

CEDAR CREEK HATCHERY



PROGRAM MANAGEMENT PLAN 2016

Cedar Creek Hatchery

INTRODUCTION

Cedar Creek Hatchery is located 1.5 miles east of Hebo off Highway 22, adjacent to Three Rivers, a Nestucca River tributary. The site is approximately 43 feet above sea level, at latitude 45° 12' 57" N (45.21583) and longitude 123° 50' 43" W (123.8453). The hatchery area is 35.33 acres. The hatchery is operated on state funding.

Water source for the hatchery is by gravity from Cedar Creek and by pump from Three Rivers during low summer flows. Total current water rights are for 60,166 gpm (134 cfs) from Cedar Creek and Three Rivers.

The facility is operated with 3 FTE's.

Rearing Facilities at Cedar Creek Hatchery

Unit Type	Unit Length (ft)	Unit Width (ft)	Unit Depth (ft)	Unit Volume (ft ³)	Number Units	Total Volume (ft ³)	Construction Material	Age	Condition	Comment
Adult Holding Ponds	94	20	4.5	8,460	2	16,920	concrete	1989	excellent	
Abatement	450	135	6	696,000	1	696,000	asphalt	1984	good	
Rearing Pond	280	80	4	87,000	1	87,000	asphalt	1999	good	
Rearing Pond	35	20	3	2,100	1	2,100	concrete	1969	fair	
Raceways	100	20	4	8,000	3	24,000	concrete	1979	good	
Raceways	100	20	5	10,000	1	10,000	concrete	1974	fair	
Raceways	100	20	4	8,000	2	16,000	concrete	1989	excellent	center wall w/removable dividers
Troughs	16	1.2	0.58	11	12	134	aluminum	1979	good	
Trough	14	3	2.5	105	4	420	concrete	1974	good	
Troughs	16	2.75	1.5	66	4	264	fiberglass	1999	excellent	
Trough	16	3	2.25	108	4	432	fiberglass	1999	excellent	
Vertical Incubators					60			1984	good	8 stacks with 15 trays
Abatement Pond				8,000			concrete	1954	fair	
Abatement Pond				24,624			concrete	1954	fair	Can also pump to large asphalt pond

PURPOSE

Construction of this facility began in 1924 and production started in 1925 by the state of Oregon. Various renovations have taken place with the most recent being done by the Restoration and Enhancement Program.

The purpose of this facility is to enhance spring Chinook, fall Chinook, winter steelhead, and summer steelhead populations for various coastal streams. The facility is used for adult collection, egg incubation and for rearing of spring Chinook, fall Chinook, winter steelhead, and summer steelhead.

PROGRAM TYPE

The ODFW Hatchery Management Policy defines hatchery programs as either harvest or conservation programs. Harvest programs operate to enhance or maintain fisheries without impairing naturally reproducing populations. Conservation programs operate to maintain or increase the number of naturally produced fish without reducing the productivity of naturally reproducing populations.

All programs at Cedar Creek Hatchery are harvest programs for the augmentation of fishing and harvest opportunities.

GOALS

Fall Chinook:

Nestucca River (47) stock: To provide hatchery-produced fish for sport and commercial harvest in both ocean and freshwater environments.

Spring Chinook:

Nestucca River (47) stock: To provide hatchery-produced fish for sport and commercial harvest in both ocean and freshwater environments.

Summer Steelhead:

Siletz River (33) stock: To provide for an annual recreational harvest of 2,400 hatchery summer steelhead for the Siletz River while minimizing interactions with wild fish, as outlined in the Siletz River Basin Fish Management Plan.

Nestucca River (47) stock: to provide hatchery-produced fish for recreational harvest in the Nestucca River and Wilson River basins.

Winter Steelhead:

Nestucca River (47) stock and Nestucca River wild (47F) stock: To increase freshwater sport harvest opportunities by releasing artificially propagated smolts in the Nestucca and Wilson River basins. The 47F stock is only used in the Nestucca basin.

OBJECTIVES

Objective 1: Foster and sustain opportunities for sport, commercial, and tribal fishers consistent with the conservation of naturally produced native fish.

Fall Chinook:

Nestucca River (47) stock

Provide 105,000 fingerlings (300 pounds) to STEP for Rhoades Pond for release into Three Rivers and Nestucca River.

Spring Chinook:

Nestucca River (47) stock

Produce 230,000 185,000 smolts (19,166 pounds) for release into the Nestucca basin.

Summer Steelhead:

Siletz River (33) stock

Produce 42,000 eggs to be combined with Nestucca River (47) stock to increase genetic diversity (Stock 47 originally came from Stock 33).

Produce 80,000 eggs for transfer to Roaring River Hatchery.

Nestucca River (47) stock

Combine with eggs from Siletz River (33) stock.

Produce 90,000 smolts (15,000 pounds) for release into Nestucca River (20,000), Three Rivers (30,000) and South Fork Wilson River (40,000).

Produce 10,000 smolts (1,667 pounds) for transfer to Hughey Creek Acclimation for acclimation and release into the Wilson River.

Winter Steelhead:

Nestucca River (47) stock

Supply 2,000 eggs to Tillamook STEP

Produce 47,000 fingerlings (783 pounds) for transfer to Tuffy Creek Pond. Smolts are later released into the Wilson River.

Produce 40,000 smolts (6,667 pounds) for release into the Nestucca River and Three Rivers.

Nestucca River wild (47F) stock

Produce 100,000 smolts (14,286 pounds) for release into the Nestucca River and Three Rivers.

Objective 2: Contribute toward the sustainability of naturally produced native fish populations through the responsible use of hatcheries and hatchery-produced fish.

- Objective 3: Maintain genetic resources of native fish populations spawned or reared in captivity.
- Objective 4: Restrict the introduction, amplification, or dissemination of disease agents in hatchery produced fish and in natural environments by controlling egg and fish movements and by prescribing a variety of preventative, therapeutic and disinfecting strategies to control the spread of disease agents in fish populations in the state.
- Objective 5: Minimize adverse ecological impacts to watersheds caused by hatchery facilities and operations.
- Objective 6: Communicate effectively with other fish producers, managers and the public.

CURRENT PRACTICES TO ACHIEVE OBJECTIVES

The sections that follow describe the current hatchery practices associated with anadromous fish production at this facility. Because ODFW hatcheries are managed to maximize use of the hatchery rearing space, hatchery operations are dynamic and subject to annual change depending upon statewide program needs.

The Native Fish Conservation Policy, the Fish Hatchery Management Policy, the Fish Health Management Policy and Hatchery Genetic Management Plans provide guidelines for the management of wild and hatchery fish in Oregon. These policies describe the brood collection, rearing, release, and health management strategies currently used at this facility.

Objective 1: Foster and sustain opportunities for sport, commercial, and tribal fishers consistent with the conservation of naturally produced native fish.

Adult Collection

Fall Chinook:

Nestucca River (47) stock: Adults arrive at the hatchery between October and December. Peak spawning occurs during November. Adults are collected at the Three Rivers Trap adjacent to the hatchery, and may also be collected by seining below the trap facility, or in the Nestucca River by volunteer anglers.

Spring Chinook:

Nestucca River (47) stock: Adults arrive at the hatchery between May and September. Peak spawning occurs during September. Adults are collected at the Three Rivers Trap adjacent to the hatchery, and may also be collected by seining below the trap facility.

Summer Steelhead:

Siletz River (33) stock: Adults arrive at the collection site between May and December. Peak spawning occurs during February. Adults are collected at the Siletz Falls trapping site and held at Cedar Creek hatchery until spawning.

Nestucca River (47) stock: Adults arrive at the hatchery between May and December. Adults are collected at the Three Rivers Trap adjacent to the hatchery. Peak spawning occurs in February.

Winter Steelhead:

Nestucca River (47) stock: Adults arrive at the hatchery between December and March. Peak spawning occurs during mid-January through mid-February. Adults are collected at the Three Rivers Trap adjacent to the hatchery.

Nestucca River wild (47F) stock: Adults are collected from the Nestucca River by angling from mid-December to April. Some adults are collected in the adult trap as needed.

The adult trap for Cedar Creek Hatchery is located at Three Rivers just above the mouth of Cedar Creek. Water source for the trap is Cedar Creek.

Objective 2: Contribute toward the sustainability of naturally produced native fish populations through the responsible use of hatcheries and hatchery-produced fish.

Rearing and Release Strategies

Rearing and release strategies are designed to limit the amount of ecological interactions occurring between hatchery and naturally produced fish. Fish are reared to sufficient size that smoltification occurs within nearly the entire population, which will reduce the retention time in downstream migration. Rearing on parent river water, or acclimation to parent river water for several weeks, is used to ensure strong homing to the hatchery, thus reducing the stray rate to natural populations. Various release strategies are used to ensure that fish migrate from the hatchery with least amount of interaction with native populations. The specific rearing and release strategies used at this hatchery are outlined below.

Fall Chinook:

Nestucca River (47) Stock: Rear 105,000 fish to size of 350 fish/pound; transfer to Rhoades Pond STEP facility in mid-April and release at 10 fish/pound (non-acclimated) off-station into Nestucca River (70,000) and Three Rivers (30,000) during mid-September. All fish are adipose clipped prior to release.

Any fry or fingerlings in excess of production needs are to be released into standing bodies of water without natural coho production, or euthanized.

Spring Chinook:

Nestucca River (47) Stock: Rear 45,000 fingerlings to a size of 12 fish/pound for release into Beaver Creek in the Nestucca basin.

Rear 185,000 fish to size of 12 fish/pound and release (non-acclimated) off-station into Nestucca River (130,000), Little Nestucca River (30,000) and Three Rivers (25,000) during late July. All fish are fin clipped prior to release, and 25,000 of the Three Rivers release receive a coded-wire tag.

Summer Steelhead:

Siletz River (33) Stock: Egg program only; see the Salmon River Hatchery Plan for further details.

Nestucca River (47) Stock: Rear 90,000 fish to size of 6 fish/pound and release (non-acclimated) off-station to the Nestucca River (20,000), Three Rivers (30,000), and South Fork Wilson River (40,000) during early April. All fish are fin clipped prior to release.

Rear 10,000 fish to a size of 6 fish/pound for transfer to Hughey Creek Acclimation Site in early April for acclimation and release into the Wilson River in mid-April. All fish are fin clipped prior to release.

Winter Steelhead:

Nestucca River (47) Stock: Rear 47,000 fish to size of 60 fish/pound for transfer to Tuffy Creek facility in late July; release during April to Wilson River (15,000 acclimated, 35,000 non-acclimated) and Nestucca River (30,000 non-acclimated). All fish are fin clipped prior to transfer.

Rear 10,000 fish to a size of 6 fish/pound and release (non-acclimated) into the Nestucca River in early April. All fish are fin clipped prior to release.

Rear 30,000 fish to a size of 6 fish/pound and release (non-acclimated) into Three Rivers in early April. All fish are fin clipped prior to release.

Nestucca River Wild (47F) Stock: Rear 80,000 fish to 7 fish/pound for release (non-acclimated) into the Nestucca River in mid-April and late April. All fish are fin clipped prior to release.

Rear 20,000 fish to 7 fish/pound for release (non-acclimated) into Three Rivers in mid-April and late April. All fish are fin clipped prior to release.

Objective 3: Maintain genetic resources of native fish populations spawned or reared in captivity.

Broodstock Selection and Spawning

Oregon's Native Fish Conservation Policy and Hatchery Genetic Management Plans outline broodstock selection and spawning protocols for some fish stocks. The following practices are currently being used at Cedar Creek Hatchery:

Fall Chinook:

Nestucca River (47) Stock: A minimum of 74 adults are collected throughout the run and spawned at 1:1 male to female spawning ratio using a modified matrix. Wild fish are incorporated into the broodstock each year. Broodstock are collected throughout the run. Jacks are to make up no more than 5% of males spawned. Wild adults not needed for spawning are released above the hatchery weir.

Spring Chinook:

Nestucca River (47) Spring Chinook: Adults are collected throughout the run and spawned at 1:1 male to female spawning ratio. The majority of the run is comprised of hatchery fish. Only hatchery fish are used for spawning. Spawning will use a modified matrix.

Summer Steelhead:

Nestucca River (47) Stock: Adults are collected throughout the run and spawned at 1:1 male to female spawning ratio using a modified matrix. The egg take is to be 33% from Siletz stock (33) and 67% from Nestucca River (47) stock.

Siletz River (33) Stock: A maximum of 71 pairs of returning hatchery adults are collected throughout the run in proportion to the number of wild fish entering the trap. Fish are spawned at a 1:1 male to female ratio using a modified matrix. A small subset of wild summer steelhead may be incorporated into the broodstock.

Winter Steelhead:

Nestucca River (47) Stock: A minimum of 65 pairs of adults are collected throughout the early portion of the run and spawned at 1:1 male to female spawning ratio using a modified matrix. Only hatchery fish are used for broodstock. Excess adults are recycled, released in lakes, given away to food share programs, or killed for stream enrichment.

Nestucca River Wild (47F) Stock: A minimum of 39 pairs of adults are collected throughout the run and spawned at 1:1 male to female spawning ratio. Only wild stock are used, not to exceed 20 % of the wild population of the Nestucca Basin. Excess adults as well as spawned adults are released back into the basin.

Objective 4: Restrict the introduction, amplification, or dissemination of disease agents in hatchery produced fish and in natural environments by controlling egg and fish movements and by prescribing a variety of preventative, therapeutic and disinfecting strategies to control the spread of disease agents in fish populations in the state.

Fish Health Management Programs--All Stocks

ODFW has adopted a Fish Health Management Policy that describes measures that minimize the impact of fish diseases on the state's fish resources. The primary objective of fish health management programs at ODFW hatcheries is to produce healthy smolts that will contribute to the fishery and return sufficient numbers of adults to continue propagation of the stocks and provide supplementation if desired. Equally important is to prevent the introduction, amplification or spread of fish pathogens that might negatively affect the health of both hatchery and naturally reproducing stocks.

ODFW has implemented both disease control and disease prevention programs at all of its facilities to achieve these objectives. These programs include the following standard elements:

Disease Control (Reactive)

- Perform necropsies of diseased and dead fish to diagnose the cause of loss.
- Prescribe appropriate treatments and remedies to disease. This includes recommending modifications in fish culture practices, when appropriate, to alleviate disease-contributing factors.
- Apply a disease control policy as stated in the Oregon Administrative Rules which dictates how specific disease problems will be addressed and what restrictions may be placed on movements of diseased stocks.
- Conduct applied research on new and existing techniques to control disease epizootics.

Disease Prevention (Proactive)

- Routinely remove dead fish from each rearing container and notify ODFW Fish Pathology if losses are increasing. Monthly mortality records are submitted to Fish Pathology from each hatchery.
- Routinely perform examinations of live fish to assess health status and detect problems before they progress to clinical disease or mortality.
- Implement disease preventative strategies in all aspects of fish culture to produce a quality fish. This includes prescribing the optimal nutritional needs and environmental conditions in the hatchery rearing container based on historical disease events. It also involves the use of vaccines or antibiotics in order to avoid a disease problem.
- Use a disease prevention policy that restricts the introduction of stocks into a facility. This will help avoid new disease problems and fish pathogens not previously found at the site.

- Use sanitation procedures that prevent introduction of pathogens into and/or within a facility.
- Conduct applied research on new and existing disease prevention techniques.
- Utilize pond management strategies (e.g., Density Index and Flow Index guidelines) to help optimize the quality of the aquatic environment and minimize fish stress that can be conducive to infectious and noninfectious diseases. For example, a Density Index is used to estimate the maximum number of fish that can occupy a rearing unit based on the rearing unit's size. A Flow Index is used to estimate the rearing unit's carrying capacity based on water flows.

Fish Health Activities at Cedar Creek Hatchery

Health Monitoring

- All fish are given a health inspection no longer than 6 weeks before fish are released or transferred. This exam may be in conjunction with the routine monthly visit.
- Monthly health monitoring examinations of healthy and clinically diseased fish are conducted on each fish lot at the hatchery. More frequent monitoring is necessary from April through August. Monitoring samples includes a minimum of 10 moribund/dead fish (if available) and 4-6 live fish per lot.
- Examinations for *Myxobolus cerebralis*, agent of whirling disease, are conducted annually on 60 fish held for a minimum of 180 days at the facility.
- At spawning, a minimum of 60 ovarian fluids and 60 kidney/spleen/pyloric caeca (based on a minimum sampling at the 5% incidence level) are examined for viral pathogens from each lot with the exception of wild stocks that are released after spawning. If prespawning mortality is above normal, necropsies are conducted on dead adult fish for bacteria, parasites and other causes of death.
- Whenever abnormal behavior is reported or observed, or mortality exceeds 0.1% per day over five consecutive days in any rearing container, the fish pathologist will examine the affected fish, make a diagnosis and recommend the appropriate remedial or preventative measures.
- Reporting and control of specific fish pathogens are conducted in accordance with the Fish Health Management Policy. Results from each examination mentioned above are reported on the ODFW Fish Health or Virus Examination forms.

Fish and Egg Movements

- Movements of fish and eggs are conducted in accordance with the Fish Health Management Policy.

Therapeutic and Prophylactic Treatments

- Adult spring Chinook may be injected with antibiotics for the control of bacterial diseases.
- At spawning, eggs are water-hardened in iodophor for disinfection.
- Juvenile fish are administered antibiotics orally as needed for the control of bacterial infections and for prevention of diseases.
- Formalin is dispensed into water for control of parasites and fungus on eggs, juveniles and adult salmon. Hydrogen peroxide is also used as an alternative. Treatments are administered according to labeling guidelines. Treatment dosage and exposure time varies with species, life-stage and condition being treated.
- Only approved or permitted therapeutic agents are used for treatments:
 - FDA labeled and approved for use on food fish
 - Allowed by the FDA as an Investigational New Animal Drug
 - Obtained by extra-label prescription from a veterinarian
 - Allowed by the FDA as low regulatory priority or deferred regulatory status
 - Approved by the FDA through USFWS for fish listed under the federal Endangered Species Act.

Sanitation

- All eggs brought to the facility are surface-disinfected or water-hardened in buffered iodophor.
- Disinfection footbaths (or other means of disinfection) are provided at the incubation facility's entrance and exit areas while embryos are incubating in the facility.
- All equipment (e.g., nets, tanks, rain gear, boots) is disinfected with iodophor between uses with different fish/egg lots or different rearing containers.
- Dead fish are disposed of promptly and in a manner that prevents introduction of disease agents to the waters of the state.

- Rearing units are cleaned on a regular basis.
- Fish transport trucks are disinfected between the hauling of different fish lots.
- Rearing units are sanitized after removing fish and before introducing a new fish stock either by thorough cleaning and use of a disinfectant or by cleaning and leaving dry for an extended time.
- Different lots of fish/eggs are physically segregated from each other by separate ponds, incubator units and water supplies. Some of the incubators have sheet-metal splash guards to decrease cross contamination between incubator stacks.

Objective 5: Minimize adverse ecological impacts to watersheds caused by hatchery facilities and operations.

Environmental Monitoring

Primarily, environmental monitoring is conducted at ODFW facilities to ensure these facilities meet the requirements of the National Pollution Discharge Elimination Permit administered by the Oregon Department of Environmental Quality. It is also used in managing fish health. On a short-term basis, monitoring helps identify when changes to hatchery practices are required. Long-term monitoring provides the ability to quantify water quality impacts resulting from changes in the watershed (e.g., logging, road building and urbanization). The following environmental parameters are currently monitored at all ODFW hatcheries:

- Total Suspended Solids (TSS) – measured quarterly during the month of heaviest production. Two composite samples are collected each week, one during normal operations and one during cleaning. Some facilities may take more samples because of multiple outfalls.
- Settleable Solids (SS) – measured quarterly during the month of heaviest production. Two composite samples are collected, one during normal operations and one during cleaning. Some facilities may take more samples because of multiple outfalls.
- pH – measured quarterly when settleable solids are measured.
- Dissolved Oxygen (DO) – measured only when conditions warrant (e.g., periods of low flows and high temperatures).
- Air Temperatures – maximum and minimum temperatures are recorded daily at some stations, but there are no special monitoring requirements.

- Flow Logs – Flows are measured weekly or when water volumes through the hatchery ponds are altered for hatchery management activities (i.e., ponding of fish, splitting of fish lots, fish releases, etc.).

Objective 6: Communicate effectively with other fish producers, managers and the public.

Coordination/Communication within ODFW

Annual Fish Production Meetings: ODFW conducts meetings throughout the state to set annual fish production goals for all public hatcheries in Oregon. These meetings involve the participation of ODFW research, management and fish culture staff as well as representatives from applicable federal agencies and tribes.

Record Keeping: The following records are kept at all ODFW hatcheries:

- Anadromous Adult Transaction Report – details the collection and disposition of all adult fish handled at the facility.
- Mark Recovery Report – details sex, fish length and tag information from all marked adult fish that are captured.
- Egg and Fry Report – records all egg and fry movements, treatments, etc.
- Monthly Poned Report – updates hatchery operations from the previous month (i.e., current number of fish, size, transfers or releases, feed conversion, mortality, medication, etc.).
- Monthly Progress Report – document summarizing operational activities for the hatchery and all satellite facilities (e.g., fish culture, fish health, fish distribution, maintenance and safety).
- Fish Loss and Treatment Report – records disease problems and daily mortality.
- Fish Loss Report/Investigation – when 1,000 or more juveniles or 10 or more adult fish are accidentally lost in a single accident.
- Predator Mortality Report – documents any fish predators that may die at the hatchery facility.
- Fish Liberation Reports – details information regarding all fish releases (e.g., fish numbers, size, location, method of release, marks, etc.).
- Coded –Wire Tag Release Reports – record of all juvenile fish released with coded-wire tags.

- Length Frequency Record – details fish lengths of all anadromous fish released (based on a sample of the releases).
- Chemical use, waste discharge monitoring, purchasing, budget, hazardous materials, safety, vehicles, equipment, maintenance and alarm logs.
- Visitor Log – some facilities record the daily visitor use of the facility; however, this is not a requirement.

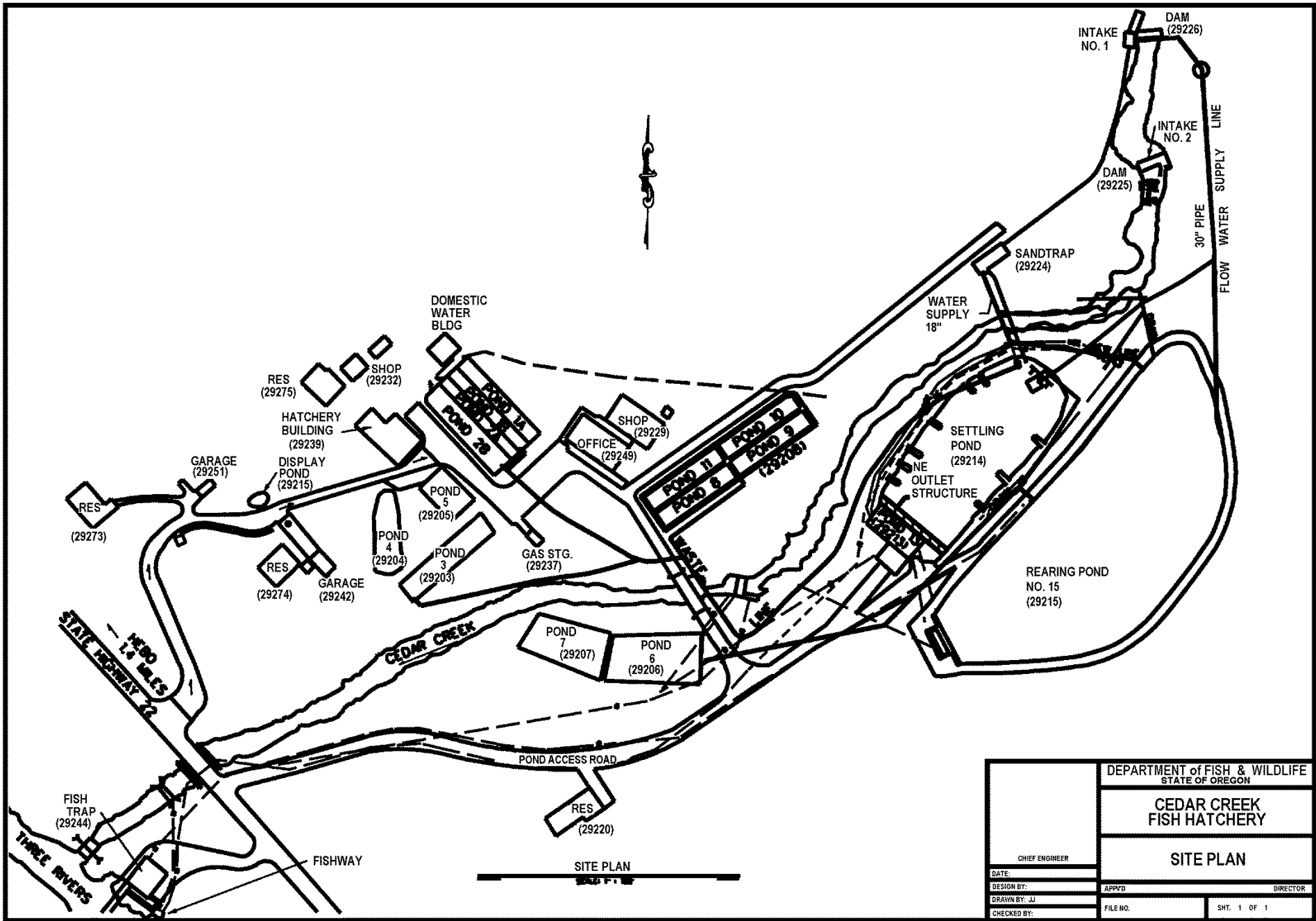
Hatchery Management System (HMS): Computerized system to collect, report, summarize and analyze hatchery production data. This system is a tool to be used in production control at all hatchery management levels.

Interagency Coordination/Communication

Pacific Northwest Fish Health Protection Committee (PNFHPC): This group is comprised of representatives from U.S. and Canadian fish management agencies, tribes, universities, and private fish operations. The group meets twice a year to monitor regional fish health policies and to discuss current fish health issues in the Pacific Northwest.

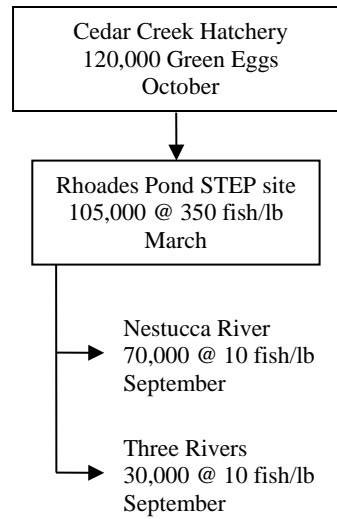
Communication with the General Public

Cedar Creek Hatchery receives approximately 4,000 visitors each year.

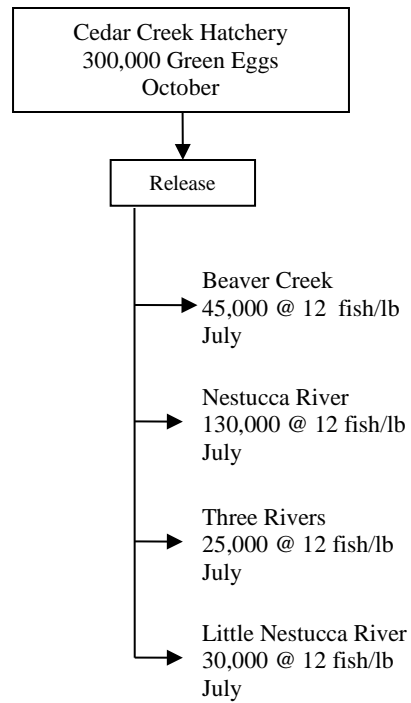


		DEPARTMENT of FISH & WILDLIFE STATE OF OREGON	
		CEDAR CREEK FISH HATCHERY	
		SITE PLAN	
CHIEF ENGINEER			
DATE:		APPVD	DIRECTOR
DESIGN BY:			
DRAWN BY: JJ		FILE NO.	SHT. 1 OF 1
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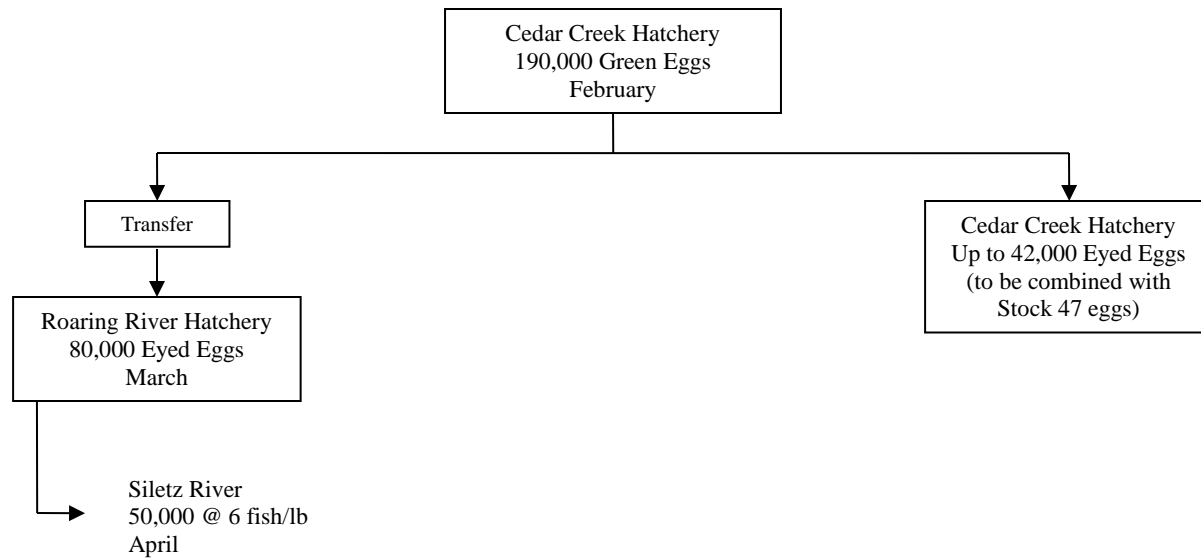
Cedar Creek Hatchery Fall Chinook Salmon – Stock 47 (Nestucca River)



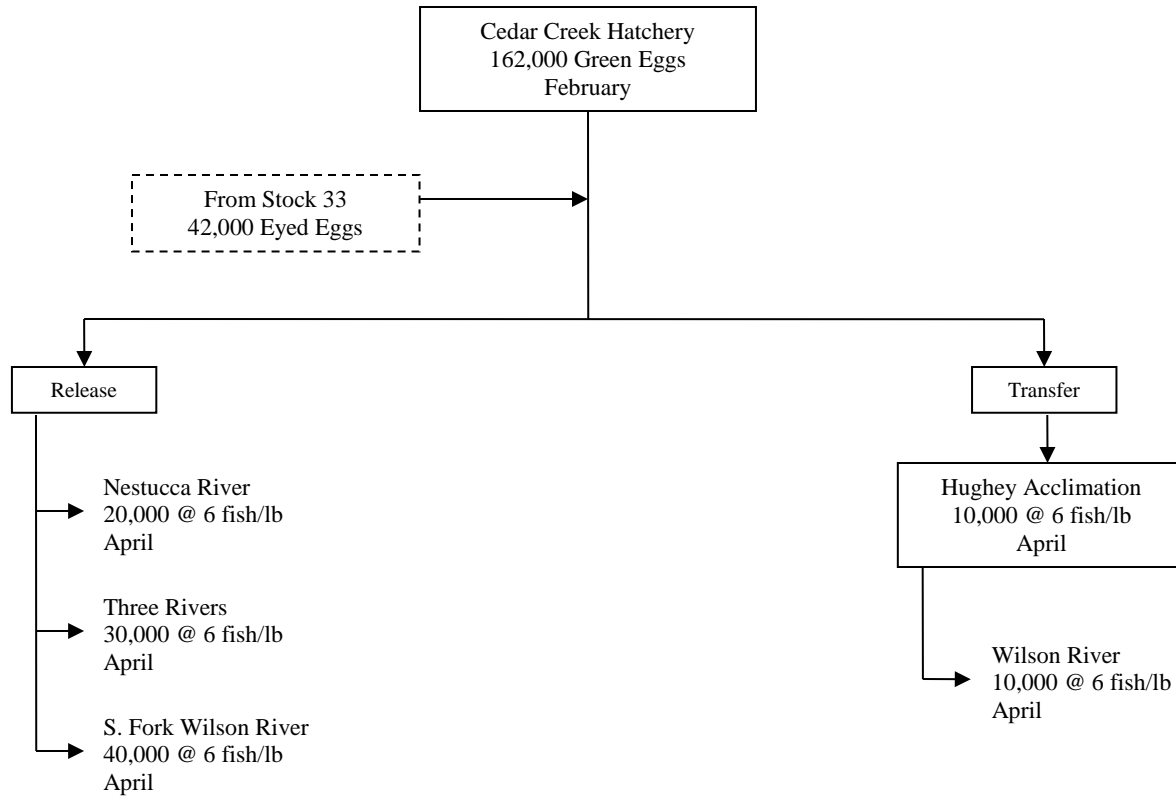
**Cedar Creek Hatchery
Spring Chinook Salmon – Stock 47 (Nestucca River)**



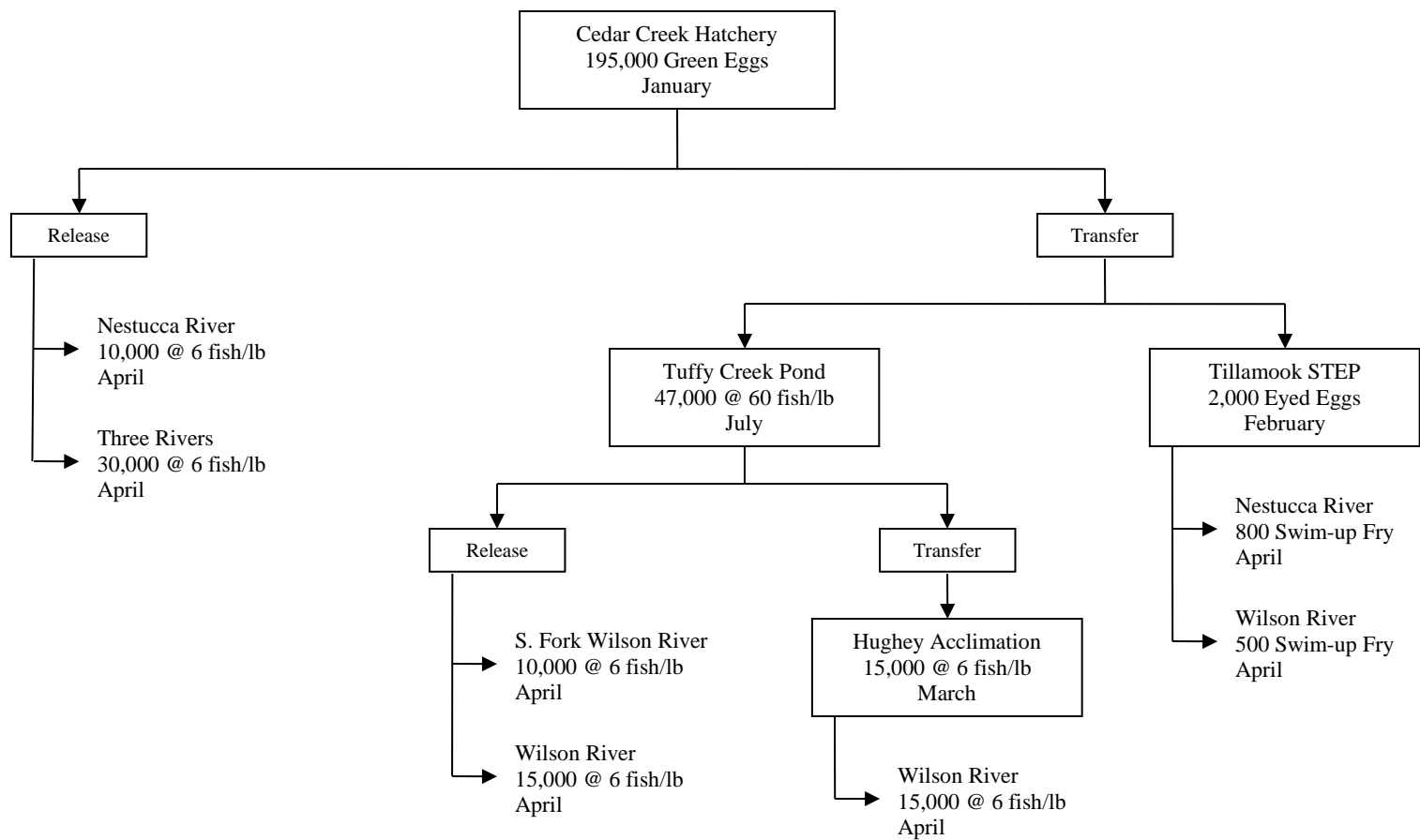
**Cedar Creek Hatchery
Summer Steelhead – Stock 33 (Siletz River)**



Cedar Creek Hatchery Summer Steelhead – Stock 47 (Nestucca River)



Cedar Creek Hatchery Winter Steelhead – Stock 47 (Nestucca River)



**Cedar Creek Hatchery
Winter Steelhead – Stock 47F (Nestucca River Wild)**

