

OAK SPRINGS HATCHERY



PROGRAM MANAGEMENT PLAN 2023

Oak Springs Hatchery

INTRODUCTION

Oak Springs Hatchery is located on the Deschutes River about 9 miles north of Maupin, Oregon, 2 miles off Highway 197. The site is at an elevation of 850 feet above sea level, at latitude 45.2196 and longitude -121.0805). The site area is 203 acres.

Water is supplied by gravity flow from several springs. The present water delivery system can deliver approximately 22,400 gpm of fresh water to the hatchery though the springs are currently supplying only 9,700 gpm. A pipeline allows for increased water re-use from one pond series to another and effectively increases available water to 13,965 gpm.

The hatchery is staffed with 5.75 FTE's.

Rearing Facilities at Oak Springs 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 |
|---------------------|------------------|-----------------|-----------------|--------------------------------|--------------|---------------------------------|-----------------------|------|-----------|-----------------------|
| Brood Ponds | 140.5 | 22 | 3.5 | 10,819 | 2 | 21,637 | concrete | 1939 | fair | For trout broodstock. |
| Burrows Ponds | 50 | 19.5 | 2.8 | 2,680 | 2 | 5,360 | concrete | 1970 | good | |
| Circular Ponds | | 30 | 3 | 2,120 | 5 | 10,600 | concrete | 1970 | good | |
| Lower Ponds | 46.8 | 38.5 | 4 | 7,207 | 7 | 50,450 | concrete | 1939 | poor | |
| Upper Ponds | 50.5 | 40 | 4.67 | 9,433 | 9 | 84,901 | concrete | 1957 | good | |
| Raceways | 113 | 9.25 | 3.33 | 3,481 | 12 | 27,845 | concrete | 1992 | good | |
| Canadian Troughs | 16 | 3 | 1.5 | 72 | 16 | 1152 | Fiberglass | 1996 | good | |
| Vertical Incubators | | | | | 192 | | plastic | 1992 | Good | |

PURPOSE

Oak Springs Hatchery was constructed in several phases beginning in 1922 with the last major construction 1996. The facility is currently used for egg production, incubation and rearing of two stocks of Rainbow Trout, incubation and rearing of summer Steelhead and winter Steelhead, and maintains two resident Rainbow Trout broodstock. The hatchery receives 75% funding from Federal sources through the Sport Fish Restoration Program and the US Army Corps of Engineers, and 25% from license fees.

PROGRAM TYPES

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.

Oak Springs Hatchery participates in harvest programs used for augmentation of fishing and harvest opportunities.

GOALS

Rainbow Trout: Produce triploid and diploid rainbow trout fingerlings, legal, and trophy fish to meet statewide trout management program objectives.

Summer Steelhead:

Deschutes River (66H) Stock: Produce catchables to meet statewide trout management program objectives.

Clackamas River (122H) Stock: To help meet PGE and City of Portland mitigation agreement goals, and to provide sport harvest opportunities on hatchery winter steelhead in the lower Clackamas River without intentional risks to naturally producing populations.

OBJECTIVES

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

Rainbow Trout:

Oak Springs (53H) Stock:

Produce 37,200 eggs for STEP.

Produce 480,000 fingerlings (2,400 pounds) for transfer to Klamath Hatchery.

Produce 30,000 eggs for future broodstock.

Produce 388,000 fingerlings (13,371 pounds), 15,500 sub-legals (1,938 pounds), and 13,000 trophy fish (26,000 pounds) for release into various standing water bodies.

Oak Springs Triploid (53T) Stock:

Produce 550,000 eggs for Wizard Falls Hatchery.

Produce 13,000 eggs for STEP.

Produce 60,000 fingerlings (200 pounds) and 90,000 sub-legals (11,250 pounds) for transfer to Irrigon Hatchery.

Produce 84,000 sub-legals (8,400 pounds) for transfer to Wallowa Hatchery.

Produce 300 trophies (600 pounds) for transfer to Bonneville Hatchery.

Produce 133,850 legals (66,925 pounds), and 5,300 trophies (10,600 pounds) for release into various standing water bodies.

Produce 8,000 legals (2,000 pounds) for transfer to Rock Creek Hatchery.

Produce 100,000 legals (33,333 pounds) for transfer to Leaburg Hatchery.

West Virginia (133H) Stock:

Produce 2,000 fish for future brood stock and release 10,150 legals (5,075 lbs.) for release into standing waterbodies.

West Virginia (133T) Stock:

Produce 8,150 legal (4,075 lbs.) for release into standing water bodies and to test the stocks' resistance to bacterial cold-water disease in the hatchery environment.

Summer Steelhead:

Deschutes River (66H) Stock:

Produce 9,000 legal (3,000 pounds) for release into Haystack Reservoir.

Clackamas River (122H) Stock:

Produce 60,000 smolts (10,000 pounds) for transfer to Clackamas Hatchery.

Produce 105,000 fingerlings (3,500 pounds) for transfer to Bonneville Hatchery.

Produce 100,000 fingerlings (3,333 pounds) for transfer to Clackamas Hatchery.

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 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

Rainbow Trout:

Oak Springs (53) Stock: Broodstock are maintained at the facility.

West Virginia (133) Stock: Brood stock are being developed with eggs received from Mantua Hatchery with the Utah Fish and Game; with two separate year classes currently being reared at the Oak Springs facility.

Summer Steelhead:

Deschutes River (66H) Stock: No adults are collected at this facility (see Round Butte Hatchery Plan for further information).

Winter Steelhead:

Clackamas River Wild (122H) Stock: Adults are collected at the Faraday Trap on the Clackamas River and held at Clackamas Hatchery for spawning (see Clackamas Hatchery Plan for further information).

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 release location, 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.

Rainbow Trout:

Oak Springs (53H) Stock:

Rear 188,000 fingerlings to a size of 35 fpp for release into various waterbodies in May.

Rear 200,000 fingerlings to a size of 25 fpp for release into Ochoco and Prineville reservoirs in May.

Rear 15,500 sub-legals to a size of 8 fpp for release into various waterbodies in September.

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Rear 13,000 trophy size fish to 0.5 fpp or larger for release into various standing water bodies in March – October.

Rear 955 brood size fish to a size of 0.1 fpp for release into various waterbodies from March to May.

Retain 30,000 fish for future broodstock.

Oak Springs Triploid (053T) Stock:

Rear 60,000 fingerlings to a size of 250 fpp for transfer to Irrigon Hatchery in July.

Rear 90,000 sub-legals to a size of 8 fpp for transfer to Irrigon Hatchery in March.

Rear 84,000 sub-legals to a size of 10 fpp for transfer to Wallowa Hatchery in October.

Rear 300 trophies to a size of 0.5 fpp for transfer to Bonneville Hatchery in May.

Rear 133,850 legal fish to a size of 2 fpp for release into various waterbodies from March through early November.

Rear 5,300 fish to a size of 0.5 fpp for release into various waterbodies in April-May.

Rear 8,000 fish to a size of 4 fpp for transfer to Rock Creek Reservoir in October.

Rear 100,000 fish to a size of 3 fpp for transfer to Leaburg Hatchery in October.

Summer Steelhead:

Deschutes River (66H) Stock:

Rear 9,000 legal fish to a size of 3 fpp for release into Haystack Reservoir in mid-April.

Winter Steelhead:

Clackamas River (122H) Stock:

Rear 105,000 fingerlings to a size of 30 fpp for transfer to Bonneville Hatchery in October. All fish are adipose clipped before transfer.

Rear 100,000 fingerlings to a size of 30 fpp for transfer to Clackamas Hatchery in October. All fish are adipose clipped before transfer.

Rear 60,000 smolts to a size of 6 fpp for transfer to Clackamas Hatchery for acclimation and release into the Clackamas River in May. All fish are adipose clipped prior to transfer.

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 Oak Springs Hatchery:

Rainbow Trout:

Oak Springs (53) Stock: Spawning takes place in September-November. Fish are spawned at a 1:1 male to female ratio. Triploidy is induced by pressure-shocking the eggs shortly after fertilization.

Summer Steelhead:

Deschutes River (66H) Stock: Broodstock selection and spawning take place at Round Butte Hatchery (see Round Butte Hatchery Plan for additional information).

Clackamas River (122H) Stock: Broodstock selection and spawning take place at Clackamas Hatchery (see the Clackamas Hatchery Plan for further information).

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 Oak Springs Hatchery

Health Monitoring

- Monthly health monitoring examinations of healthy and clinically diseased fish are conducted on each fish lot at the hatchery. The sample includes a minimum of 10 moribund/dead fish (if available) and 4-6 live fish per lot.
- 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.
- 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 trout lot. If pre-spawning 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

- Eggs are spawned, fertilized, placed into colanders to remove ovarian fluid and then 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 and juveniles. 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 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.

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. Two composite samples are collected, one during normal operations and one during cleaning. Some facilities may take more samples because of multiple outfalls.
- Settleable Solids (SS) – measured quarterly. 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.
- Total Ammonia and Total Phosphorus – measured quarterly during the first 12 months of the permit when settleable solids are measured.
- Water Temperatures – daily maximum and minimum water temperatures are measured within the hatchery. Temperature units are recorded for egg development in some hatcheries.
- 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 – changes in water flows through the hatchery ponds are recorded daily.

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

Production Advisory Committee (PAC): The Columbia River PAC is comprised of representatives from the regulatory management agencies and tribes. This group meets monthly to discuss anadromous fish production issues and to provide an opportunity for communication among the anadromous fish hatchery managers.

Technical Advisory Committee (TAC): The Columbia River TAC is comprised of regulatory fish harvest technicians. This group provides management direction used in establishing hatchery fish production goals. TAC meets monthly.

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 groups meets twice a year to monitor regional fish health policies and to discuss current fish health issues in the Pacific Northwest.

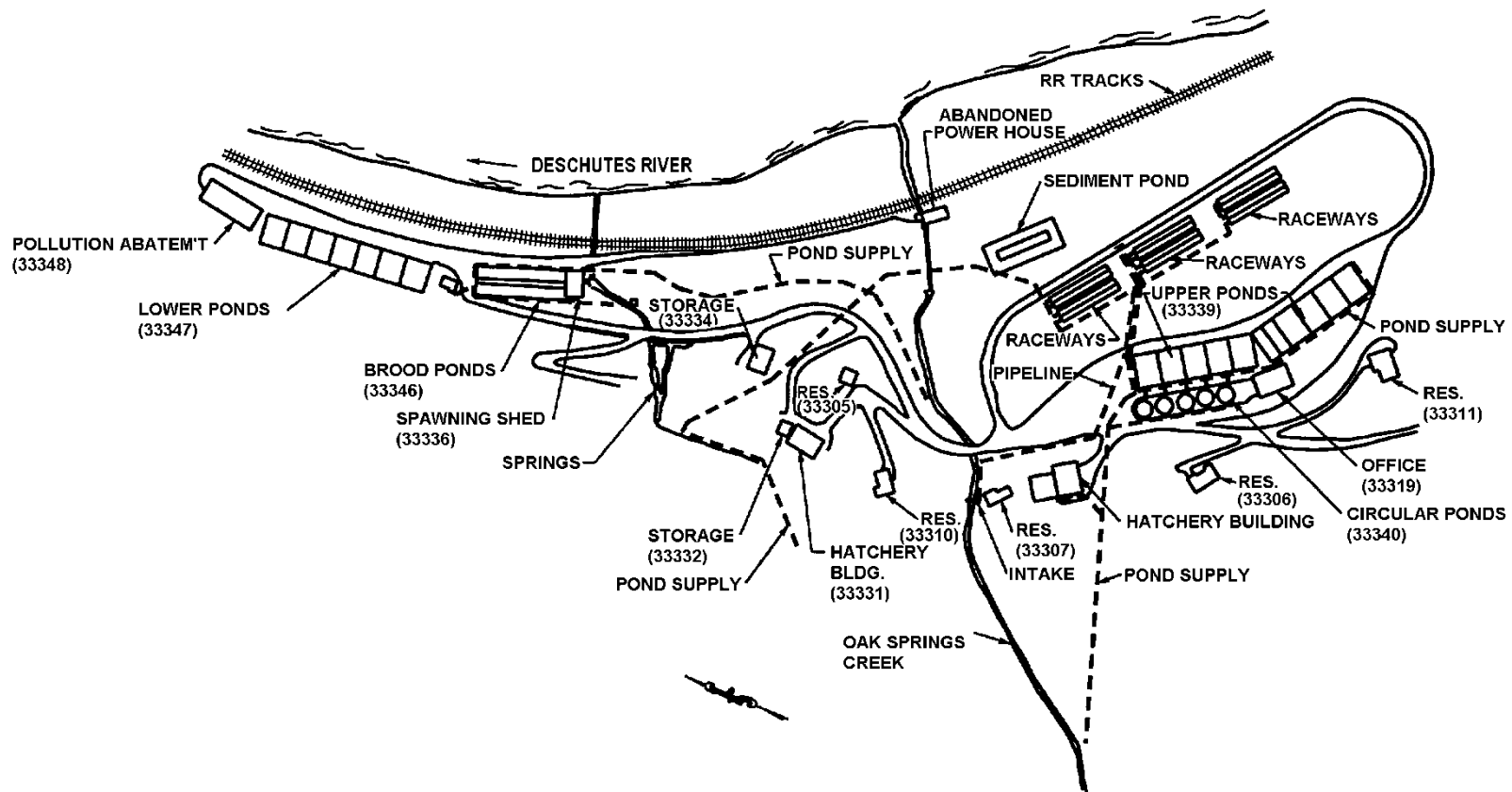
In-River Agreements: State and tribal representatives meet annually to set Columbia River harvests as part of the *U.S. v. Oregon Agreement*. Periodic meetings are also held throughout the year to assess if targets are being met.

Streamnet ([www/streamnet.org](http://www.streamnet.org)): Hatchery return data are input into StreamNet, a cooperative information management and data dissemination project focused on fisheries and aquatic related data and data related services in the Columbia River basin and the Pacific Northwest. StreamNet is funded through the Northwest Power and Conservation Council's Fish and Wildlife Program by the Bonneville Power Administration and are administered by the Pacific States Marine Fisheries Commission. The data are maintained and disseminated through the Pacific States Marine Fisheries Commission (PSMFC).

In-Season Communications: Communication with PAC, the Columbia River Inter-Tribal Fish Commission, Washington Department of Fish and Wildlife, Washington Department of Fisheries, U.S. Fish and Wildlife Service and Idaho Department of Fish and Game takes place each year to coordinate proper fish and egg transfers in an effort to meet basin-wide goals at all facilities, where applicable.

Communication with the General Public

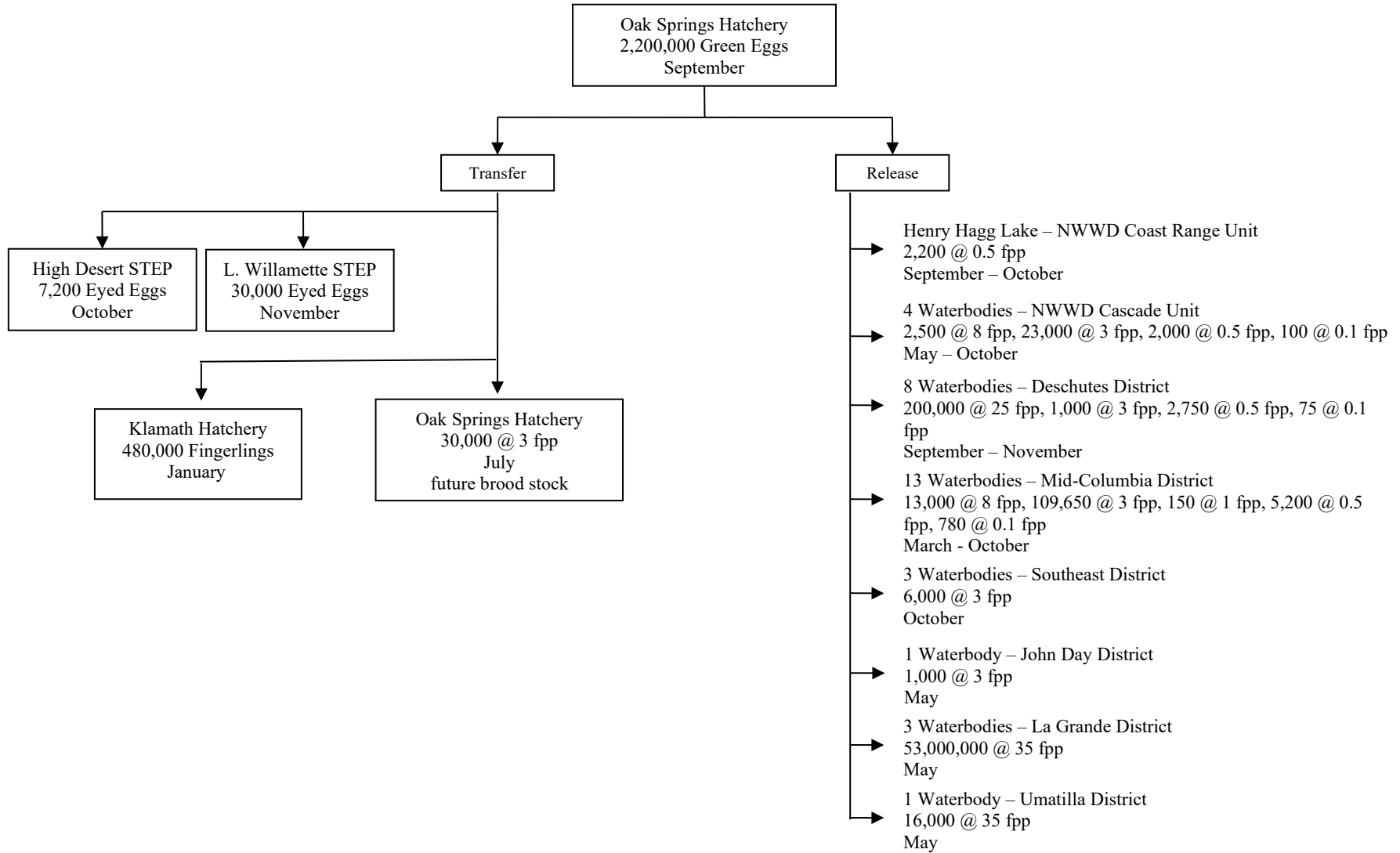
Oak Springs Hatchery receives approximately 750 visitors per year.



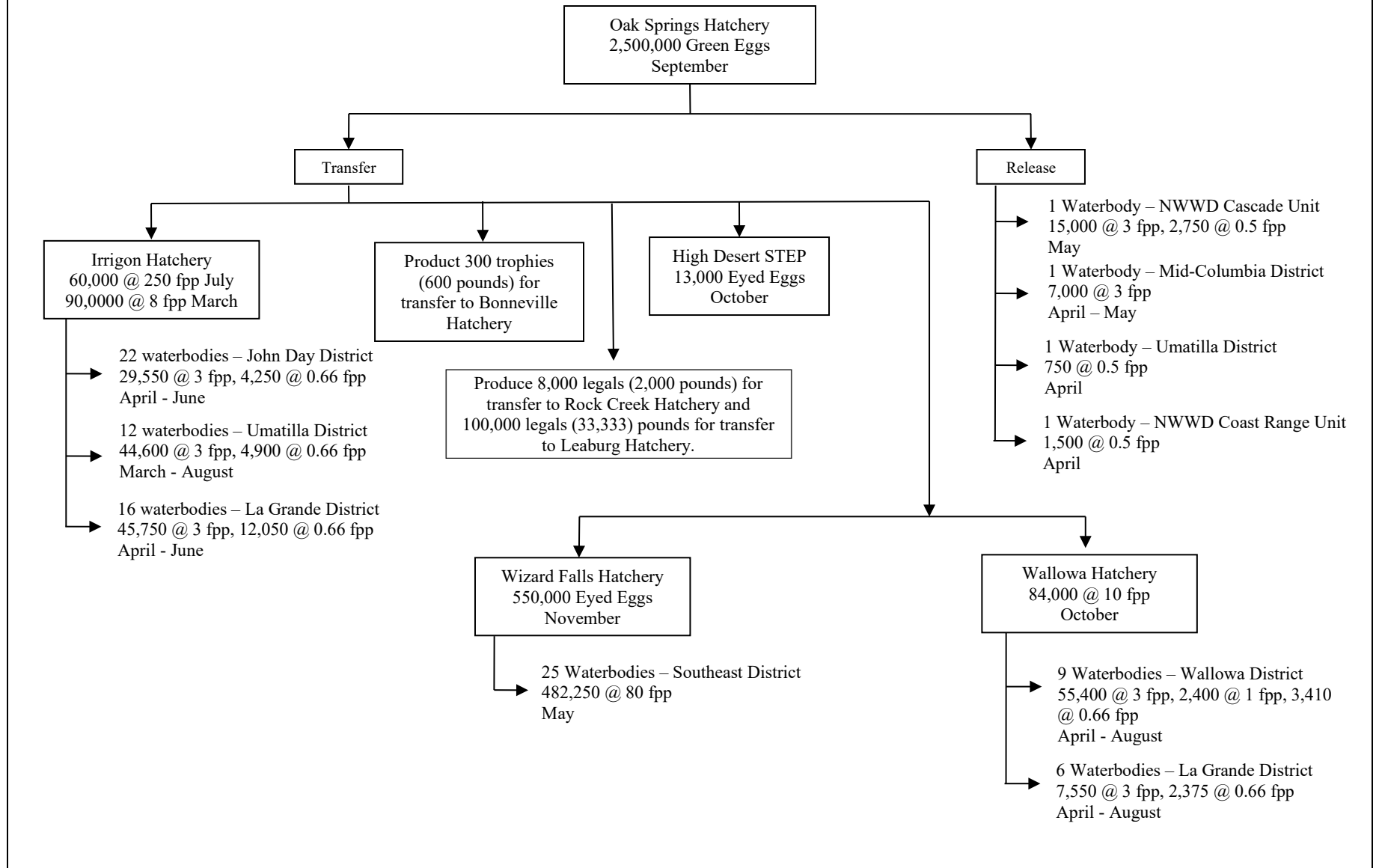
SITE PLAN
1" = 100 FT.

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|----------------|--|--|--|
| | | DEPARTMENT of FISH & WILDLIFE STATE OF OREGON | |
| | | OAK SPRINGS HATCHERY | |
| | | SITE PLAN | |
| CHIEF ENGINEER | | DIRECTOR | |
| DATE: | | APPROVED | |
| DESIGN BY: | | FILE NO. | |
| DRAWN BY: JJ | | SHT. 1 OF 1 | |
| CHECKED BY: | | | |

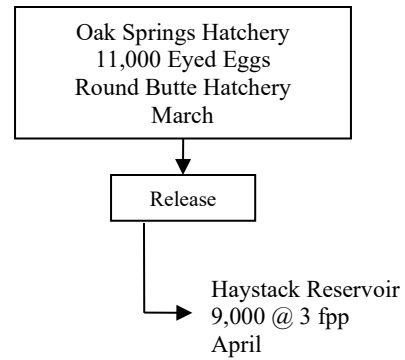
Oak Springs Hatchery Rainbow Trout – Stock 53H (Oak Springs Diploid)



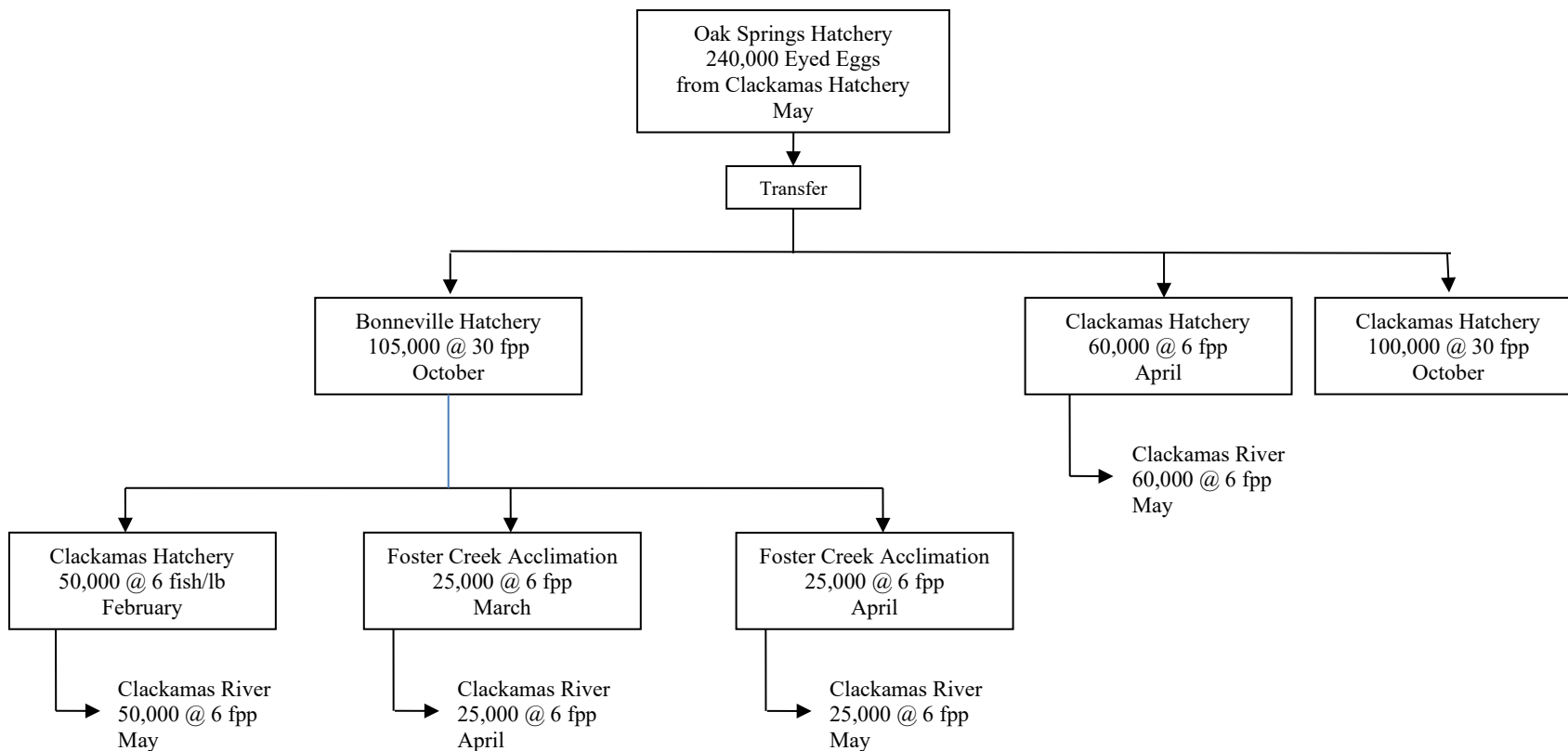
Oak Springs Hatchery Rainbow Trout – Stock 53T (Oak Springs Triploid)



Oak Springs Hatchery Summer Steelhead – Stock 66H (Deschutes River)



Oak Springs Hatchery Winter Steelhead – Stock 122H (Clackamas River Wild)



Oak Springs Hatchery Rainbow Trout – Stock 133H and Stock 133T (West Virginia)

