

HATCHERY AND GENETIC MANAGEMENT PLAN

RESIDENT FISH VERSION

(HGMP-RF)

Hatchery Program: Colville Hatchery

Species or Hatchery Population/Strain:
Rainbow Trout

Agency/Operator:
Washington Department of Fish and Wildlife

Watershed and Region: Upper Columbia River
Lake Roosevelt

Date Submitted:

Date Last Updated:

SECTION 1. GENERAL PROGRAM DESCRIPTION

1.1) Name of hatchery or program. Colville Hatchery

1.2) Species and population (or ~~stock~~strain) under propagation, ~~and~~ ESA/population status.

— Rainbow Trout (*Oncorhynchus mykiss*) Phalon (red band).

1.3) Responsible organization and individuals

Name (and title): Mike Lewis; Complex Manager
Agency or Tribe: Washington Department of Fish and Wildlife
Address: 2927 W. Waikiki Spokane WA. 99208
Telephone: (509) 625-5169
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Other agencies, Tribes, co-operators, or organizations involved, including contractors, and extent of involvement in the program:

Sherman Creek Hatchery, Spokane Tribal Hatchery (Fishery Co-Managers) - Joint Artificial Production through SCH, STH & Lake Roosevelt Kokanee Net Pen Rearing Project, Monitoring & Evaluation through Lake Roosevelt Monitoring Program, Project Direction & Oversight through Lake Roosevelt Hatcheries Coordination Team.

- Colville Confederated Tribes (Fishery Co-Managers) - Monitoring & Evaluation through Lake Roosevelt Monitoring Program and Chief Joseph Kokanee Enhancement Project, Project Direction & Oversight through Lake Roosevelt Hatcheries Coordination Team
- Lake Roosevelt Development Association – Joint Artificial Production through Lake Roosevelt Rainbow Trout Rearing Project
- Lake Roosevelt Forum – Public Inter-face Source
- Eastern Washington University - Monitoring & Evaluation through Lake Roosevelt Monitoring Program, Peer Review of Project

1.4) Funding source, staffing level, and annual hatchery program operational costs.

Funding is provided through the Confederated Tribes of Colville and Pend Orielle County PUD.

Staff levels are at 1.6 FTEs
Annual operating is at \$84,000

1.5) Location(s) of hatchery and associated facilities.

Colville Hatchery is Located in the town of Colville and has a drainage into the Colville

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River which is a tributary to the Columbia.

1.6) Type of program(s).

Isolated recovery/Isolated Harvest

1.7) Purpose (Goal) of program(s). The goal of this program is to supply the Lake Roosevelt Fisheries Restoration Program with a native stock of rainbow trout to use for artificial production. This was addressed as a concern of the ISRP in that more of these stocks should be utilized for hatchery production.

1.8) Justification for the program.

This program is needed as a way to use native stocks for production. These fish could indeed prove to be valuable in restoring or enhancing the rainbow fisheries on Lake Roosevelt. More research is needed at this time to evaluate their performance.

1.9) List of program "Performance Standards."

1.10) List of program "Performance Indicators", designated by "benefits" and "risks."

1.10.1) "Performance Indicators"-addressing benefits.

1.10.2) "Performance Indicators" addressing risks.

1.11) Expected size of program.

The current production levels for the Phalon stock of rainbows is 100,000.

1.11.1) Proposed annual broodstock collection-level need (maximum number of adult fish).

120 adult fish are needed to reach program needs.

1.11.2) Proposed annual fish release levels (maximum number) by life stage and location.

Life Stage	Release Location	Annual Release Level
Eyed Eggs		
Unfed Fry		
Fry		
Fingerling		
Yearling		

1.12) Current program performance, including estimated smolt-to-adult survival rates,

adult production levels, and escapement levels. Indicate the source of these data.

~~Provide estimated smolt-to-adult survival rate, total adult production number, and escapement number (to the hatchery and natural areas)~~

1.13) Date program started (years in operation), or is expected to start.

The Phalon Lake rainbow program was initiated in 1991.

1.14) Expected duration of program.

 Indefinitely

1.15) Watersheds targeted by program.

Lake Roosevelt, Kettle River

1.16) Indicate alternative actions considered for attaining program goals, and reasons why those actions are not being proposed.

SECTION 2. PROGRAM EFFECTS ON ESA-LISTED SALMONID POPULATIONS.

~~**2.1) List all ESA permits or authorizations in hand for the hatchery program.**~~

~~**2.2) Provide descriptions, status, and projected take actions and levels for ESA-listed natural populations in the target area.**~~

~~**2.2.1) Description of ESA-listed salmonid population(s) affected by the program.**~~

~~Include information describing: adult age class structure, sex ratio, size range, migrational timing, spawning range, and spawn timing; and juvenile life history strategy, including smolt emigration timing. Emphasize spatial and temporal distribution relative to hatchery fish release locations and weir sites~~

~~**Identify the ESA-listed population(s) that will be directly affected by the program.**
(Includes listed fish used in supplementation programs or other programs that involve integration of a listed natural population. Identify the natural population targeted for integration).~~

~~**Identify the ESA-listed population(s) that may be incidentally affected by the program.**
(Includes ESA-listed fish in target hatchery fish release, adult return, and broodstock collection areas).~~

~~**2.2.2) Status of ESA-listed salmonid population(s) affected by the program.**~~

~~**Describe the status of the listed natural population(s) relative to "critical" and**~~

~~“viable” population thresholds (see definitions in “Attachment 1”).~~

~~–Provide the most recent 12 year (e.g. 1988-present) progeny-to-parent ratios, survival data by life stage, or other measures of productivity for the listed population. Indicate the source of these data.~~

~~–Provide the most recent 12 year (e.g. 1988-1999) annual spawning abundance estimates, or any other abundance information. Indicate the source of these data. (Include estimates of juvenile habitat seeding relative to capacity or natural fish densities, if available).~~

~~–Provide the most recent 12 year (e.g. 1988-1999) estimates of annual proportions of direct hatchery-origin and listed natural-origin fish on natural spawning grounds, if known.~~

~~**2.2.3) Describe hatchery activities, including associated monitoring and evaluation and research programs, that may lead to the take of listed fish in the target area, and provide estimated annual levels of take (see “Attachment 1” for definition of “take”).**~~

~~–Describe hatchery activities that may lead to the take of listed salmonid populations in the target area, including how, where, and when the takes may occur, the risk potential for their occurrence, and the likely effects of the take. (e.g. “Broodstock collection directed at sockeye salmon has a “high” potential to take listed spring chinook salmon, through migrational delay, capture, handling, and upstream release, during trap operation at Tumwater Falls Dam between July 1 and October 15. Trapping and handling devices and methods may lead to injury to listed fish through descaling, delayed migration and spawning, or delayed mortality as a result of injury or increased susceptibility to predation”).~~

~~–Provide information regarding past takes associated with the hatchery program, (if known) including numbers taken, and observed injury or mortality levels for listed fish.~~

~~**Provide projected annual take levels for listed fish by life stage (juvenile and adult) quantified (to the extent feasible) by the type of take resulting from the hatchery program (e.g. capture, handling, tagging, injury, or lethal take). Complete the appended “take table” (Table 1) for this purpose. Provide a range of potential take numbers to account for alternate or “worst case” scenarios.**~~

~~**–Indicate contingency plans for addressing situations where take levels within a given year have exceeded, or are projected to exceed, take levels described in this plan for the program.** (e.g. “The number of days that steelhead are trapped at Priest Rapids Dam will be reduced if the total mortality of handled fish is projected in season to exceed the 1988-99 maximum observed level of 100 fish.”)~~

SECTION 32. RELATIONSHIP OF PROGRAM TO OTHER MANAGEMENT OBJECTIVES

32.1) Describe alignment of the hatchery program with other hatchery plans~~any ESU-wide hatchery plan (e.g. Hood Canal Summer Chum Conservation Initiative) or other regionally-accepted and~~ policies (e.g., the NPPC Annual Production Review Report and Recommendations - NPPC document 99-15). Explain any proposed deviations from the plan or policies.

The hatchery program will be operated consistent with the subbasin ~~ESU-wide~~ plan.

32.2) List all existing cooperative agreements, memoranda of understanding, memoranda of agreement, or other management plans or court orders under which program operates.

The Lake Roosevelt Hatchery Coordination team has agreed that this stock of rainbow be evaluated for their programs.

32.3) Relationship to harvest objectives.

2.3.1) ~~3.3.1)~~ Describe fisheries benefiting from the program, and indicate harvest levels and rates for program-origin fish for the last 12 years (1988-99), if available.

32.4) Relationship to habitat protection and ~~recovery strategies~~ purposes of artificial production.

32.5) Ecological interactions.

SECTION 43. WATER SOURCE

- 43.1) Provide a quantitative and narrative description of the water source (spring, well, surface), water quality profile, and natural limitations to production attributable to the water source.**

The water supply for the Colville Hatchery is strictly well water. It is gravity fed from the pumphouse to the hatchery building. It has a constant temperature of 51 degrees F. The well is 75 feet deep with a capacity of 450 gallons per minute.

- 43.2) Indicate any appropriate risk aversion measures that will be applied to minimize the likelihood for the take of listed natural fish species as a result of hatchery water withdrawal, screening, or effluent discharge.**

SECTION 54. FACILITIES

- 54.1) Broodstock collection, holding, and spawning facilities ~~(or methods)~~.**

The broodstock that is used for Colville's program comes from Phalon Lake and the fish are spawned at the lake itself. They are trapped by the use of a floating Oneida trap.

- 54.2) Fish transportation equipment (description of pen, tank truck, or container used).**

None of these stocks are transported.

- ~~5.3) Broodstock holding and spawning facilities.54.34)~~ Incubation facilities.**

Colville Hatchery has a series of shallow troughs used for incubation.

- 54.45) Rearing facilities.**

Rearing facilities are a series of intermediate tanks. A portion of the program is destined for net pens on Lake Roosevelt. (Sherman Creek Hatchery)

- 54.56) Acclimation/release facilities.**

45,000 fish will be transported to Sherman Creek net pens for final rearing and the rest of the program is a forced release into the Kettle river or it's tributaries .

- 54.67) Describe operational difficulties or disasters that led to significant fish mortality.**

None

- 54.6.18) —————Indicate available back-up systems, and risk aversion measures ~~that will be applied,~~ that minimize the likelihood for the take of listed natural fish species that may result from equipment failure, water loss, flooding, disease transmission, or other events that could lead to injury or mortality.**

- 4.6.2) Indicate needed back-up systems and risk aversion measures that minimize the likelihood for the take of listed species that may result from equipment failure, water loss, flooding, disease transmission, or other events that could lead to injury or mortality.**

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SECTION 65. BROODSTOCK ORIGIN AND IDENTITY ~~Describe the origin and identity of broodstock used in the program, its ESA-listing status, annual collection goals, and relationship to wild fish of the same species/population.~~

65.1) Source.

The Phalon stock is located at Phalon Lake.

65.2) Supporting information.

65.2.1) History.

The Phalon Lake rainbow program began in 1991. The intent was to augment wild rainbow populations in the Kettle River. Approximately 100 to 150 wild fish are trapped each year and transferred to the lake. Thus the broodstock for the program.

65.2.2) Annual size.

65.2.3) Past and proposed level of natural fish in broodstock.

65.2.4) Genetic or ecological differences.

5.2.5) ~~6.2.5)~~ Reasons for choosing Broodstock traits

The Phalon Lake stock was chosen for the program to determine if this stock is more suited for the Lake Roosevelt environment over the Spokane stock as well as to address the issues put forth by the ISRP to use native stocks.

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5.2.6) ESA-Listing status

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~~Describe any special traits or characteristics for which broodstock was selected.~~

65.3) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects that may occur as a result of using the broodstock source. ~~to listed natural fish that may occur as a result of broodstock selection practices.~~

Each year class of spawners will have an influence of “new adults” to reduce the risk hatchery influence.

SECTION 76. BROODSTOCK COLLECTION

76.1) Life-history stage to be collected (~~adults, eggs, or juveniles~~ eggs, juveniles, adults).

Only adult fish will be used.

76.2) Collection or sampling design.

The Phalon stock is located at Phalon Lake and is of 100% native origin. Spawn timing is May and June and hatchery practices does not include selection for bias.

| **76.3) Identity.**

| **76.4) Proposed number to be collected:**
!20 adult fish.

| **76.4.1) Program goal (assuming 1:1 sex ratio for adults):**
The program goal is to spawn 60 mated pair or 120 adults.

| **76.4.2) Broodstock collection levels for the last 12 years (e.g., 1988-99), or for most recent years available:**

Year	Adults Females	Males	Jacks	Eggs	Juveniles
1988					
1989					
1990					
1991					
1992	26	30			
1993	48	56			
1994	34	42			
1995	25	44			
1996	43	133			
1997	66	94			
1998	33	44			
1999	68	151			

| Data source: [\(Link to appended Excel spreadsheet using this structure. Include hyperlink to main database\)](#)

- | **76.5) Disposition of hatchery-origin fish collected in surplus of broodstock needs.**
Phalon stock - When program levels are met the remaining adults will be left in the lake.
- | **76.6) Fish transportation and holding methods.**
N/A
- | **76.7) Describe fish health maintenance and sanitation procedures applied.**
These fish are monitored and tested by the fish health staff at WDFW.
- | **76.8) Disposition of carcasses.**
N/A
- | **76.9) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects to listed d-natural fish species resulting from the broodstock collection program.**
N/A

SECTION 87. MATING

Describe fish mating procedures that will be used, including those applied to meet performance indicators identified previously.

- | **87.1) Selection method.**
A minimum of 60 pairs should be spawned to maintain genetic diversity. Maintain a random mating pattern and avoid any deliberate selection of breeding pairs.
- | **~~8.2) Males:~~**
~~Specify expected use of backup males, precocious males (jacks), and repeat spawners.~~
- | **87.23) Fertilization.**
With a sex ratio of 1:1 the gametes are pooled in five fish pools. After fertilization the eggs are watered hardened in iodifor as a disinfecting measure.
- | **87.34) Cryopreserved gametes.**
N/A
- | **~~87.45) ———~~**Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects to listed natural fish resulting from the mating scheme.

SECTION 98. INCUBATION AND REARING

~~Specify any management goals (e.g., “egg to smolt survival”) that the hatchery is currently operating under for the hatchery stock in the appropriate sections below. Provide data on the success of meeting the desired hatchery goals.~~

98.1) Incubation:

98.1.1) Number of eggs taken/received and survival rate at stages of egg development and survival rates to eye-up and/or ponding

1992 Eggs taken –	43,520	% survival to swimup
1993	102,723	
1994	92,046	
1995	72,000	
1996	93,806	
1997	87,773	
1998	69,419	66%
1999	123,546	64%
2000	150,976	76%

~~98.1.2) Cause for, and disposition of surplus egg takes.~~

~~Describe circumstances where extra eggs may be taken (e.g. as a safeguard against potential incubation losses), and the disposition of surplus fish safely carried through to the eyed eggs or fry stage to prevent exceedence of programmed levels.~~

98.1.23) Loading densities applied during incubation.

Baskets are loaded at 18,500 eggs. Average size is 277/ounce. Flows are at 7gpm.

98.1.34) Incubation conditions.

The water is constant at 51 degrees. Oxygen levels at intake is 10 ppm.

98.1.45) Ponding.

Fish are ponded from the troughs at 800/lb.

~~degree of button up, cumulative temperature units, and mean length and weight (and distribution around the mean) at ponding. State dates of ponding, and whether swim up and ponding are volitional or forced.~~

98.1.56) Fish health maintenance and monitoring.

Fish health is monitored by the WDFW fish health staff.

98.1.67) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to ~~listed~~ fish during incubation.

The hatchery has a low water alarm system and staff are paid “stanby” to respond to any and all emergencies.

98.2) Rearing:

98.2.1) Provide survival rate data (average program performance) by hatchery life stage (fry to fingerling; fingerling to ~~releasesmolt~~) for the most recent twelve years (1988-99), or for years dependable data are available..

98.2.2) Density and loading criteria (goals and actual levels).

Pond volumes are 420 cu.ft. Flows are at 150 gpm. For fish smaller than 25/lb the target density level is 9lbs/gpm and on fish larger than 25/lb the target is 11lbs/gpm.

98.2.3) Fish rearing conditions

Tanks and troughs are cleaned every morning and mortality trends are recorded. The outflow has a minimum standard of 6ppm oxygen level.

98.2.4) Indicate biweekly or monthly fish growth information (*average program performance*), including length, weight, and condition factor data collected during rearing, if available.

~~9.2.5) Indicate monthly fish growth rate and energy reserve data (*average program performance*), if available.~~

~~Contrast fall and spring growth rates for yearling smolt programs. If available, indicate hepatosomatic index (liver weight/body weight) and body moisture content as an estimate of body fat concentration data collected during rearing.~~

98.2.56) Indicate food type used, daily application schedule, feeding rate range (e.g.

% B.W./day and lbs/gpm inflow), and estimates of total food conversion efficiency during rearing (*average program performance*).

The feed used is Nutra Diet from Moore Clark and the feed schedule varies from several times a day down to two times a day. %BW of feed also varies from fry to yearlings. Fry are typically fed at 3 to 4% BW, while yearlings are fed at a lower rate of 1.5%. Estimates of food conversion are at 1.2:1.

98.2.67) Fish health monitoring, disease treatment, and sanitation procedures.

Fish health is monitored by the WDFW fish health staff.

~~9.2.8) Smolt development indices (e.g. gill ATPase activity), if applicable.~~

98.2.79) Indicate the use of "natural" rearing methods as applied in the program.

98.2.810) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to ~~listed~~ fish under propagation.

SECTION 109. RELEASE

Describe fish release levels, and release practices applied through the hatchery program.

~~10.1) Proposed fish release levels. (Use standardized life stage definitions by species 9.1)~~
Proposed fish release levels.

Age Class	Maximum Number	Size (fpp)	Release Date	Location
Eggs				
Unfed Fry				
Fry				
Fingerling				
Yearling	26,000	25	May	Kettle River

109.2) Specific location(s) of proposed release(s).

Stream, river, or watercourse: Kettle River

Release point: (river kilometer location, or latitude/longitude)

Major watershed: Columbia River

Basin or Region: Upper Columbia

109.3) Actual numbers and sizes of fish released by age class through the program.

Release year	Eggs/ Unfed Fry	Avg size	Fry	Avg size	Fingerling	Avg size	Yearling	Avg size
1988								
1989								
1990								
1991								
1992								
1993								
1994								
1995								
1996								
1997								
1998								
1999								
Average								

109.4) Actual dates of release and description of release protocols.

~~and any culling procedures applied for non-migrants.~~

109.5) Fish transportation procedures, if applicable.

The hatchery utilizes a fry tank for all fish plants. The time of transport varies from less

than an hour to as many as two hours depending on the plant site.

109.6) Acclimation procedures (*methods applied and length of time*).

109.7) Marks applied, and proportions of the total hatchery population marked, to identify hatchery componentadults.

109.8) Disposition plans for fish identified at the time of release as surplus to programmed or approved levels.

109.9) Fish health certification procedures applied pre-release.

109.10)) — Emergency release procedures in response to flooding or water system failure.

109.11) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed fish species resulting from fish releases.

(e.g.—“All yearling coho salmon will be released in early June in the lower mainstem of the Green River to minimize the likelihood for interaction, and adverse ecological effects, to listed natural chinook salmon juveniles, which rear in up river areas and migrate seaward as sub-yearling smolts predominately in May”).

SECTION 10. PROGRAM EFFECTS ON ALL ESA-LISTED, PROPOSED, AND CANDIDATE SPECIES (FISH AND WILDLIFE)

10.1) List all ESA permits or authorizations in hand for the hatchery program.

10.2) Provide descriptions, status, and projected take actions and levels for ESA-listed natural populations in the target area.

10.2.1) Description of ESA-listed, proposed, and candidate species affected by the program.

Include information describing: adult age class structure, sex ratio, size range, migrational timing, spawning range, and spawn timing; and juvenile life history strategy, including smolt emigration timing. Emphasize spatial and temporal distribution relative to hatchery fish release locations and weir sites.

- Identify the ESA-listed population(s) that will be directly affected by the program. (Includes listed fish used in supplementation programs or other programs that involve integration of a listed natural population. Identify the natural population targeted for integration).

***** To obtain a list of listed species in your area, refer to Attachment 3 for the phone number and address of the nearest ecological field office.*****

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- Identify the ESA-listed population(s) that may be incidentally affected by the program.

(Includes ESA-listed fish in target hatchery fish release, adult return, and broodstock collection areas).

10.2.2) Status of ESA-listed species affected by the program.

- Describe the status of the listed natural population(s) relative to “critical” and “viable” population thresholds (see definitions in “Attachment I”).

- Provide the most recent 12 year (e.g. 1988 - present) progeny-to-parent ratios, survival data by life-stage, or other measures of productivity for the listed population. Indicate the source of these data.

- Provide the most recent 12 year (e.g. 1988 - 1999) annual spawning abundance estimates, or any other abundance information. Indicate the source of these data. (Include estimates of juvenile habitat seeding relative to capacity or natural fish densities, if available).

- Provide the most recent 12 year (e.g. 1988 - 1999) estimates of annual proportions of direct hatchery-origin and listed natural-origin fish on natural spawning grounds, if known.

10.2.3) Describe hatchery activities, including associated monitoring and evaluation and research programs, that may lead to the take of listed species in the target area, and provide estimated annual levels of take (see “Attachment I” for definition of “take”). Provide the rationale for deriving the estimate.

- Describe hatchery activities that may lead to the take of listed species in the target area, including how, where, and when the takes may occur, the risk potential for their occurrence, and the likely effects of the take.

- Provide information regarding past takes associated with the hatchery program, (if known) including numbers taken, and observed injury or mortality levels for listed fish.

- Provide projected annual take levels for listed species by life stage (juvenile and adult) quantified (to the extent feasible) by the type of take resulting from the hatchery program (e.g. capture, handling, tagging, injury, or lethal take).

Complete the appended “take table” (Table 1) for this purpose. Provide a range of potential take numbers to account for alternate or “worst case” scenarios.

- Indicate contingency plans for addressing situations where take levels within a given year have exceeded, or are projected to exceed, take levels

described in this plan for the program.

(e.g. “The number of days that westslope cutthroat trout are trapped in Lake Creek will be reduced if the total mortality of handled fish is projected inseason to exceed the 1988-99 maximum observed level.”)

SECTION 11. MONITORING AND EVALUATION OF PERFORMANCE INDICATORS

This section describes how “Performance Indicators” listed in Section 1.10 will be monitored. Results of “Performance Indicator” monitoring will be evaluated annually and used to adaptively manage the hatchery program, as needed, to meet “Performance Standards”.

11.1) Monitoring and evaluation of “Performance Indicators” presented in Section 1.10.

11.1.1) Describe the proposed plans and methods necessary to respond to the ~~proposed-to-collect data~~ appropriate “Performance Indicators” that have been identified for the program.

11.1.2) Indicate whether funding, staffing, and other support logistics are ~~available~~ or committed to allow implementation of the monitoring and evaluation on program.

11.2) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic and ecological effects to listed ~~fish~~ species resulting from monitoring and evaluation activities.

~~(e.g. “The Wenatchee River smolt trap will be continuously monitored, and checked every eight hours, to minimize the duration of holding and risk of harm to listed spring chinook and steelhead that may be incidentally captured during the sockeye smolt emigration period.”)~~

SECTION 12. RESEARCH

Provide the following information for any research programs conducted in direct association with the hatchery program described in this HGMP. Provide sufficient detail to allow for the independent assessment of the effects of the research program on listed fish. ~~—If applicable, correlate with research indicated as needed in any ESU hatchery plan approved by the co-managers and NMFS—~~ Attach a copy of any formal research proposal addressing activities covered in this section. Include estimated take levels for the research program with take levels provided for the associated hatchery program in Table 1.

12.1) Objective or purpose.

Indicate why the research is needed, its benefit or effect on listed natural fish

populations, and broad significance of the proposed project.

- 12.2) Cooperating and funding agencies.
- 12.3) Principle investigator or project supervisor and staff.
- 12.4) Status of population, particularly the group affected by project, if different than the population(s) described in Section 2.
- 12.5) Techniques: include capture methods, drugs, samples collected, tags applied.
- 12.6) Dates or time period in which research activity occurs.
- 12.7) Care and maintenance of live fish or eggs, holding duration, transport methods.
- 12.8) Expected type and effects of take and potential for injury or mortality.
- 12.9) Level of take of listed ~~fish~~ **species**: number or range of ~~fish~~ **individuals** handled, injured, or killed by sex, age, or size, if not already indicated in Section 2 and the attached “take table” (Table 1).
- 12.10) Alternative methods to achieve project objectives.
- 12.11) List species similar or related to the threatened species; provide number and causes of mortality related to this research project.
- 12.12) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse ecological effects, injury, or mortality to listed ~~fish~~ **species** as a result of the proposed research activities.
(e.g., “Listed ~~coastal~~ **westslope** cutthroat trout sampled for the ~~predation~~ **growth** study will be collected in compliance with ~~NMFS Electrofishing~~ **Federal** Guidelines to minimize the risk of injury or immediate mortality.”).

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SECTION 13. ATTACHMENTS AND CITATIONS

Include all references cited in the HGMP. In particular, indicate hatchery databases used to provide data for each section. Include electronic links to the hatchery databases used (if feasible), or to the staff person responsible for maintaining the hatchery database referenced (indicate email address). Attach or cite (where commonly available) relevant reports that describe the hatchery operation and impacts on the listed species or its critical habitat. Include any EISs, EAs, Biological Assessments, benefit/risk assessments, or other analysis or plans that provide pertinent background information to facilitate evaluation of the HGMP.

SECTION 14. CERTIFICATION LANGUAGE AND SIGNATURE OF RESPONSIBLE PARTY

"I hereby certify that the foregoing information is complete, true and correct to the best of my knowledge and belief. I understand that the information provided in this HGMP is submitted for the purpose of receiving limits from take prohibitions specified under the Endangered Species Act of 1973 (16 U.S.C.1531-1543) and regulations promulgated thereafter for the proposed hatchery program, and that any false statement may subject me to the criminal penalties of 18 U.S.C. 1001, or penalties provided under the Endangered Species Act of 1973."

Name, Title, and Signature of Applicant:

Certified by_____ Date:_____

Table 1. Estimated listed species take levels by hatchery activity.

Listed species affected: _____	ESU/Population: _____		Activity: _____	
Location of hatchery activity: _____	Dates of activity: _____		Hatchery program operator: _____	
Type of Take	Annual Take of Listed Fish By Life Stage (<i>Number of Fish</i>)			
	Egg/Fry	Juvenile/Smolt	Adult	Carcass
Observe or harass a)				
Collect for transport b)				
Capture, handle, and release c)				
Capture, handle, tag/mark/tissue sample, and release d)				
Removal (e.g. broodstock) e)				
Intentional lethal take f)				
Unintentional lethal take g)				
Other Take (specify) h)				

- a. Contact with listed fish through stream surveys, carcass and mark recovery projects, or migrational delay at weirs.
b. Take associated with weir or trapping operations where listed fish are captured and transported for release.
c. Take associated with weir or trapping operations where listed fish are captured, handled and released upstream or downstream.
d. Take occurring due to tagging and/or bio-sampling of fish collected through trapping operations prior to upstream or downstream release, or through carcass recovery programs.
e. Listed fish removed from the wild and collected for use as broodstock.
f. Intentional mortality of listed fish, usually as a result of spawning as broodstock.
g. Unintentional mortality of listed fish, including loss of fish during transport or holding prior to spawning or prior to release into the wild, or, for integrated programs, mortalities during incubation and rearing.
h. Other takes not identified above as a category.

Instructions:

1. An entry for a fish to be taken should be in the take category that describes the greatest impact.
2. Each take to be entered in the table should be in one take category only (there should not be more than one entry for the same sampling event).
3. If an individual fish is to be taken more than once on separate occasions, each take must be entered in the take tabl

