\$427,692	\$371,874	\$421,818
Capital Costs	\$300	\$0	\$0
Indirect Costs	\$130,532	\$126,310	\$117,820
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs	\$0	\$0	\$0
Total Hatchery Costs	\$901,425	\$824,549	\$873,121
Source of Funds			
100% BPA			
Program Production (lb)	96,700	40,676	39,358
Total Production (lb)	168,762	114,048	132,067
Program as Percent of Total	57.3	35.66	29.8
Program Costs	\$516,517	\$300,453	\$260,190

¹ When it was not possible to obtain a detailed cost breakdown from an agency or third party, the undivided costs were entered here.

Table 6c. Detailed Expenditures at Umatilla Hatchery by Program**Fall Chinook**

Component	1994	1995	1996
Personnel Costs	\$342,901	\$344,365	\$333,483
Operational Costs	\$427,692	\$371,874	\$421,818
Capital Costs	\$300	\$0	\$0
Indirect Costs	\$130,532	\$126,310	\$117,820
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs	\$0	\$0	\$0
Total Hatchery Costs	\$901,425	\$824,549	\$873,121
Source of Funds			
100% BPA			
Program Production (lb)	43,809	45,206	63,719
Total Production (lb)	168,762	114,048	132,067
Program as Percent of Total	25.96	39.64	48.25
Program Costs	\$234,010	\$333,986	\$421,281

¹ When it was not possible to obtain a detailed cost breakdown from an agency or third party, the undivided costs were entered here.

Table 6d. Detailed Expenditures at Umatilla Hatchery by Program
Winter Steelhead

Component	1994	1995	1996
Personnel Costs	\$342,901	\$344,365	\$333,483
Operational Costs	\$427,692	\$371,874	\$421,818
Capital Costs	\$300	\$0	\$0
Indirect Costs	\$130,532	\$126,310	\$117,820
Lumped Hatchery Costs ¹			
Lumped Third-Party Costs	\$0	\$0	\$0
Total Hatchery Costs	\$901,425	\$824,549	\$873,121
Source of Funds			
100% BPA			
Program Production (lb)	203	390	304
Total Production (lb)	168,762	114,048	132,067
Program as Percent of Total	< 0.2%	< 0.4%	< 0.3%
Program Costs	\$0	\$0	\$0

¹ When it was not possible to obtain a detailed cost breakdown from an agency or third party, the undivided costs were entered here.