HATCHERY AND GENETIC MANAGEMENT PLAN (HGMP)

Hatchery Program:	**Alsea Hatchery Rainbow Trout Program**
Species or Hatchery Stock:	**Rainbow Trout (Stock 72/72T)**
Agency/Operator:	**Oregon Department of Fish and Wildlife**
Watershed and Region:	**North Coast Watershed District**
Date Submitted: **First Update Submitted:** **Second Update Submitted:**	**December 28, 2005** **June 27, 2008** **June 23, 2016**
Date Last Updated:	**June 23, 2016**

SECTION 1

GENERAL PROGRAM DESCRIPTION

1.1) Name of hatchery or program.

Alsea Hatchery, Rainbow Trout program for harvest in coastal lakes.

1.2) Species and population (or stock) under propagation and ESA status.

Rainbow Trout *Oncorhynchus mykiss*, stock-72 diploid are used as broodstock to produce sterile/triploid (72T) for stocking into lakes. Since the release year 2007 only triploid/sterile Rainbow Trout (72T) are being stocked under this program, to prevent interbreeding with resident Rainbow Trout or anadromous Rainbow Trout (steelhead). This stock is not listed under the Federal or State of Oregon Endangered Species Acts (ESA).

1.2) Responsible organization and individuals.

Lead Contact:

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Onsite Lead Contacts:

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Name (and title):	John Spangler, District Fisheries Biologist
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Hatchery Contact:
Name (and title): Matt Franks, Alsea Hatchery Manager
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Other agencies, Tribes, co-operators, or organizations involved, including contractors, and extent of involvement in the program:

None.

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

Funding for the Alsea Hatchery is 50% general fund and 50% other funds. The Alsea Hatchery employs four FTE's. Annual operating costs total $278,511. This total includes all rainbow and winter steelhead programs reared at Alsea Hatchery, plus personnel costs, supplies, and services. Of this amount, $35,650 (12.8%) is used to raise the rainbow trout for lakes listed in this HGMP.

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

The Alsea Hatchery is located on the North Fork of the Alsea River off Highway 34, near the town of Alsea, which is 15 miles (24 km) west of Philomath. The hatchery occupies about 25 acres at an elevation of 380 feet, latitude 44º 25'22" N, and longitude 123º 33' 05" W. Alsea Hatchery is located at river mile 6 (km 9.6) on the North Fork Alsea. The North Fork Alsea merges with the South Fork Alsea to form the Alsea River at river mile 43 (km 68.8) on the Alsea River. The North Fork Alsea watershed code is 1800430000.

1.6) Type of program.

This program is an isolated harvest program.

1.7) Purpose (Goal) of program.

The goal of this program is to augment the coastal lake trout fishery by providing catchable hatchery trout in the spring.

1.8) Justification for the program.

This program provides hatchery-produced sterile Rainbow Trout to be caught by the recreational anglers in coastal lakes along the Mid-Coast of Oregon. Since the release year 2007, only sterile or triploid Rainbow Trout are being stocked to prevent interbreeding of these fish with resident Rainbow Trout and anadromous Rainbow Trout (steelhead). The stocked lakes covered in this program are Mercer, Siltcoos, Sutton, and Woahink lakes near Florence; Eckman Lake near Waldport; and Devils Lake in Lincoln

City. These are the only lakes stocked with trout in the Mid-Coast that contain ESA-listed natural Coho Salmon.

The trout are planted in these lakes in the spring at times coinciding with higher angling effort for trout. The hatchery trout are released at a size that is greater than the legal size limit for retaining trout (8 inches). Both stocking times and size at release (ready for harvest) will expedite the trout harvest and will minimize the competition for food and space between the listed Coho Salmon and stocked trout.

This size limit is greater than the size of most natural Coho Salmon smolts and limits the number of smolts accidentally retained as trout by anglers. Efforts are underway to develop fish identification signs and post them at these lakes. The signs will show the difference between rainbow trout and Coho Salmon juveniles and remind anglers that the Coho must be released unharmed. Trout stocked in Devils Lake are finclipped and regulations are in place requiring that any unmarked trout be released. This action was implemented to protect wild Coho Salmon juveniles.

Trout stocking was eliminated in Tahkenitch Lake and significantly reduced in Siltcoos Lake. These lake basins support the largest natural Coho Salmon populations of any lakes in this area. Numbers of trout stocked have also been reduced in Mercer, Sutton, and Woahink lakes in an effort to reduce impacts to wild Coho Salmon.

1.9 & 10) List program "Performance Standards" and "Performance Indicators", designated by "benefits" and "risks".

The following are key performance standards and indicators identified to evaluate the success of this fish propagation program.

Trout Fishery Contribution

Standard 1.1: Provide an opportunity for anglers to catch hatchery trout in Mercer, Siltcoos, Sutton, and Woahink lakes near Florence; Eckman Lake near Waldport; and Devils Lake in Lincoln City in a manner that limits impacts to wild Coho Salmon**.**
Indicator: Angler effort and number of hatchery fish caught in the trout fishery at each of the lakes.
Indicator: Number of wild Coho Salmon juveniles caught during fisheries targeting hatchery rainbow trout.

Standard 1.2: Stock a total of 33,100 hatchery rainbow trout at a size of 3/lb or larger into Devils, Eckman, Mercer, Siltcoos, Sutton, and Woahink lakes.
Indicator: Trout will be inventoried at time of release to determine size and enumerate trout numbers released in these lakes.

Facility Operation and Maintenance

Standard 2.1: Brood selection, mating, and spawning protocol are consistent with approved methods and procedures.

***Indicator*:** Females and males are selected (and paired) randomly for spawning.
***Indicator*:** Fish are spawned at a 1:1 male-to-female ratio and are spawned according to a 6-by-6 spawning matrix.
***Indicator*:** All fish are live-spawned.

Standard 2.2: Maximize survival rates at varying life stages within the hatchery. (Refer to Section 9.2)
***Indicator*:** Enumerate survival rates from egg-fry, fry-fingerling, and fingerling to release to determine optimal rearing conditions and practices.

Standard 2.3: Follow approved fish health and disinfection guidelines to minimize disease impacts to natural populations.
Indicator: Monthly fish health inspections by ODFW Fish Health staff. Results reported in the fish health database, with recommendations to hatchery staff as needed.
***Indicator*:** Evaluate fish health status prior to release, and release only certified fish.

Standard 2.4: Alsea Hatchery effluent will comply with the conditions and water quality limitations identified in the current NPDES permit.
Indicator: Water samples collected and results reported.
Indicator: Results are within permit requirements.

Standard 2.5: Alsea Hatchery water withdrawals will comply with NOAA Fisheries juvenile screening criteria.
Indicator: Screens inspected and are either in, or are brought into compliance.

1.11) Expected size of program.

Current program calls for 33,100 legal size and larger trout to be planted annually into the bodies of water designated in this HGMP (see Section 1.8).

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

No adults need to be collected from natural populations. The hatchery broodstock is maintained at ODFW's Roaring River Hatchery.

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

Only legal-size and larger trout will be released under this program. The proposed annual fish release levels and their life stages and release locations are listed below:

Table 1-1. Proposed Annual Fish Release Levels of Stock 72T Rainbow Trout.

Life Stage	Release Location	Annual Release Level	Release Date
Legals (3.0 fish per pound)	Eckman Lake	3,200	Mid-March and Mid-May
	Devils Lake	20,000	Mid-March and Mid-April
Larger (1.5 fish per pound)	Mercer Lake	4,500	Mid-March and Mid-April
	Sutton Lake	2,500	Mid-March and Mid-April
	Woahink Lake	2,000	Mid-March and Early April
	Siltcoos Lake	2,000	Mid-March and Mid April
	Eckman Lake	100	Mid April
Trophy (0.5 fish per pound)	Eckman Lake	50	Mid-May
Data source: ODFW			

1.12) Current program performance, including estimated smolt-to-adult survival rates, adult production levels, and escapement levels. Indicate the source of these data.

The performance of this program can be measured in terms of harvest. The best information on harvest is based on a creel survey done on the Florence lakes in 1993. The percentage of stocked trout caught ranged from 5% on Sutton Lake, to 25% on Mercer Lake. The overall trout fishery in the coastal lakes in the Florence area harvested 31% of the trout stocked. Higher proportions of the stocked trout were harvested in smaller lakes without outlets that do not contain any wild Coho Salmon and are therefore not specifically discussed in this HGMP.

The stocking strategy has changed at these lakes since the creel was done. Larger trout are stocked at lower numbers. One reason for the poor harvest rate on Sutton Lake was thought to be bird predation after stocking. Numerous cormorants had been observed on the lake eating hatchery trout and it was thought that larger trout would be difficult for the birds to eat. The larger trout are also more popular with the anglers.

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

Stocking of the above bodies of water with rainbow trout from Alsea Hatchery began in 1995. Trout were stocked in these lakes prior to this date, but the trout came from other hatcheries.

1.14) Expected duration of program.

The trout stocking program will continue indefinitely.

1.15) Watersheds targeted by program.

The coastal lakes that are stocked are the target of this HGMP (note Table 1.1).

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

1.16.1) Brief Overview of Key Issues

(a) Impacts on wild Coho Salmon juveniles

Impacts to listed natural Coho Salmon from stocked rainbow trout could involve anglers targeting the stocked trout and inadvertently catching Coho Salmon juveniles that are killed through hooking mortality. Juvenile wild Coho Salmon can also be miss-identified as a legal trout and illegally retained by anglers.

(b) Competition for food and space

This is generally not thought to be a major impact because most of the stocked trout are either quickly caught or perish. The abundance of both the stocked rainbow and juvenile Coho Salmon in these lakes is usually low compared to prolific populations of warm water gamefish. The juvenile Coho Salmon that are present in these lakes are considerably larger as smolts than stream reared Coho juveniles. Analysis of scale patterns on adult Coho Salmon returning to these lakes indicates that "lake rearing" prior to the freshwater annulus on the scale is not a prevalent life history in Siltcoos, or Devils Lake, but does occur commonly in the Mercer/Sutton lake system (Lisa Borgerson, ODFW Scale Analyst, personnel communication). Improved spring growth of juvenile Coho Salmon immediately prior to smolting is common to Coho in all these lakes.

1.16.2) Potential Alternatives to the Current Program.

Alternative 1 - Discontinue trout stocking in coastal lakes with Coho Salmon populations. This would pose the least risk to wild Coho of any of the alternatives. Fewer anglers would target trout in these lakes if the lakes were no longer stocked. This could result in fewer wild Coho Salmon juveniles being caught incidentally. Some trout fishing will continue in the lakes even if they are not stocked with trout because these lakes contain wild cutthroat trout. Closing the lakes to all trout fishing could further enhance protection of Coho in the lakes by eliminating any anglers targeting trout. Eliminating the trout stocking will negatively impact trout anglers who fish in these lakes. This alternative could also be implemented by shifting the rainbow stocking to lakes that do not contain wild Coho. The shift away from coho lakes has already been done to the extent that non Coho Salmon lakes are currently stocked near maximum levels. Shifting more of the trout stocking to these lakes may not benefit the fisheries.

Alternative 2 - Increase trout stocking in coastal lakes with Coho Salmon to 1990 levels. This alternative would likely increase the harvest of trout in these lakes. It could also increase trout angling effort. This increased harvest and effort would likely lead to higher numbers of Coho Salmon juveniles being caught by trout anglers and an increase in the mortality rate to wild Coho from the fishery. More stocked trout could also lead to detrimental competitive interactions with juvenile wild Coho Salmon.

Alternative 3 - Adipose fin-clip all hatchery trout stocked in coastal lakes with Coho Salmon and implement "fin-clipped trout only" regulations. This alternative would help

to eliminate the inadvertent take through miss-identification of wild Coho Salmon by trout anglers in these lakes. Anglers would know that any fish with an adipose fin still present must be released. This would not prevent wild Coho from being caught by trout anglers and would not lessen the mortality incurred on Coho from being caught and released. This alternative would also eliminate the consumptive harvest of wild cutthroat trout in these lakes.

1.16.3) Potential Reforms and Investments.

Reform/Investment 1: Fin-clip all hatchery trout stocked in lakes with Coho Salmon. This would require the fin-clipping of an additional 16,500 trout (using current stocking levels). Estimated cost would be less than $1,000. This reform would also result in the loss of harvest on wild cutthroat trout. These wild cutthroat populations are healthy and provide for substantial year round fisheries in Siltcoos, Mercer and Sutton lakes.

SECTION 2

PROGRAM EFFECTS ON NMFS ESA-LISTED SALMONID POPULATIONS

Effects on NMFS ESA-listed salmonid species and non-salmonid species are also addressed in Addendum A).

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

The HGMP for this program was submitted to NMFS on 12/28/2005 for ESA permit or take authorization. This is an updated version of the previously submitted HGMP.

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

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

Oregon coast Coho Salmon ESU has been listed as threatened population under the federal ESA and the listing decision will be effective from May 12, 2008. This program may affect wild Coho Salmon populations in the respective lake basin where hatchery trout are stocked (Devils Lake in Lincoln City, Eckman Lake near Waldport; and Mercer/Sutton lakes and Siltcoos/Woahink lakes near Florence). For the purpose of this assessment, the Coho Salmon in each of the lake(s) associated with independent ocean tributaries were considered as populations. Eckman Lake which feeds into Alsea Bay was considered part of the Alsea Basin wild Coho Salmon population. The pounds of trout stocked per acre for each lake is listed in Table 2-1.

Table 2-1. Annual stocking of Rainbow Trout per acre by individual lake.

Lake	Lake Size (acres)	Number Stocked	Fish Size (fish/lb)	Pounds Stocked	Pounds Stocked/acre
Devils	678	20,000	3.0/lb	6,667	9.8
Eckman	45	3,200 100 50	3.0/lb 1.5/lb 0.5/lb	1,333 67 100	 27.4
Mercer	359	4,500	1.5/lb	2,500	6.9
Sutton	107	2,500	1.5/lb	1,667	15.6
Woahink	820	2,000	1.5/lb	1,333	1.6
Siltcos	3,168	2,000	1.5/lb	1,333	0.4

Devils Lake

Devils Lake at Lincoln City drains through D River for about 100 yards into the Pacific Ocean. The lake is 678 acres in size and has a drainage area of about 24 square miles. A wild Coho Salmon population spawns in Rock Creek, the principal tributary to the lake. Adult Coho Salmon in this lake has been monitored annually through spawning ground surveys (Table 2-2).

Eckman Lake

Eckman Lake is 45 acres in size and is situated on a small tributary to the Alsea Basin in lower tidewater. The entire Eckman Creek Basin drains about five square miles. It has been verified to have Coho Salmon production based on juvenile surveys, but adult Coho returns to this stream have not been monitored. However, extensive monitoring of spawner abundance has been made throughout the Alsea River Basin (Table 2-2).

Mercer/Sutton lakes

Mercer and Sutton lakes are adjacent to each other and are primary contributors to a common outlet to the Pacific Ocean. Mercer Lake is 359 acres in size, while Sutton Lake is 107 acres. Together they have a drainage area of about 11 square miles (Atlas of Oregon Lakes). The primary tributary stream feeding into these lakes is Bailey Creek, which has been monitored for adult Coho Salmon spawner abundance in recent years (Table 2-2).

Siltcoos/Woahink lakes

Siltcoos and Woahink lakes are also situated adjacent to each other, and empty into the Pacific Ocean from a common outlet. Siltcoos Lake is 3,168 acres in size while Woahink Lake is 820 acres in size. They have a drainage area of 68 square miles (Atlas of Oregon Lakes), and have extensive monitoring of adult Coho Salmon spawner abundance (Table 2-2).

Coho Salmon Life History

Coho Salmon life histories associated with the aforementioned lakes are generally similar. Specific to these lakes, adult Coho Salmon migrate to freshwater in the fall and tend to hold within the lakes near tributary outlets before migrating to spawning grounds. Soon after emergence, the fry may stay in the stream as is typical for Coho Salmon, or the recently emerged Coho Salmon may migrate downstream to the lake. Lake reared Coho Salmon juveniles typically exhibit considerably more growth than river reared Coho, however they may have low survival due to predation by introduced warm water gamefish. In addition to the initial migration to the lake as fry, it is thought additional juvenile Coho Salmon get washed out of the stream during the winter. These Coho are thought to benefit from the lake environment through faster growth. During the winter and spring prior to movement to the ocean, these lakes have cooler water temperatures which allow the Coho to grow rapidly and better co-exist with the introduced warm water gamefish. Smolting occurs in the spring following 1 year to occasionally 2 years of freshwater rearing. After smolting, the Coho Salmon migrate to the ocean to rear to adults before entering freshwater to complete their life cycle. Because lake reared smolts are typically larger, there tends to be a higher percentage of jacks (precocious males) associated with returning adult spawners. A general Coho Salmon life history description can be found in (Nickelson et al. 1992a, 1992b).

Habitat Use and Freshwater Distribution
Adult spawning and early rearing of juvenile Coho Salmon are found throughout suitable habitat in tributary streams. Soon after emergence, some of the fry migrate to the lake or stream associated marsh habitats to rear. During winter and early spring months the entire lake has potential for use, but during summer months the lake is warm and juvenile Coho Salmon will utilize marsh habitats associated with cool water streams, seeps, or springs. After the fall rains begin and water temperatures cool, the entire water body has potential for use.

- Identify the NMFS ESA-listed population(s) that will be directly affected by the program.

This is a rainbow trout program using domesticated hatchery-origin fish as broodstock. As a result, direct take of any ESA-listed Coho Salmon shall not occur due to this program.

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

In release areas, natural Coho Salmon may be indirectly affected due to competitive interactions with Rainbow Trout for food and space. Coho fry may also be affected due to predation by program's Tainbow Trout. Also, listed Coho Salmon may be incidentally captured by anglers while fishing for stocked Rainbow Trout.

2.2.2) Status of NMFS 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").*

Critical and viable population thresholds have been established for Siltcoos/Woahink Lake Coho Salmon (Zhou 2000). The critical threshold for Siltcoos and Tahkenitch lakes are 198 and 101 adult Coho Salmon, respectively. Viable population thresholds for Siltcoos Lake is 1,800 and for Tahkenitch Lake is 880 adult Coho Salmon, respectively. These lakes have exceeded both thresholds in recent years.

For other Coho Salmon populations occupying habitat where hatchery rainbow trout are stocked, critical and viable population thresholds have not been established.

- 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.

Table 2-2. Estimates of progeny to parent ratios for lakes Coho Salmon populations affected by hatchery rainbow trout stocking. Progeny estimate are derived from table 2-3 and are not adjusted for harvest.

Parental Year	Devils Lake	Alsea Basin	Siltcoos Lake
1990	1.9	0.9	2.2
1991	1.4	0.8	0.5
1992	9.5	0.1	11.5
1993	0.5	1.5	1.3
1994	0.4	0.5	1.9
1995	1.7	0.3	0.7
1996	1.8	1.2	0.9
1997	1.1	3.6	1.5
1998	1.2	15.7	1.7
1999	2.5	3.1	1.2
2000	2.2	3.6	1.7
2001	7.6	1.7	1.6
2002	NA	1.5	0.9
2003	1.1	0.2	0.8
2004	0.01	0.4	0.2
2005	NA	1.0	0.9
2006	0.8	7.4	1.0
2007	4.0	4.5	5.3
2008	6.5	2.1	1.6
2009	0.8	0.6	0.8
2010	1.5	1.0	0.5
2011	0.5	0.9	1.1

- 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).*

Table 2-3. Coho Salmon spawner index data for all lakes stocked with rainbow trout. Data from Siltcoos Lake, Alsea River, and Devils Lake was collected by ODFW. Data for Bailey Creek was collect by the U.S. Forest Service, Florence Office.

	Siltcoos Lake		Alsea River	Bailey Creek		Devils Lake
	Estimated Spawner Abundance			Peak Spawners/Mile[1/]		Peak Spawners[1/]
Year	Adults	Jacks	Adults	Adults/Mile	Jacks/Mile	Peak Count
1990	1529	419	775			12
1991	2730	317	1011			31
1992	368	187	6273			2
1993	3415	402	694	22	4	23
1994	1345	731	828			44
1995	4240	923	441	32	8	19
1996	4502	1405	1060	49	15	12
1997	2501	340	601			16
1998	2943	963	108	55	5	33
1999	4001	1168	1341	55	12	21
2000	3835	1757	3363	102	9	17
2001	5104	436	3228	149	40	38
2002	4749	1425	9073	166	75	52
2003	6628	2336	10281	288	34	37
2004	7998	2193	5233	202	43	287
2005	4364	1197	13907	NA	NA	NA
2006	5452	384	1972	NA	NA	41
2007	1447	482	2146	NA	NA	6
2008	3873	1321	13320	NA	NA	19
2009	5197	758	14638	NA	NA	31
2010	7678	781	9688	NA	NA	24
2011	6354	911	28337	NA	NA	124
2012	3945	117	8470	NA	NA	24
2013	3797	1555	9283	NA	NA	37
2014	7178	573	25786	NA	NA	67

[1/]Peak spawner counts include all live and dead adult Coho Salmon.

- 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.

From 1990-99, the proportion hatchery-origin Coho Salmon on natural spawning areas of the lakes complex Coho has been 0.9 % based on analysis of scale samples collected during spawning surveys.

No Rainbow Trout have been observed on spawning ground surveys. Note: All Rainbow Trout stocked under this program are triploid or sterile fish, aimed to prevent possible interbreeding with resident Rainbow Trout or anadromous Rainbow Trout (steelhead).

2.2.3) Describe hatchery activities, including associated monitoring and evaluation and research programs, that may lead to the take of NMFS 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.

There are no known takes of listed fish associated with this program. The release of hatchery trout into these lakes may have some adverse effects on listed Coho Salmon due to predation on wild Coho by the trout, disease transmission from the trout to wild Coho, or competition for food or habitat between the trout and wild Coho. However, there is no information available to determine the occurrence or extent of these impacts.

Annual take level of wild Coho Salmon has been documented in association with the fishery on hatchery trout in these lakes. This take has been addressed in the Section 7 Consultation for fisheries with the Pacific Fisheries Management Council.

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

There are no known takes associated with this fish propagation and stocking program.

- 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).

There are no known takes associated with this fish propagation and stocking program. Take associated with the trout fishery is addressed under a Section 7 consultation.

- 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.

There are no known takes associated with this fish propagation and stocking program.

Table 2-4. Estimated Listed Salmonid Take Levels by Hatchery Activity.

Listed Species Affected: Coho Salmon ESU/Population: Oregon Coastal Coho Salmon Activity: Trout Release				
Location of Hatchery Activity: Mercer/Sutton lakes, Siltcoos/Woahink lakes, Eckman Lake, and Devils Lake **Dates of Activity:** **Hatchery Program Operator: ODFW**				
Type of Take	**Annual Take of Listed Fish By Life Stage *(Number of Fish)***			
	Egg/Fry	**Juvenile/Smolt**	**Adult**	**Carcass**
Observe or harass a)	0	0	0	0
Collect for transport b)	0	0	0	0
Capture, handle, and release c)	0	0	0	0
Capture, handle, tag/mark/tissue sample, and release d)	0	0	0	0
Removal (e.g. broodstock) e)	0	0	0	0
Intentional lethal take f)	0	0	0	0
Unintentional lethal take g)	0	0	0	0
Other Take (specify) h)	0	0	0	0

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 table.

SECTION 3

RELATIONSHIP OF PROGRAM TO OTHER MANAGEMENT OBJECTIVES

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

- **Alsea River Basin Fish Management Plan** (approved by the Oregon Fish and Wildlife Commission—November 14, 1997) - The basin management plan identifies the existing program as a priority.

- **Native Fish Conservation Policy**: The Oregon Fish and Wildlife Commission has approved the Native Fish Conservation Policy (NFCP). The Native Fish Conservation Policy (NFCP) requires the development of a conservation plan for each native stock within the species management unit (SMU). The ODFW has completed an Oregon Native Fish Stock Status Report 2005. Information in the document will be used for the development of conservation plan as part of the NFCP. The conservation plan shall illustrate options for the responsible use of hatchery-produced fish within the SMU.

- **Hatchery Fish Management Policy*:*** This policy provides guidance for the responsible use of hatchery-produced fish. It outlines the best management practices for hatchery programs to ensure conservation and management of both naturally produced native fish and hatchery produced fish in Oregon. The FHMP calls for the development of Hatchery Program Management Plans (HPMPs) to outline the hatchery practices that will be followed for each hatchery program. A HPMP may be a Hatchery and Genetic Management Plan (HGMP) or an aspect of conservation plan developed under the Native NFCP.

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

- **Oregon Plan for Salmon and Watersheds** (Executive Order 99-01). The Oregon Plan for Salmon and Watersheds is a prescriptive set of measures for recovering threatened and endangered salmon and steelhead, and meeting federal water quality standards, established by Executive Order of the Governor.
- **Pacific Fisheries Management Council** (Section 7 Consultation).
- NPDES general permit 300J for the Alsea Hatchery operation.

3.3) Relationship to harvest objectives.

The sole intent of this program is to provide trout angling opportunities in coastal lakes with minimum biological risks to the listed Coho Salmon.

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

The recreational trout fishery in coastal lakes benefits from this program. A creel survey completed in 1993, estimated that 31% of all trout stocked in 17 coastal lakes were caught. This survey included both lakes with and without Coho Salmon. The catch rate in individual lakes varied from 5% to nearly 100%.

3.4) Relationship to habitat protection and recovery strategies.

Refer to Attachment A for ODFW habitat protection and enhancement policies identified in the Alsea Basin Fish Management Plan (adopted November 14, 1997). These are the same policies and objectives found in all of the basin plans. Generally, habitat protection and recovery strategies are prioritized in areas with (potential) good/high quality habitat. Habitat protection and recovery strategies for Coho Salmon in all Mid-Coast basins focus on riparian areas and winter and summer rearing habitat. Progress has been made to improve fish passage at road crossings. Most fish passage barriers blocking significant habitat reaches have been remediated. ODFW personnel work with both private and public landowners in all of the basins to protect and restore riparian areas along Coho Salmon inhabiting streams. Numerous projects using large wood have been implemented to enhance natural processes in streams and create summer and winter rearing habitat for Coho Salmon. This hatchery trout program is not directly related to any of these habitat strategies.

3.5) Ecological interactions.

(a) Species that could negatively impact program.
Predatory non-native fish like yellow perch and largemouth bass may negatively impact the program fish. Predation by aquatic mammals may negatively impact the program. Piscivorous birds, such as blue herons, Caspian terns, cormorants, and gulls etc. may also impact the program.

(b) Species that could be negatively impacted by the program.
Since rainbow trout of legal and larger sizes will be stocked in this program, it is expected that the program will have very minimum impacts to other species. There are likely to be interactions between the hatchery trout and native fishes in the lakes, including Coho Salmon and cutthroat trout. These interactions are not completely understood and cannot be quantified to any extent. Possible interactions include competition for food and space and predation of juvenile wild Coho Salmon, Cutthroat Trout, Yellow Perch, Largemouth Bass and other local species.

(c) Species that could positively impact program.
Any fish of smaller sizes that may serve as food for trout may positively impact the program.

(d) Species that could be positively impacted by the program.
Species that depend directly or indirectly on trout for their food and nutrient supply could be positively impacted by the program. These include fish species, aquatic mammals, birds, and other predator and scavenger species. Thus, the hatchery production has the potential for playing a significant role in the predator-prey relationships and community ecology during periods of low natural productivity.

SECTION 4

WATER SOURCE

4.1) 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.

Alsea Hatchery utilizes the North Fork Alsea River as its sole surface water source. The average water temperatures range from 37º to 68º F. Alsea maintains a water diversion permit for 21,103 gallons per minutes (gpm). Alsea Hatchery operates under a NPDES 0300-J discharge permit, and the facility is in compliance with the NPDES permit requirements. Low stream flows during the late summer and fall can limit total hatchery production. Alsea Hatchery is also in compliance with the water right, water withdrawals, and annual water uses reporting to Oregon Department of Water Resource.

4.2) Indicate risk aversion measures that will be applied to minimize the likelihood for the take of natural fish as a result of hatchery water withdrawal, screening, or effluent discharge.

Hatchery intake is screened with 1/8-inch-square screening to avoid entrapment of juveniles. Downstream migration of fish over intake screens is accomplished through a bypass channel, which collects fish moving over the intake screen, and allows diversion back into the stream below the intake. The recent construction of a new trap and fish ladder facility at the water intake dam will allow for both downstream and upstream migration for fish. Hatchery effluent is sampled and tested according to NPDES discharge permit requirements. Facility effluent compliance falls well within permit allowances. The date for inspection of the intake screens, to check compliance with NMFS standards, is to be determined in cooperation with the ODFW Engineering Division.

SECTION 5
FACILITIES

5.1) Broodstock collection facilities (or methods).

Captive broodstocks of Rainbow Trout (stock 72 diploid) are held throughout the life cycle at ODFW's Roaring River Hatchery.

5.2) Fish transportation equipment (description of pen, tank truck, or container used).

Not applicable for captive broodstock.

5.3) Broodstock holding and spawning facilities.

Holding facilities consist of two 20-foot by 100-foot raceways. The water supply comes from Roaring River at an average of 800 gpm per pond. Spawning operations occur in a covered building where adult fish are separated into pens by year, class, and sex. Prior to spawning, the fish are anesthetized using MS222 in a 120-gallon tank. All fish are live-spawned using compressed air. After spawning, fertilized eggs are subjected to pressure shock to produce triploid eggs at Roaring River Hatchery.

5.4) Incubation facilities.

Roaring River Hatchery:
Incubation occurs in 16-tray vertical stack incubators. The water supply is from the Roaring River, which is diverted from the stream at the main intake. No temperature manipulation is used during the incubation period. Troughs for picking and enumerating eggs are utilized when needed. Most egg picking and counting is done by machine. The water supply is equipped with an alarm system to monitor for critical water-level conditions.

Alsea Hatchery:
Alsea hatchery receives triploid eyed-eggs from Roaring River Hatchery. Incubation facilities at Alsea consist of 24 stacks of 8-tray vertical incubators. North Fork Alsea River water, diverted at the intake, is delivered to the hatchery by a 42-inch mainline. An 18-inch line delivers water from the mainline to the hatchery building. Two 4-inch lines feed water, in tandem, to a screened headbox that is supported over the incubators to create a supply and flow reservoir. In addition, there are four 15-foot, shallow trough incubators. Equipment includes a Jensorter egg picker, mechanical counter, egg picking trough, and other necessary equipment. The total egg hatching capacity is 1.7 million. The incubation system is equipped with a low-water alarm system. The incubation facilities are housed in a 100-foot by 40-foot wood constructed building.

5.5) Rearing facilities.

Rearing facilities consist of twenty 16-foot by 30-inch concrete starter tanks housed inside the hatchery building, twenty 100-foot by 20-foot concrete raceways, one 200-foot

by 16-foot concrete pond, three 29-foot circular ponds, and two concrete raceway show ponds. Cleaning effluent is diverted to a 310-foot by 110-foot pollution abatement pond used to settle out solids. All holding tanks utilized for production are individually alarmed.

5.6) Acclimation/release facilities.

Not applicable.

5.7) Describe operational difficulties or disasters that led to significant fish mortality.

The hatcheries experience seasonal environmental difficulties that could lead to fish mortality. These include high muddy water, extreme low-flow situations, seasonal parasite infestation, and disease problems. Although there has not been significant fish mortality due to these conditions in recent history, these conditions do exist and must be dealt with.

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

The hatchery-produced Rainbow Trout stock 72T is not an ESA-listed species or population. However, the hatchery is staffed full time, and is equipped with a low-water alarm system to help prevent any loss of fish under this program. Disinfecting procedures are followed between stocks of fish, to prevent disease transmission. A fish pathologist conducts regular exams to monitor fish health. All equipment utilized to handle and move fish is regularly inspected, to prevent damage to fish from handling. There is no backup water source available should the primary water source be reduced due to a catastrophe.

SECTION 6

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.

6.1) Source.

The stock 72 Rainbow Trout have been reared at Roaring River Hatchery since 1970. They are referred to as the Cape Cod stock and came from the Spokane Hatchery in Washington State. The Cape Cod Rainbow is not a listed species.

6.2) Supporting information.

6.2.1) History.

The diploid stock of Rainbow Trout has been held in captivity since the late 1880's. The diploid stock 72 (Cape Cod Stock) Rainbow Trout originated from the McCloud River in California in the late 1800's. Eggs of this stock were shipped to the Cape Cod Trout Company in Massachusetts, and used there as broodstock for many years. In 1942, eggs were shipped from the Cape Cod Company to the Spokane Hatchery, a state fish hatchery in Washington. Eggs from Spokane hatchery were shipped to Roaring River Hatchery in 1967.

6.2.2) Annual size.

The average number of adult Rainbow Trout (stock 72) used in broodstock is 500 males, 800 females from the 3-year class, and 375 females from the 4-year brood class. *Note: Roaring River Hatchery provides eyed eggs to several rainbow programs throughout the state and has an annual egg take of 7.5 million.*

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

Not applicable.

6.2.4) Genetic or ecological differences.

Not applicable.

6.2.5) Reasons for choosing.

This stock was chosen for trout stocking programs because of its inability to reproduce in the wild in Oregon, and its tendency to hold in the area of release. It also has good survival in the hatchery, along with good fecundity and size.

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

The captive Cape Cod stock 72 will be used to produce triploid/sterile Rainbow Trout for this trout stocking program. The brood selection practices of this stock will have no adverse genetic or ecological effects to listed natural fish in the basin. However, genetic diversity within this captive broodstock is maintained.

SECTION 7

BROODSTOCK COLLECTION

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

The program will use adult captive broodstock, to produce triploid eggs. There is no collection of broodstock outside the hatchery environment.

7.2) Collection or sampling design.

Not applicable.

7.3) Identity.

Not applicable.

7.4) Proposed number to be collected:

7.4.1) Program goal (assuming 1:1 sex ratio for adults):

See Section 6.2.2.

7.4.2) Broodstock collection levels for the last twelve years (e.g. 1990-99), or for the most recent years available:

Not applicable, as only captive Rainbow Trout are used as broodstock.

7.5) Disposition of hatchery-origin fish collected in surplus of broodstock needs.

Not applicable.

7.6) Fish transportation and holding methods.

Not applicable.

7.7) Describe fish health maintenance and sanitation procedures applied.

A qualified fish health specialist from ODFW will conduct all fish health monitoring on a regular basis. Broodstock will be examined annually to detect the presence of viral (reportable) pathogens. Fish will be treated using appropriate drugs or chemicals as recommended by a fish pathologist. If bacterial pathogens require treatment with antibiotics, a drug sensitivity profile will be generated (if feasible). Disinfecting procedures are followed between stocks of fish to prevent disease transmission. All equipment utilized to handle and move fish, is regularly inspected to prevent damage to fish from handling. Dead fish will be collected and buried to prevent disease transmission.

7.8) Disposition of carcasses.

Because all fish are live-spawned, fish are released into closed bodies of water (lakes and ponds) after spawning. All males (500) are released after one spawning season. All 4-year class females (375) and approximately 400 of the 3-year females are also released. Mortalities are either rendered or buried.

7.9) 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 broodstock collection program.

Not applicable.

SECTION 8

MATING

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

8.1) Selection method.

- Eggs from 3 and 4-year-old brood are used.
- All adults from the hatchery environment are checked for ripeness, sorted, and spawned as they reach maturation, beginning in late fall.
- Fish are selected randomly from ripe fish on the day of spawning.
- Fish are checked each week there after and subsequently spawned.

8.2) Males.

- Only 3-year-old class males are used in this program.
- After all of the males have been spawned once, they are reused, but not more than three times.

8.3) Fertilization.

- All adults are live spawned using accepted air spawning techniques.
- A 1:1 male-to-female ratio is maintained.
- Males may be used more than once, but no more than three times in a spawning season.
- Eggs are spawned into a container where milt from one male is added. Eggs and milt are then set aside for approximately 1 to 2 minutes. Eggs are then put into a common container for transport to the incubation facility.
- All fish health monitoring will be conducted by a qualified fish health specialist, according to approved fish health standards.
- Broodstock will be examined annually to detect the presence of viral (reportable) pathogens. Number of individuals examined, usually 60 fish, will be great enough to assure a 95% chance of detection of a pathogen present in the population at the 5% level. American Fisheries Society "Fish Health Blue Book" procedures will be followed. Wild fish will be sampled using non-lethal techniques.
- Findings and results of fish health monitoring will be recorded on a standard fish health reporting form and maintained in a fish health database.
- Fertilized eggs will be disinfected during the egg water-hardening phase to reduce bacterial transfer from parent to progeny.
- After fertilization eggs are treated under pressure shock to produce triploid eggs.
- Equipment and spawning areas will be disinfected following spawning operations.

8.4) Cryopreserved gametes.

Not applicable.

8.5) 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.

Not applicable.

SECTION 9

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.

9.1) Incubation.

9.1.1) Number of eggs taken and survival rates to eye-up and/or ponding.

The total number of eggs taken at Roaring River Hatchery is 7.5 million, which provides eggs/fish for this and other Rainbow Trout programs. The average survival from fertilization to eyed-stage is 90%.

- Alsea Hatchery receives eyed eggs from Roaring River Hatchery.
- The Rainbow Trout produced under this stocking program (Section 10.1) represent only 12.8% of total annual Rainbow Trout production at Alsea.
- Survival rate from eyed to ponding averages 98%.

Table 9-1. Number of Eggs Taken and Survival Rate to Ponding.

Year	Eyed Eggs Received	Fry Ponded	Percent Survival (Eyed Egg to Fry Ponded)
1995	133,000	130,000	97.7
1996	185,000	175,750	95.0
1997	250,000	247,500	99.0
1998	391,000	387,000	98.9
1999	431,000	427,000	99.1

9.1.2) Cause for and disposition of surplus egg takes.

When surplus eggs and fry exist as a result of high survival rates (in the hatchery), surpluses are removed and buried or given to the Oregon Coast Aquarium to be used as feed for avian display.

9.1.3) Loading densities applied during incubation.

Roaring River:

- Green eggs are trayed down at a rate of 22,000 to 25,000 per tray in vertical stack incubators.
- Green egg sizes are 370 to 450 per ounce. Water hardened sizes are 250 to 335 per ounce for eggs from 4-year and 3-year females, respectively.
- Incubator stacks are operated with an incoming water flow of 5 gpm of fresh water.

Alsea Hatchery

- Eyed eggs received from Roaring River are loaded into vertical stack (Heath) incubators at 6,000 to 8,000 eggs per tray. Eyed egg size averages are 225 per ounce and 300 per ounce for eggs from 4-year and 3-year broodstock, respectively.

- Incubation stacks are operated with a water flow of 5 gpm of fresh water.

9.1.4) Incubation conditions.

- Incubation conditions are virtually the same for both facilities, and are as per Integrated Hatchery Operations Team (IHOT) guidelines.
- A drip treatment of formalin at 1:600 is administered daily to control fungus on eggs up to the eyed stage. Incubators are visually inspected twice daily for proper flow.
- Water supply to the incubator head box is monitored continuously by a low-water alarm.
- Silt loads in incubator trays are monitored. Roding techniques are used to remove silt loads when necessary.
- Water temperature is tracked continuously. Temperature units are reported and projected on a weekly basis. This information, along with visual inspections, is used to track egg development and to determine proper timing of eggshell removal during hatching, egg shocking, and fry ponding.
- Eggs are incubated on ambient river water temperature; the hatchery does not thermally control the incubator's water supply.
- Dissolved oxygen is not monitored unless conditions indicate a need to do so. For example, influent water supplies are less than saturation, high-density loading, and/or warm temperatures.

9.1.5) Ponding.

- Ponding will occur when several fry samples indicate that 95% of fry show complete button up, regardless of temperature units.
- Cumulative temperature units will most often range from 900 to 1,000 at the time of ponding.
- Average weight sample at ponding is 2,500 to 3,400 fish per pound depending on the age class of the females from which eggs were taken.
- Average length at time of ponding should be 2.1 cm.
- Approximate ponding dates will depend on water temperatures and dates when eggs are received, but generally occur early to mid March.
- Mortality is picked from swim up fry and disposed of.
- Fry are placed into starter tanks.

9.1.6) Fish health maintenance and monitoring.

- A qualified fish health specialist will conduct all fish health monitoring. Appropriate actions, including drug or chemical treatments, will be recommended as necessary. If bacterial pathogens require treatment with antibiotics, a drug sensitivity profile will be generated (if feasible).
- Fish health maintenance and monitoring for the Alsea rainbow trout program is carried out according to existing standardized procedures. These protocols include:

(1) Eggs are disinfected during water hardening phase with iodophore treatment at 1:150 for 15 to 30 minutes.
(2) To control fungus, eggs are treated with a flow-through formalin treatment (at 1:600), every other day, until eye-up and shocking.
(3) Incubators are monitored daily for environmental conditions (water temperature, water flow, and silting).
(4) Fish mortality is removed at eye-up (during shocking) and ponding, unless significant losses dictate otherwise. Folded vexar is used (in each incubator tray) to isolate mortalities to particular locations on the tray. This method also allows mortalities to be easily removed during ponding.

- Fish mortalities are removed within 24 hours after shocking, initially via an automated egg picker, followed by thorough handpicking. Mortalities are also removed (by hand) at the time of ponding.
- Incubators are continuously monitored by a float alarm system and by a visual inspection, which occurs twice during the day and again during evening rounds.

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

Program does not include listed stock. Risk aversion measure applied to the program will follow established hatchery operation procedures utilized during this rearing phase:

- Incubation system will be continuously alarmed to indicate low flows.
- Daily inspection of incubator environmental conditions such as flow, mortality, silting, and temperature.
- Development monitoring.
- Incubate in substrate (vexar) and darkness.
- Incubate at low densities.
- Incubator screening is in good order to prevent escapement.

9.2) Rearing:

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

The Alsea rainbow program began in 1995. The averages for rearing survival was taken from hatchery pond management records for the last 5 years. The average survival rates for all rearing stages at the Alsea facility are as follows:

Table 9-2. Average Survival at Each Rearing Stage (Since 1994).

Average survival from eyed egg to ponding	98%
Average survival from fry to fingerling	93%
Average survival from fingerling to legal	98%
Overall survival from eyed-eggs received to release	**89.3%**

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

The stock 72T Rainbow Trout are managed according to rearing density equivalency (spatial and volume) guidelines recommended by IHOT protocols and by protocols stated in the 1999 Artificial Production Review.

- Starter tank rearing density goal: Not to exceed 25,000 fish at ponding and/or a flow index factor of 1.5 during any period of tank rearing.
- Raceway pond density goal: Maintain a flow index factor of less than 1.5. This is sometimes exceeded during late summer low flows, or if fall rains have been delayed.
- Density levels are monitored weekly by updating flow and growth data. Weekly reports are reviewed for compliance with onsite operating guidelines and adjustments are made as needed.

See example of weekly report (Table 9-3).

Table 9-3. Fish density, flow, fish size and flow index.

POND NO.	LOT NO.	NUMBER OF FISH	FISH PER LB	PREV. F/LB	LBS OF FISH	FLOW IN INCHES	FLOW GPM	LBS. OF FISH\GPM	LBS OF FISH/CU FT.	FISH LENGTH	FLOW INDEX
11					0.0		0	0	0.00		0.00
12	7297 Rb	28,675	2.76	2.76	10,389.5	3 ½	942	11.03	1.73	9.3	1.19
13					0.0		0	0	0.00		0.00
14	7297 Rb	30,363	2.8	2.8	10,843.9	3 ¼	843	12.86	1.81	9.25	1.39
15	7297 Rb	17,179	1.87	1.87	9,186.6	3 ½	942	9.75	1.53	10.6	0.92
16	7297 Rb	15,189	1.87	1.87	8,122.5	3 ½	942	8.62	1.35	10.6	0.81
17	7297 Rb	29,788	2.94	2.94	10,132.0	3 ½	942	10.76	1.69	9.11	1.18
18	7297 Rb	27,697	4.16	4.16	6,657.9	3 ¼	843	7.9	1.11	8.11	0.97
19	7297 Rb	7,098	1.62	1.62	4,381.5	3 3/8	892	4.91	0.73	11.1	0.44
20	7297 Rb	28,253	4.38	4.38	6,450.5	3	748	8.62	1.08	7.98	1.08
21	4398 StW	40,924	6.24	6.24	6,558.3	5 1/8	1254	5.23	1.09	7.57	0.69
22	4398 StW	38,529	6.17	6.17	6,244.6	4 1/8	904	6.91	1.04	7.59	0.91
23	4398 StW	33,378	5.98	5.98	5,581.6	5	1206	4.63	0.93	7.68	0.60
24	3798 StS	32,694	6.35	6.35	5,148.7	4 5/8	1073	4.8	0.86	7.52	0.64
25	3798 StW	32,741	6.65	6.65	4,923.5	4 ½	1030	4.78	0.82	7.41	0.65
26	3798 StW	31,125	6.52	6.52	4,773.8	5 1/8	1254	3.81	0.80	7.46	0.51
27	3798 StW	34,909	6.02	6.02	5,798.8	4 ¾	1117	5.19	0.97	7.66	0.68
28	3398 StW	21,716	6.9	6.9	3,147.2	4	863	3.65	0.52	7.32	0.50
29	3398 StW	29,518	7.02	7.02	4,204.8	4 ¾	1117	3.76	0.70	7.27	0.52
30	7297 Rb	24,621	2.98	2.98	8,262.1	5 ¼	1299	6.36	1.38	9.07	0.70
34	7296Rb	978	0.5	0.5	1,956.0	2 1/8	334	5.86	0.24	16	0.37
T-1	7298Rb	32,000	2203	2203	14.5	½	20	0.73	0.13	0.99	0.74
T-2	7298Rb	32,000	2218	2218	14.4	½	20	0.72	0.13	0.99	0.73
T-3	7298Rb	32,000	2218	2218	14.4	½	20	0.72	0.13	0.99	0.73
T-4	7298Rb	32,000	2218	2218	14.4	½	20	0.72	0.13	0.99	0.73
T-5	7298Rb	32,000	2117	2117	15.1	½	20	0.76	0.13	0.99	0.77
T-6	7298Rb	32,000	2335	2335	13.7	½	20	0.69	0.12	0.99	0.70
T-7	7298Rb	32,000	2126	2126	15.1	½	20	0.76	0.13	0.99	0.77
T-8	7298Rb	32,000	2307	2307	13.9	½	20	0.7	0.12	0.99	0.71
T-9	7298Rb	32,000	2220	2220	14.4	½	20	0.72	0.13	0.99	0.73
T-10	7298Rb	32,000	2220	2220	14.4	½	20	0.72	0.13	0.99	0.73
T-11	7298Rb	32,000	2228	2228	14.4	½	20	0.72	0.13	0.99	0.73
T-12	7298Rb	32,000	2220	2220	14.4	½	20	0.72	0.13	0.99	0.73
T-13	7298Rb	12,880	2140	2140	6.0	½	20	0.3	0.05	1	0.30
T-14	7298Rb	43,400	1778	1778	24.4	½	20	1.22	0.21	1.07	1.14
T-15					0.0		0	0	0.00		0.00
T-16					0.0		0	0	0.00		0.00
T-17					0.0		0	0	0.00		0.00
T-18					0.0		0	0	0.00		0.00
T-19					0.0		0	0	0.00		0.00
T-20							0	0	0.00		0.00
	TOTALS	945,655			122,967.3						

9.2.3) Fish rearing conditions.

The following parameters and procedures have been established to maintain optimal pond rearing environments.

- Fish density levels are monitored weekly (flow index and fish growth). This data is used to calculate density levels in individual ponds based upon pounds per gpm, pounds per cubic feet, and flow index.
- Dissolved oxygen is monitored weekly during summer flows and throughout the year when environmental factors indicate a need.
- Hatchery effluent water quality parameters like total suspended solids, settable solids, pH, temperature, flow, ammonia nitrogen and total phosphorus are measured and

monitored to report quarterly to DEQ as per conditions identified in 300-J NPDES General State Permit.

- Ponds are cleaned weekly.
- During summer rearing, ponds are lowered to an average depth of 8 inches for 4 hours each day; usually from 7:30 a.m. to 11:30 a.m. This has greatly reduced the need to treat fish for external parasites.
- Alsea Hatchery has no water temperature control system. Winter temperatures range from 36º to 49º F. Summer temperatures range from 50º to 72º F.
- There is no monitoring program for carbon dioxide, nitrogen saturation, etc. There is no history of fish loss at Alsea Hatchery in recent years attributed to these factors.

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

This Rainbow Trout program produces fish for lake plants at 3.0 fish per pound, 1.5 fish per pound, and 2-pound trophy trout. Growth rates vary significantly depending on date and size of release. Monthly growth rates for the Rainbow Trout program are shown below in Table 9-4.

Table 9-4. Monthly growth rates of Rainbow Trout.

Month	Average size (fish/pound)
February	3,600
March	744
April	347
May	126
June	60
July	25
August	17
September	10
October	7
November	6
December	5
January	3.7
February	3.4
March	3.1
April	2.8
May	2.3
June	1.8
July	1.4
August	1.4
September	1.3
October	1.2
November	0.9
December	0.9
January	0.7

February	0.6
March	0.5
April	0.5
May	0.5
June	0.5

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

See Section 9.2.4 for monthly fish growth (fish/lb). Energy reserve data are not available.

9.2.6) Indicate food type used, daily application schedule, feeding rate range (e.g. percent B.W./day and lbs/gpm inflow), and estimates of total food conversion efficiency during rearing (average program performance).

- Fish are started on a dry diet (Moore Clark Nutra Starter).
- Feed (dry diet) is changed at 150 fish per pound (Silver Cup Salmon Diet).
- Fish are put on a different diet at size 20 fish per pound (Silver Cup Trout Diet).
- At 3 to 5 fish per pound (depending on scheduled release size), Astaxanthin is added to the diet and fed until release.
- A feed schedule is utilized, which calculates growth development factors such as percent body weight, length, weight, expected conversion, condition factor, temperature, expected average growth rate, and desired release size.
- A schedule with daily adjustments is developed to meet the needs of program.
- Average overall conversions for this program are 1.1 to 1.2.

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

Incubation trays, rearing tanks, and rearing ponds are disinfected prior to, and after rearing. In addition, all equipment used during daily rearing activities is disinfected between uses. Disinfection procedures for onsite operations were developed from IHOT recommendations for hatchery disinfection. Fish health monitoring is accomplished by daily observation of fish behavior, pond environment monitoring, and daily recording of fish mortality. In addition to daily on-site monitoring, the following steps are carried out routinely by a qualified ODFW fish pathologist.

- Conduct examinations of juvenile fish at least monthly, and more often as necessary. A representative sample of healthy and moribund fish from each lot of fish will be examined. The number of fish examined will be at the discretion of the fish health specialist.
- Investigate abnormal levels of fish loss when they occur.
- Determine fish health status prior to release or transfer to another facility.
- Appropriate actions including drug or chemical treatments will be recommended as necessary. If a bacterial pathogen requires treatment with antibiotics, a drug sensitivity profile will be generated when possible.

- Findings and results of fish health monitoring will be recorded on a standard fish health reporting form, and maintained in a fish health database.

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

Not applicable.

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

Not applicable.

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

The Rainbow Trout under this propagation program is not an ESA-listed population.

SECTION 10

RELEASE

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

10.1) Proposed fish levels.

Table 10-1. Alsea Hatchery Rainbow Trout (Stock 72T) Proposed Release Levels.

Age Class	Maximum Number	Size (fpp)	Release Date	Location
Eggs				
Unfed Fry				
Fry				
Fingerling				
Yearling	3,200	3.0	Mid-March and Mid-May	Eckman Lake
	20,000	3.0	Mid-March and Mid-April	Devils Lake
	100	1.5	Mid April	Eckman Lake
	4,500	1.5	Mid-March and Mid-April	Mercer Lake
	2,000	1.5	Mid-March and Early April	Woahink Lake
	2,000	1.5	Mid-March and Mid-April	Siltcoos Lake
	2,500	1.5	Mid-March and Mid-May	Sutton Lake
	50	0.5	Mid -May	Eckman Lake
Data source:				

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

Stream, river, or watercourse: Devils Lake
Release point: Boat ramps
Major watershed: Devils Lake
Basin or Region: Devils Lake

Stream, river, or watercourse: Eckman Lake
Release point: Boat ramp
Major watershed: Alsea River
Basin or Region: Alsea

Stream, river, or watercourse: Mercer Lake
Release point: Boat ramp
Major watershed: Mercer Lake
Basin or Region: Mercer/Sutton

Stream, river, or watercourse: Sutton Lake
Release point: West shore
Major watershed: Sutton Lake
Basin or Region: Mercer/Sutton

Stream, river, or watercourse: Woahink Lake
Release point: Boat ramp
Major watershed: Woahink Lake
Basin or Region: Siltcoos Lake

Stream, river, or watercourse: Siltcoos Lake
Release point: Boat ramp
Major watershed: Siltcoos Lake
Basin or Region: Siltcoos Lake

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

Table 10-2. Data of past releases (releases in 2006 were comprised of both diploid and triploid Rainbow Trout; and releases from 2007-2015 were only triploid (sterile) Rainbow Trout.

Release Year	Number Released	Average Size (fish/lb)	Date Released
2006	35,574	2.36	3/13 - 5/19
2007	35,605	2.33	3/13 - 5/18
2008	34,328	2.42	3/14 - 5/16
2009	34,237	2.26	3/16 - 5/15
2010	34,936	2.00	3/15 - 5/14
2011	34,081	1.95	3/14 - 5/13
2012	31,241	2.11	3/14 - 5/18
2013	33,341	1.93	3/20 - 5/17
2014	36,547	2.21	2/12 - 5/16
2015	35,495	2.18	3/9 - 5/15
Average	**34,539**	**2.18**	

Source: ODFW HMS database.

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

See above Table 10-2 for release dates. Legal size trout are placed in lakes in the spring before water temperatures reach undesirable levels. Fish are flushed into lakes from standard liberation trucks.

10.5) Fish transportation procedures, if applicable.

Transportation of Rainbow Trout from Alsea Hatchery to the lakes identified above is accomplished with the use of various sized liberation truck units. The units range in size from 1,000-gallon to 2,500-gallon tankers. Some units utilize recirculatory refrigeration systems which are used to maintain or cool the temperature of water taken at the hatchery site; oxygen is added at a rate of 1.5 Lpm. Some units utilize insulated tanks equipped with aerators; oxygen is added at a rate of 1.5 Lpm. All units haul rainbow trout at an average density of 1.2 pounds per gallon. Total length of time in transit depends on the location of the lake.

10.6) Acclimation procedures.

None. All legal size Rainbow Trout are forced released.

10.6) Marks applied, and proportions of the total hatchery population marked, to identify hatchery adults.

The trout produced for this program are not marked, except for those released in Devils Lake. All 20,000 trout stocked in Devils Lake are adipose fin-clipped to help anglers differentiate Rainbow Trout from wild Coho Salmon smolts.

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

Any surplus fish from this program may be utilized in other legal trout stocking programs within the state.

10.8) Fish health certification procedures applied pre-release.

Per ODFW Fish Health Management Policy, fish health status is inspected prior all releases or transfer by a qualified fish health specialist, and only certified fish are released or stoked.

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

No release of stock 72 Rainbow Trout would be made into this system (Alsea watershed) during any water-related emergency. Efforts would be made to transfer these fish to another facility in the event of such emergency, to raise program fish up to legal size.

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

All releases of Rainbow Trout are made in standing water away from tributaries. Rainbow Trout planted into Devils Lake are adipose finclipped so that anglers can distinguish between Rainbow Trout and naturally produced Coho Salmon smolts within that system.

SECTION 11

MONITORING AND EVALUATION OF PERFORMANCE INDICATORS

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

11.1.1) Describe plans and methods proposed to collect data necessary to respond to each "Performance Indicator" identified for the program.

Sections 1.9 and 1.10 define the plans for monitoring the performance of this program. The indicators listed identify methods to be used to monitor 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 program.

All indicators listed in Sections 1.9 and 1.10 are being implemented under existing funding and staffing levels.

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

There are no known or expected effects to listed fish resulting from monitoring and evaluation activities.

SECTION 12

RESEARCH

No research is being conducted in association with this program.

SECTION 13

ATTACHMENTS AND CITATIONS

References

Nickelson, T. E., J. D. Rodgers, S. L. Johnson, and M. F. Solazzi. 1992a. Seasonal changes in habitat use by juvenile coho salmon (*Oncorhynchus kisutch*) in Oregon coastal streams. Canadian Journal of Fisheries and Aquatic Sciences 49:783-789.

Nickelson, T. E., M. F. Solazzi, S. L. Johnson, and J. D. Rodgers. 1992b. Effectiveness of selected stream improvement techniques to create suitable summer and winter rearing habitat for juvenile coho salmon (*Oncorhynchus kisutch*) in Oregon coastal streams. Canadian Journal of Fisheries and Aquatic Sciences 49:790-794.

Zhou, S. 2000. Stock assessment and optimal escapement of coho salmon in three Oregon coastal lakes. Information Reports Number 2000-07. Oregon Department of Fish and Wildlife, Fish Division. Portland, Oregon.

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 and Title of Applicant: Chris Knutsen, North Coast Watershed District Manager, ODFW

Signature:_____ Date:_____

Certified by: Scott Patterson, Fish Propagation Program Manager, ODFW

Signature: _____ Date:_____

Attachment A

Alsea River Basin Fish Management Operating

Principles and Objectives, All Waters

635-500-4830

Habitat Management - Policies and objectives for habitat management in the Alsea River Basin.

(1) Policies:

(a) The Department shall actively pursue and promote habitat protection and improvement necessary to achieve the objectives for management of the basin's aquatic resources;

(b) The Department shall coordinate with and advise landowners and management agencies of the Alsea River Basin;

(c) Habitat protection shall be emphasized over habitat restoration and enhancement;

(d) Potential losses of fish production from habitat alteration shall be prevented or reduced to the extent possible.

(2) Objectives:

(a) Maintain or increase in-stream flows during summer low flow periods in the Alsea River Basin;

(b) Reduce summer water temperatures where artificial warming occurs that is detrimental to fish;

(c) Increase in-stream channel complexity in the Alsea River Basin;

(d) Reduce artificially accelerated erosion rates and inputs of sediments into waterways in the Alsea River Basin;

(e) Prevent chemical contaminants from degrading fish habitat in the Alsea River Basin;

(f) Restore natural fish passage conditions in the Alsea River Basin;

(g) Increase habitat area available to fish in the Alsea River Basin;

(h) Coordinate with other agencies and landowners to implement habitat protection and restoration activities.

Stat. Auth.: ORS 496.138, ORS 496.146 & ORS 506.119

Stats. Implemented: ORS 506.109 & ORS 506.129

Hist.: DFW 5-1998, f. & cert. ef. 1-12-98