

HATCHERY AND GENETIC MANAGEMENT PLAN
RESIDENT FISH VERSION
(HGMP-RF)

Hatchery Program: Colville Hatchery

Species or Hatchery Population/Strain:
Kokanee Salmon

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. ColvilleHatchery

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

~~—~~ Kokanee Salmon (*Oncorhynchus nerka*) Lake Whatcom, Kootenay Lake

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
Fax: (509) 625-5170
Email: lewisml@dfw.wa.gov

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 River which is a tributary to the Columbia.

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1.6) **Type of program(s).**
Isolated recovery/Isolated harvest.

1.7) **Purpose (Goal) of program(s).** The hatchery goal in this program is to hold and spawn trapped adult kokanee from Lake Roosevelt. The resulting egg takes will be used to supply eggs for the Lake Roosevelt Fisheries Restoration and Enhancement program.

1.8) **Justification for the program.** The Lake Roosevelt Fisheries Restoration and Enhancement program at this time does not have the ability to hold and spawn kokanee adults that are trapped on the lake. Colville’s participation in the program will give them the added support to continue to trap and spawn hatchery origin kokanee and ultimately support a viable population.

1.9) **List of program “Performance Standards.”**

1.10.1) **“Performance Indicators”-addressing benefits.**

1.10.2) **“Performance Indicators” addressing risks.**

1.11) **Expected size of program.**

The expected size of the program, in terms of fish artificial produced through joint efforts of the Spokane Tribal Hatchery, Sherman Creek Hatchery and Lake Roosevelt Net Pen Rearing Program, includes annual target release goals of 1 million kokanee yearlings, 300,000 kokanee fingerlings and 550,000 rainbow trout yearlings.

1.11.1) **Proposed annual broodstock ~~collection level need~~ (maximum number of adult fish).**
12,000 adult fish.

1.11.2) **Proposed annual fish release levels (maximum number) by life stage and location.** (Use standardized life stage definitions by species presented in Attachment 2.)

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.

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

The program began in 1998.

1.14) Expected duration of program.

 Indefinitely

1.15) Watersheds targeted by program.

Lake Roosevelt

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 desealing, 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 program should continue.

Fish Health Management and Policy

This project is consistent with these plans and commitments

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. *Include information on water withdrawal permits, National Pollutant Discharge Elimination System (NPDES) permits, and compliance with NMFS screening criteria.*

- 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. N/A**

SECTION 54. FACILITIES

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

The trapping methods are done by Sherman Creek hatchery staff and Colville is the holding and spawning facility.

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

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

Colville Hatchery has a series of shallow troughs used for incubation. After eggs are eyed they are shipped to Spokane Tribal Hatchery.

- ~~54.45) Rearing facilities.~~**

N/A

- ~~54.56) Acclimation/release facilities.~~**

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

~~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.~~

The hatchery will be staffed full-time, and equipped with a low-water alarm system to help prevent catastrophic fish loss resulting from water system failure.

- 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

65.1) Source.

Lake Roosevelt Kokanee as identified by hatchery marks either coded wire tags and/or fin clips. Hatchery stocks originated from the stocks listed below.

65.2) Supporting information.

65.2.1) History.

The Lake Whatcom stock of kokanee has been cultured in the state of Washington for 66 years with no known introduction of other stocks.

The Meadow creek stock, is one of three stocks found on Kootenay Lake in British Columbia. The Meadow creek stock is native to Kootenay Lake and has been cultured since 1938.

65.2.2) Annual size.

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

N/A

65.2.4) Genetic or ecological differences.

Unknown

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

The Lake Whatcom stock was chosen for its abundance and availability for the initial programs on Lake Roosevelt. The Meadow Creek stock has been chosen to try and identify a stock that may perform better than the Lake Whatcom as well as address the issues of the ISRP on using native stocks or locally adapted stocks for artificial production.

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.

SECTION 76. BROODSTOCK COLLECTION

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

Adult fish

76.2) Collection or sampling design.

Boat electro fishing, backpack electro fishing, floating "Oneida" trap, and the hatchery barrier trap. Fish are caught from Sherman Creek and Sherman Creek Cove during the month of October. These methods are used by the Sherman Creek Hatchery staff.

76.3) Identity.
Identified by hatchery marks either coded wire tags and/or fin clips.

76.4) Proposed number to be collected:
12,000 adult

76.4.1) Program goal (assuming 1:1 sex ratio for adults):
12,000

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					
1993					
1994					
1995					
1996					
1997	22	374			
1998	50	2421			

Year	Adults Females	Males	Jacks	Eggs	Juveniles
1999	35	1292			

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.**
To date there has not been any incident of surplus broodstock. The methods used for collecting broodstock would cease in the event of meeting program goals.
- 76.6) Fish transportation and holding methods.**
Fish are transported in a hatchery fry tank and held at Colville in intermediate hatchery tanks for spawning.
- 76.7) Describe fish health maintenance and sanitation procedures applied.**
Fish health is monitored by the fish health staff at WDFW.
- 76.8) Disposition of carcasses.**
All carcasses are used to feed the Bald Eagles along the lake.
- 76.9) Indicate risk aversion measures that will be applied to minimize the likelihood for adverse genetic or ecological effects to listed el-natural-fish species resulting from the broodstock collection program.**

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 250 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

1998- 68,000 ,1999- 8,000 with 53% survival.

~~9.1.2) 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.

Standard loadings at Colville is 18,500 eggs per basket in shallow trough incubation. Flows are 7 gallons per minute per trough.

98.1.34) Incubation conditions.

As a standard, once the eggs have eyed, they are shocked and picked and then transferred to the Spokane Tribal Hatchery.

98.1.45) Ponding.

N/A

~~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).~~

~~98.2.3) Fish rearing conditions~~

~~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).~~

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

~~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.~~

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

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				

Age Class	Maximum Number	Size (fpp)	Release Date	Location
Fry				
Fingerling				
Yearling				

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

Stream, river, or watercourse: (include name and watershed code (e.g. WRIA) number)

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

Major watershed: (e.g., "~~Skagit~~ Kootenai River")

Basin or Region: (e.g., "~~Puget Sound~~ Columbia River Basin/Mountain Columbia Province")

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

For existing programs, provide fish release number and size data for ~~the past three fish generations, or approximately~~ the past 12 years, if available. Use standardized life stage definitions by species presented in **Attachment 2**. Cite the data source for this information.

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.

109.5) Fish transportation procedures, if applicable.

- | **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

