
HAGERMAN HATCHERY

**A SUMMARY OF THE IHOT AUDIT
FOR SUMMER STEELHEAD**

JULY, 1998

**HATCHERY EVALUATION REPORT
SUMMARY FOR**

**Hagerman NFH
- Summer Steelhead**

**A Summary of the Independent Audit Based on
Integrated Hatchery Operations Team (IHOT) Performance
Measures**

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Executive Summary

This report presents a summary of the findings of the Hatchery Evaluation Report for Summer Steelhead at of the Hagerman National Fish Hatchery (NFH). The original Hatchery Evaluation Report, prepared by Montgomery Watson, includes the complete findings. Details on the audit compliance status are included in the original report. The Hatchery Evaluation Report was based upon an audit 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 in the lower Snake River basin in southern Idaho and is used for egg incubation, and rearing of Summer Steelhead. The hatchery is operated by the US Fish and Wildlife Service.

Background

The hatchery audit was 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 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.

Hagerman NFH - Summer Steelhead Results

The hatchery complex includes an administration building, two hatchery buildings, 102 raceways, several springs used for water supply, water supply intakes, a pumped water supply from Riley Creek for emergency use, a fish waste sedimentation system, four on-site residences, feed storage facilities and several garages and storage buildings.

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The hatchery was in general compliance with most of the performance measures. In the area of program objectives, the hatchery needed to document its adult contribution. The audit found that the hatchery was not in compliance with the temperature criteria, water chemistry and contaminant monitoring criteria, alarm requirements, secondary screens criteria, feed handling protocols, sanitation protocols, and pathology-free water criteria, which are all facilities requirements. The hatchery did not have a density and loading criteria for early rearing, and was not in compliance with the acclimation requirements for lower Salmon River releases, transportation protocols, and fishery contribution study performance measure. In the compliance area for fish health policy, the hatchery did not meet the requirements for foot baths and sanitation protocols for equipment used to handle dead fish. The hatchery also did not have a Genetics Monitoring and Evaluation Program in place.

The specific areas in which the Hagerman NFH - 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:

- Develop rearing and acclimation sites for lower Salmon River sites
- Develop an alarm log
- Develop density and loading criteria for early rearing and monitor loading and density for IHOT Operations Plan
- Develop disease-free water supply
- Develop genetics M&E plan for IHOT
- Develop smoltification monitoring plan
- Document adult contribution
- Document smolt-to-adult survival
- Follow IHOT criteria for tempering water temperature at release
- Follow IHOT disinfection protocols for vehicle cab
- Follow IHOT protocols for feed handling
- Follow IHOT sanitation procedures for foot baths
- Follow sanitation protocols for equipment used to collect dead fish
- Install flow alarms in incubation facility
- Install secondary screens in raceways
- Install temperature control system for chilling eggs and fry to reduce early growth
- Monitor oxygen concentration in transport tank
- Monitor TGP
- Perform required fishery contribution study
- Provide training to staff on operations plan
- Reduce temperature in feed hoppers and storage facilities
- Run additional analysis for contaminants when fish are present
- Run analysis for missing chemistry parameters

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

Facility Description

Name:	Hagerman NFH
Stock/Species:	Summer Steelhead Rainbow trout
Operating Agency:	U.S. Fish & Wildlife Service
Funding Agency:	U.S. Fish & Wildlife Service
Location:	Located next to the Snake River in southern Idaho, approximately 5 miles southeast of the town of Hagerman.
Address:	Hagerman National Fish Hatchery U.S. Fish & Wildlife Service 3059-D National Fish Hatchery Road Hagerman, ID 83332
Hatchery Manager:	Mr. Byran Kenworthy
Phone:	(208) 837-4896
Fax:	(208) 837-6225
Purpose:	The hatchery was authorized in 1930 and began operating in 1933, Historically, production consisted of rearing rainbow trout for stocking waters in Idaho, Oregon and Nevada. In the late 1970's, trout production was reduced and the steelhead started. The hatchery was remodeled and expanded from 1982 to 1984 as part of the Lower Snake River Compensation Program (LSRCP) - a program to mitigate for fishery losses caused by four federal dams constructed on the lower Snake River. The goals of the hatchery is to produce summer steelhead to the Snake River Basin
Production Goal:	Summer Steelhead 1.53 million smolts for off-station release into the Salmon and Snake rivers Rainbow Trout Trout as needed for management of federal lands. Currently 100,000 are released into Duck Valley Reservoirs.
Water Supply:	Water rights of 92.5 cfs from six major collecting structures. Water rights are currently under adjudication.

Facilities:

Adult Holding:	none
Incubation:	66 upwelling jars
Early Rearing:	46 starter tanks - 80 cf each 20 starter tanks - 93 cf each
Raceways:	102 raceways - 3100 cf each
Rearing Ponds:	none
Satellite Facilities:	none

Section 3
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 Hagerman NFH - Summer Steelhead

This section presents the corrective actions required to bring the Hagerman NFH - Summer Steelhead program 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 (Table 3).

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 3. Remedial Actions Required at Hagerman NFH - 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		
Type 2 - Remedial actions requiring changes in agency policies or procedures		
Provide training to staff on operations plan	----	2
Document adult contribution	----	4a
Document smolt-to-adult survival	----	4h
Install security alarms	----	6
Install outside alarms and buzzers in residences	----	6
Follow IHOT protocols for feed handling	----	12
Develop density and loading criteria for early rearing and monitor loading and density for IHOT Operations Plan	----	19
Follow IHOT sanitation procedures for foot baths	----	21,28
Develop smoltification monitoring plan	----	22a1
Follow IHOT disinfection protocols for vehicle cab	----	23
Follow IHOT criteria for tempering water temperature at release	----	23
Perform required fishery contribution study	----	24
Follow sanitation protocols for equipment used to collect dead fish	----	28
Develop genetics M&E plan for IHOT	----	43
Type 3 - Remedial actions requiring changes in monitoring coverage or interval		
Monitor TGP	----	5b
Run analysis for missing chemistry parameters	----	5c
Run additional analysis for contaminants when fish are present	----	5g
Monitor oxygen concentration in transport tank	----	23

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

Remedial Action Required	Cost	PMs ¹
<p>Type 4 - Remedial actions requiring significant capital expenditures</p> <p>Install temperature control system for chilling eggs and fry to reduce early growth</p> <p>1,400 tons of chiller capacity</p> <p>Install flow alarms in incubation facility</p> <p>Develop an alarm log</p> <p>Install secondary screens in raceways</p>	<p>\$500,000 to \$700,000</p> <p>\$3,000</p> <p>\$1,000</p> <p>\$21,000</p>	<p>5a</p> <p>6</p> <p>6</p> <p>10</p>
<p>Type 5 - Remedial actions that may require significant capital expenditures but are not clearly definable at this time</p> <p>Reduce temperature in feed hoppers and storage facilities</p> <p>Develop disease-free water supply</p> <p>Develop rearing and acclimation sites for lower Salmon River sites</p>	<p>----</p> <p>----</p> <p>----</p>	<p>12</p> <p>21,28</p> <p>22b</p>

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 Hagerman NFH - Summer Steelhead program contribution of adult fish to fisheries, local fisheries, spawning grounds, and hatcheries (Table 4). 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 4. Adult Contribution to Fisheries, Spawning Grounds, and Hatcheries:
Hagerman NFH - Summer Steelhead**

Year	Fisheries ¹ (Broodyear)	Spawning Grounds ¹ (Broodyear)	Hatchery ¹ (Broodyear)	Smolt to Adult Survival (percent)
1981				
1982				
1983				
1984				
1985				
1986	3,208	24	111	0.33
1987	2,167	20	132	0.14
1988	575	--	52	0.056
1989	5,975	--	0	0.48
1990	7,378	--	0	0.51
1991				
1992				

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

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, 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 Hagerman NFH are presented in Table 5 by program. The detailed breakdown of program expenditures at this hatchery is presented in separate tables (Tables 6a and 6b).

Table 5. Annual Operating Expenses - Hagerman NFH

Program	1994	1995	1996
1. Summer Steelhead	\$548,497	\$667,088	\$717,000
2. Rainbow Trout	\$77,636	\$0	\$0
3.			
4.			
5.			
Total Hatchery Costs	\$626,133	\$667,088	\$717,000

6a. Annual Operating Expenses: Summer Steelhead

Expenditure Occurring at Hagerman NFH

Component	1994	1995	1996
Personnel Costs	\$362,055	\$417,015	\$290,366
Operational Costs	\$225,790	\$218,765	\$226,134
Capital Costs	\$15,060	\$11,643	\$200,500
Indirect Costs	\$11,655	\$19,665	\$9,000
Lumped Hatchery Costs ¹			
Lumped Third Party Costs	\$8,732		
Total Hatchery Costs	\$623,292	\$667,088	\$717,000
Source of Funds			
Program Production (#)	1,857,198	1,335,816	1,461,071
Total Production (#)	2,121,441	1,335,816	1,461,071
Program as Percent of Total	88%	100%	100%
Program Costs	\$548,497	\$667,088	\$717,000

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. Annual Operating Expenses: Rainbow Trout
Expenditure Occurring at Hagerman NFH**

Component	1994	1995	1996
Personnel Costs	\$362,055	\$417,015	\$290,366
Operational Costs	\$225,790	\$218,765	\$226,134
Capital Costs	\$15,060	\$11,643	\$200,500
Indirect Costs	\$11,655	\$19,665	\$9,000
Lumped Hatchery Costs ¹			
Lumped Third Party Costs	\$8,732		
Total Hatchery Costs	\$623,292	\$667,088	\$717,000
Source of Funds			
Program Production (#)	264,243	0	0
Total Production (#)	2,121,441	1,335,816	1,461,071
Program as Percent of Total	88%	100%	0%
Program Costs	\$548,497	\$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.