MARION FORKS HATCHERY

PROGRAM MANAGEMENT PLAN
2024

Marion Forks Hatchery

INTRODUCTION

Marion Forks Hatchery is located along Marion and Horn Creeks (Santiam River tributaries in the Willamette Basin) about 17 miles east of Detroit, Oregon, along Highway 22. The site is at an elevation of 2,580 feet above sea level, at latitude 44.6125 and longitude -121.9472. The site area is 15 acres, owned by the US Forest Service Willamette National Forest.

The facility is staffed with 4.8 FTE's. Four permanent positions, 1- 4.5-month seasonal position.

There are two water rights: 15,257 gpm from Marion Creek and 14,368 gpm from Horn Creek. Water is supplied from Marion Creek from April through September, and from Horn Creek from October through March. All rearing units use single-pass water.

Rearing Facilities at Marion Forks 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
Marion Forks										
Canadian Troughs	21	2.67	1.75	98	12	1,177	Fiberglass	1986	good	
Rearing Troughs	16	3.25	2.67	139	4	556	Fiberglass	2013	excellent	
Raceways	80	20	2.5	4,000	8	32,000	Concrete	1951	good	
Circular Ponds		24	2.16	980	48	47,040	Concrete	1951	good	
Vertical Incubators					272		Plastic	1986	fair	34 stacks of 8 trays
Vertical Incubators					136		Plastic	2013	excellent	34 stacks of 4 trays

PURPOSE

Marion Forks Hatchery began operation in 1951. The U.S. Army Corps of Engineers (COE) funds the majority of operational costs as mitigation for the development of Detroit and Big Cliff dams. The hatchery is used for egg incubation and rearing of spring chinook.

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.

Marion Forks Hatchery programs are harvest programs, used to mitigate loss of fishing and harvest opportunities due to loss of habitat and migration blockage resulting from the construction of hydroelectric projects in the Willamette River Basin.

GOALS

Brook Trout: Produce brook trout to meet sport harvest management goals

Spring Chinook:

North Santiam River (21H) Stock: Produce fish to mitigate the loss of spring chinook catch in sport and commercial fisheries that was lost due to the construction and operation of Big Cliff and Detroit dams, to meet Santiam River Subbasin Fish Management Plan harvest goals for the mainstem and North Fork Santiam River, and to maintain suitable broodstock for ongoing and future population recovery efforts throughout the subbasin.

Rainbow Trout: Produce triploid trout to meet sport harvest management goals.

OBJECTIVES

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

Brook Trout:

Wyoming Triploid (74T) Stock:
Hold 4,200 fingerlings (21 pounds) for high lakes backpack stocking (odd years only).

Spring Chinook:

North Santiam River (21H) Stock:
Produce 250,000 fingerlings (8,333 pounds) for transfer to Clatsop County Fisheries (CCF) Tongue Point Net Pens.

Produce 200,000 fingerlings (6,667 pounds) for transfer to Big Creek Hatchery.

Produce 300,000 smolts (18,750 pounds) for transfer to CCF Youngs Bay Net Pens.

Produce 100,000 smolts (6,250 pounds) for release into the Molalla River.

Produce 704,000 smolts (50,286 pounds) for transfer to Minto Fish Facility for acclimation and release into the North Santiam River system.

Rainbow Trout:

Crane Prairie Triploid (127T) Stock:
Hold 26,200 fingerlings (105 pounds) for backpack stocking of high lakes.

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

Brook Trout:

Wyoming Triploid (74T) Stock: No broodstock is held at the hatchery. Maintained at Fall River Hatchery

Spring Chinook:

North Santiam River (21H) Stock: Adults begin arriving in the Santiam River in mid-May. Adults are collected and held for spawning at the Minto Facility from late August to October. Peak spawning occurs from mid to late September.

Rainbow Trout:

Crane Prairie Triploid (127T) Stock: Broodstock are maintained at Wizard Falls Hatchery.

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.

Brook Trout:

Wyoming Triploid (74T) Stock:

Receive 4,200 fish at 200 f/lb. from Fall River Hatchery for backpack stocking of high lakes in mid-July (odd years only).

Spring Chinook:

North Santiam River (21H) Stock:

Rear 250,000 smolts to a size of 30 f/lb. for transfer to CCF Tongue Point Net Pens in early November. All fish are fin-clipped and 25,000 are coded-wire tagged prior to transfer.

Rear 200,000 smolts to a size of 30 f/lb. for transfer to Big Creek Hatchery in early November. All fish are fin-clipped and 25,000 are coded-wire tagged prior to transfer.

Rear 300,000 smolts to a size of 16 f/lb. for transfer to CCF Youngs Bay Net Pens in early March. All fish are fin-clipped and 25,000 are coded-wire tagged prior to transfer.

Rear 100,000 smolts to a size of 16 f/lb. for transfer to Trout Creek Acclimation in February-March for release into the Molalla River in April. All fish are fin-clipped and 30,000 are coded-wire tagged prior to release.

Rear 704,000 smolts to a size of 14 f/lb. for transfer to Minto Fish facility for acclimation and release into the North Santiam River in February-March. All fish are adipose-clipped and otolith-marked, and 100,000 are coded-wire tagged prior to release.

Rainbow Trout:

Crane Prairie Triploid (127T) Stock:

Receive 26,200 fish at a size of 250 f/lb. from Wizard Falls Hatchery for high lakes backpack stocking in early June.

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 Marion Forks Hatchery:

Brook Trout:

Wyoming Triploid (74T) Stock: Broodstock selection and spawning take place at Story Hatchery in Wyoming.

Spring Chinook:

North Santiam River (21H) Stock: The Minto Pond trap is opened in August and adults are collected throughout the run until early October. The adults collected include both non-marked (wild) and hatchery fish (the largest portion is hatchery fish). Adults are spawned at a 1:1 male to female ratio. Only North Santiam spring Chinook are used for broodstock. 10% non-marked adults are incorporated into the brood.

Rainbow Trout:

Crane Prairie Triploid (127T) Stock: Broodstock selection and spawning take place at Wizard Falls Hatchery (see Wizard Falls 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 Health Services if losses are increasing. Monthly mortality records are submitted to Fish Health Services 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 Marion Forks Hatchery and Satellite

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 dead fish (if available) and 4-6 live fish per lot.
- 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 salmon and steelhead lot. If pre-spawning loss is above normal, necropsies are conducted to identify bacteria, parasites and other causes of death.
- 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.
- Whenever abnormal behavior is reported or observed, or mortality exceeds 0.1% per day over five consecutive days in any rearing container, the fish health specialist 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 Treatments

- At spawning, eggs are water-hardened in iodophor for disinfection and then transported to Marion Forks Hatchery.
- Juvenile fish are administered antibiotics orally as needed for the control of bacterial infections.
- Formalin or hydrogen peroxide 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.
    - Approved by the FDA as a veterinary feed directive.

Sanitation

- All eggs brought to the facility are surface-disinfected or water-hardened in buffered iodophor.
- All equipment (e.g., nets, tanks, rain gear, and 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.

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.
- Formalin – measured once yearly.
- Water Temperatures – daily maximum and minimum water temperatures are measured within the hatchery. Temperature units are recorded for egg development in some hatcheries. Effluent and receiving stream temperatures are measured weekly.
- 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 weekly.

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 Ponded 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.

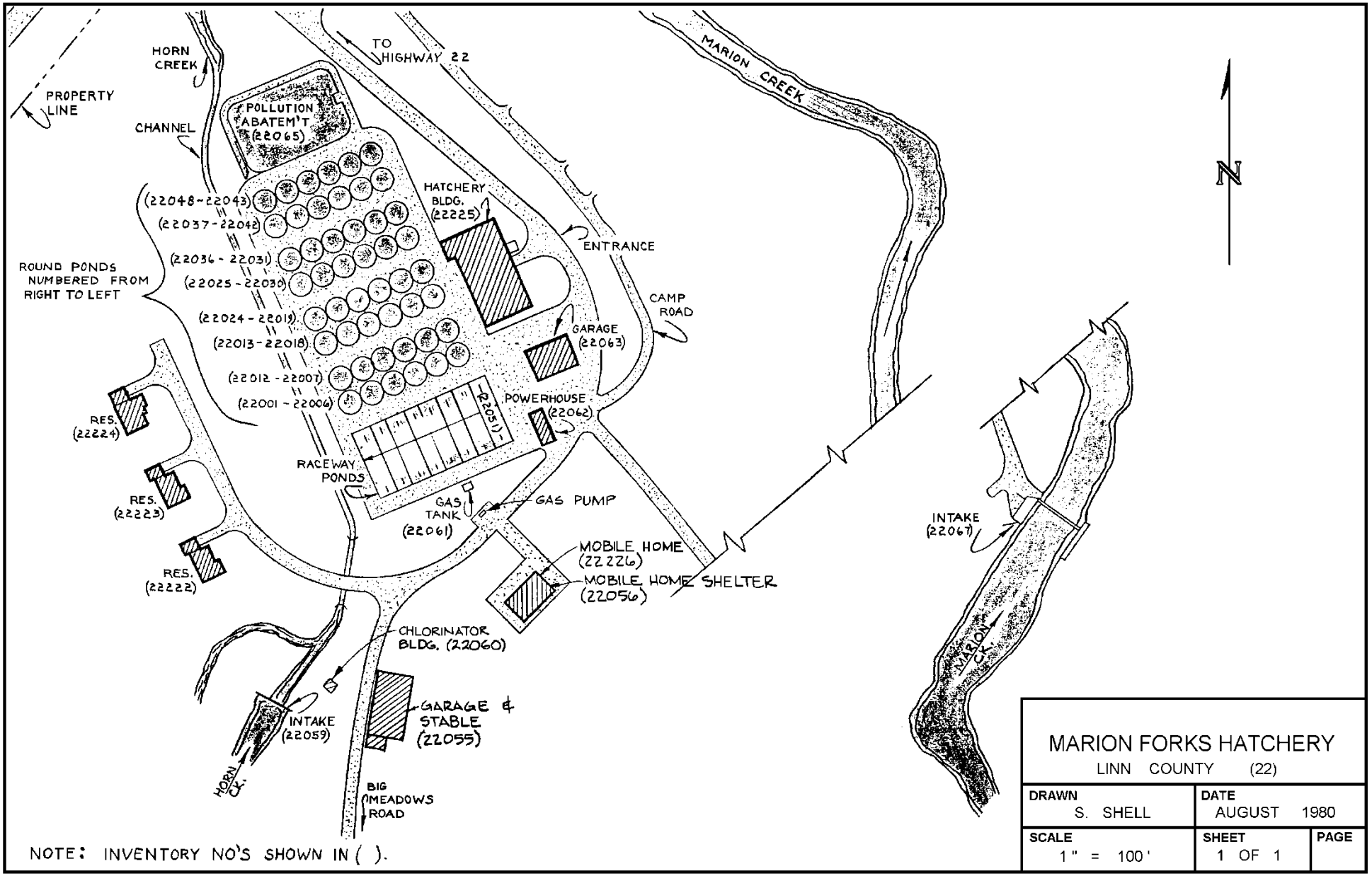
In-River Agreements: State and tribal representatives meet annually to set Columbia River harvests as part of the *U.S. v. Oregon Agreement*. Periodic meetings are also held throughout the year to assess if targets are being met.

Streamnet (www/streamnet.org)): 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).

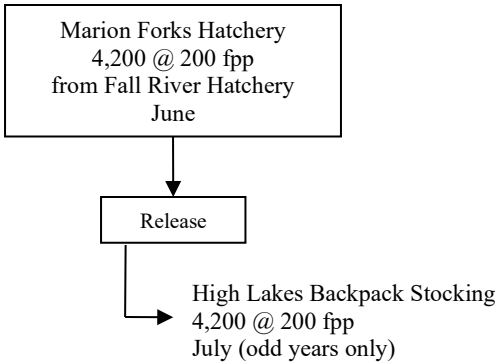
In-Season Communications: Communication with PAC, the Columbia River Inter-Tribal Fish Commission, Washington Department of Wildlife, Washington Department of Fisheries, U.S. Fish and Wildlife Service and Idaho Department of Fish and Game takes place each year to coordinate proper fish and egg transfers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

Communication with the General Public

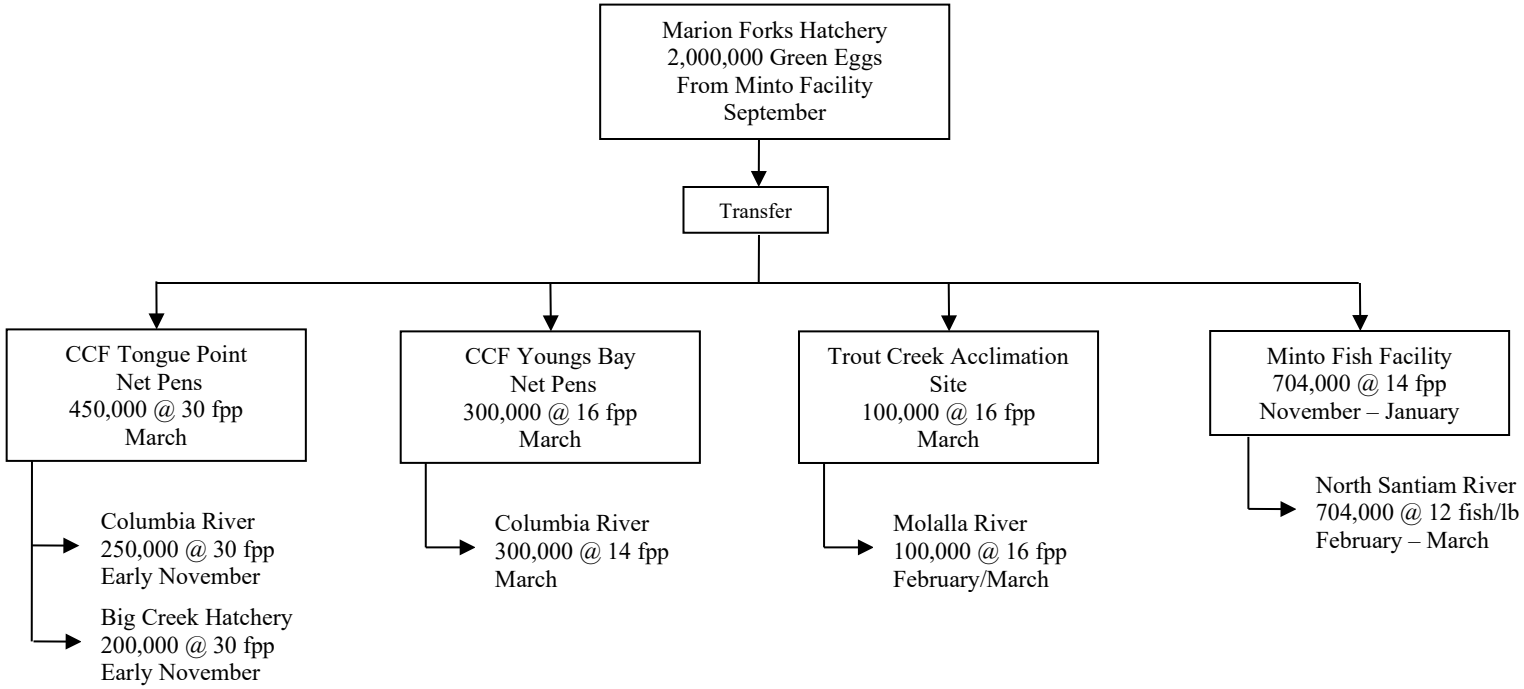
Marion Forks Hatchery receives approximately 6,000 visitors per year. Hatchery personnel also assist with school tours, classroom fish-rearing projects and a mentorship program.


HORN CREEK
PROPERTY LINE
CHANNEL
POLLUTION ABATEM'T (22065)
TO HIGHWAY 22
MARION CREEK
N
HATCHERY BLDG. (22225)
ENTRANCE
CAMP ROAD
ROUND PONDS NUMBERED FROM RIGHT TO LEFT
(22048-22043)
(22037-22042)
(22036-22031)
(22025-22030)
(22024-22019)
(22013-22018)
(22012-22007)
(22001-22006)
GARAGE (22063)
POWERHOUSE (22062)
(2205 1/-)
RACEWAY PONDS
RES. (22224)
RES. (22223)
RES. (22222)
GAS TANK (22061)
GAS PUMP
MOBILE HOME (22226)
MOBILE HOME SHELTER (22056)
INTAKE (22067)
MARION CK.
CHLORINATOR BLDG. (22060)
GARAGE & STABLE (22055)
INTAKE (22059)
HORN CK.
BIG MEADOWS ROAD
NOTE: INVENTORY NO'S SHOWN IN ( ).
MARION FORKS HATCHERY
LINN COUNTY (22)
DRAWN S. SHELL
DATE AUGUST 1980
SCALE 1" = 100'
SHEET 1 OF 1
PAGE

Marion Forks Hatchery
Brook Trout – Stock 74T (Wyoming Triploid)



Marion Forks Hatchery
Spring Chinook Salmon – Stock 21H (North Santiam River)



Marion Forks Hatchery
Rainbow Trout – Stock 127T (Crane Prairie Triploid)