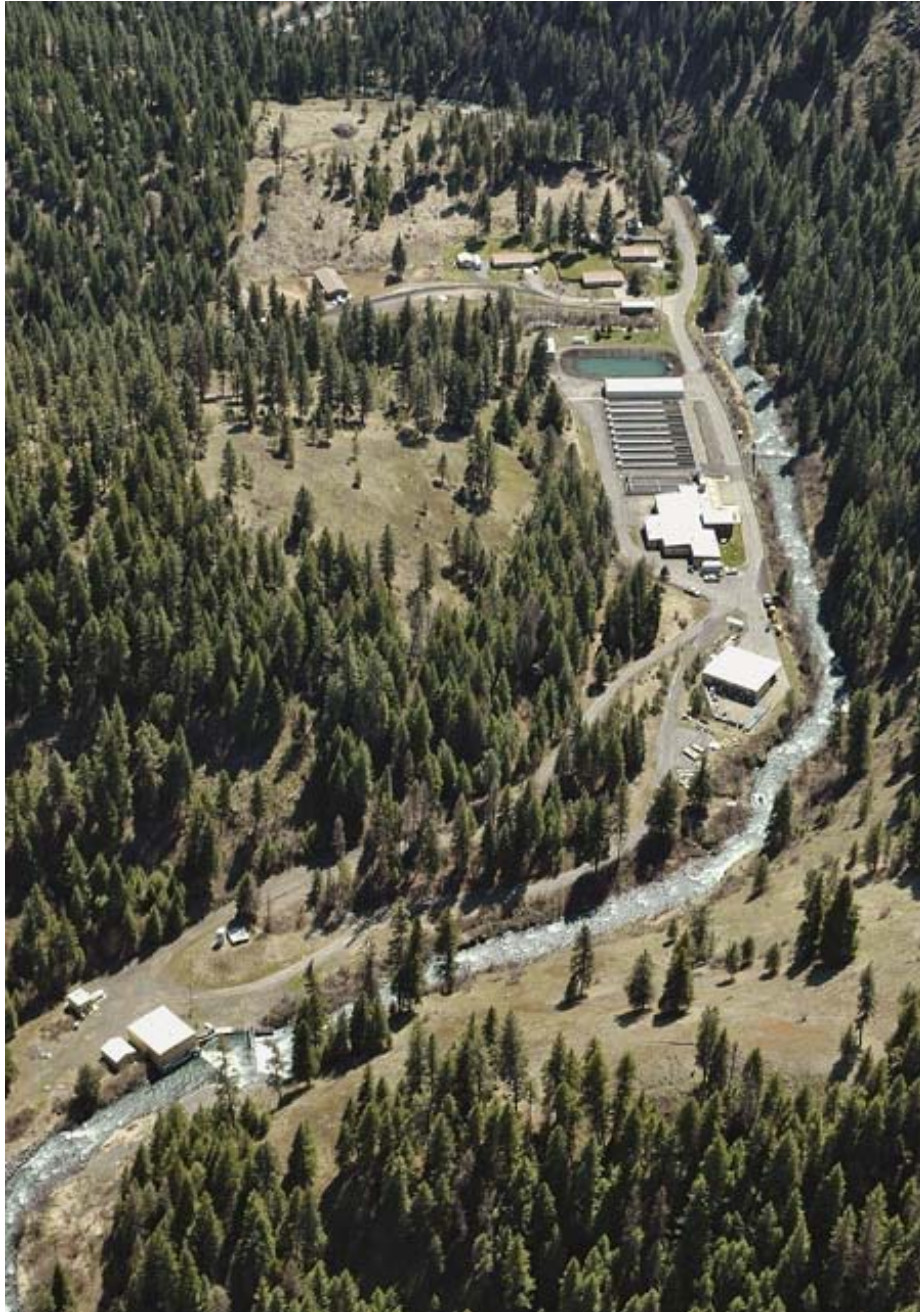


LOOKI NGGLASS HATCHERY



OPERATI ONS PLAN
2012

Lookingglass Hatchery And Imnaha Satellite Facility

INTRODUCTION

Lookingglass Hatchery is located along Lookingglass Creek, a tributary to the Grande Ronde River located approximately 2 miles from Palmer Junction in northeast Oregon. The site is located at an elevation of 2520 feet above sea level, at latitude 45° 43' 55" N (45.73194) and longitude 117° 51' 45" W (117.8625). The area of the site is 22.5 acres, owned by the US Fish & Wildlife Service. Lookingglass Hatchery has 7 full time employees to operate Lookingglass Hatchery and Imnaha Satellite Facility.

Water rights for the hatchery total 38,782 gpm from Lookingglass Creek and wells. Water rights for Lookingglass Creek include 22,442 gpm for fish propagation and an additional 13,462 gpm for operation of a fishway constructed prior to the hatchery. Water flows equal to the water rights are available year round but are not needed at all times. Freezing of the intake and water supply is a problem during the winter. Well water is used to temper creek water in an attempt to reduce the water intake and raceways from filling with slush ice.

The Imnaha Facility is a satellite of Lookingglass Hatchery. It is located along the middle section of the Imnaha River, 30 miles upriver from the town of Imnaha. The site is at an elevation of 3,760 feet above sea level, at latitude 45° 43' 55" N and longitude 116° 52' 12" W. The facility, which was built in 1988, consists of a single acclimation pond (13,000 cu. Ft.) and adult ladder and trap.

Rearing Facilities at Lookingglass 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
<u>Lookingglass</u>										
Adult Holding Ponds	76	10	3	2,280	4	9,120	concrete	1983	good	Divider walls concrete
Adult Holding Circulars	20		4.5	1,414	3	4,241	fiberglass	1997	good	Endemic building circulars
Raceways	100	10	3	3,000	18	54,000	concrete	1983	good	
Canadian Troughs	21	2.5	3.0	158	30	4680	fiberglass	2000 & 2009	good	117 cu. Ft. rearing space
Vertical Incubators					360	225	fiberglass	1988	good	45 stacks of 8 trays
<u>Imnaha Pond</u>										
Acclimation pond	125	26	4	13,000	1	13,000	concrete	1989	good	Acclimation/adult holding

PURPOSE

Lookingglass Hatchery was constructed in 1982 as part of the Lower Snake River Compensation Program (LSRCP)—a program to mitigate for spring Chinook and summer steelhead losses caused by the four federal dams constructed on the lower Snake River. Lookingglass is used to rear spring Chinook for the Grande Ronde and Imnaha rivers as part of LSRCP.

Lookingglass Hatchery serves as an adult collection, egg incubation, and rearing and release site for the spring Chinook destined for the Grande Ronde River system. The Imnaha Satellite Facility is used for the collection of spring Chinook adults returning to the Imnaha River. Adults captured at the Imnaha satellite facility are transported to Lookingglass Hatchery. Eggs are incubated and juveniles reared at Lookingglass Hatchery. Juveniles/smolt are then transferred back to the Imnaha facility for acclimation and release into the Imnaha River system.

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.

Lookingglass Hatchery participates in both harvest and conservation programs. The Grande Ronde Spring Chinook program is a conservation program using supplementation to restore spring Chinook salmon populations in the Grande Ronde Basin. The Imnaha spring Chinook program is a harvest program that provides mitigation for lost fishing and harvest opportunities due to habitat loss and migration corridor issues resulting from construction of dams on the Lower Snake River.

GOALS

Spring Chinook:

Grande Ronde Basin (80, 81, 200, 201) Stock: Short-term goals are to utilize conventional supplementation to prevent the extinction of three wild Chinook populations in the Grande Ronde Basin. Also, reintroduction of spring/summer Chinook into Lookingglass Creek using Catherine Creek stock is a goal of the program. Associated objectives include:

- To prevent extinction of native wild Chinook populations in the Lostine River, upper Grande Ronde River and Catherine Creek
- Maintain genetic diversity of indigenous artificially propagated Chinook populations
- Maintain genetic diversity in wild Chinook populations specifically the Minam, Wallowa, and Wenaha rivers

An intermediate goal of the Grande Ronde program is the restoration of spring Chinook salmon in the Grande Ronde sub-basin using three indigenous stocks.

The long-term goal of the Grande Ronde program is recovery, de-listing, and to mitigate for fish losses occurring as a result of the construction and operation of the four Lower Snake River Dams.

Imnaha River (029) Stock: The goal of the Imnaha program is the restoration of spring/summer Chinook salmon in the Imnaha River using the indigenous stock and to mitigate for fish losses occurring as a result of the construction and operation of the four Lower Snake River Dams. The program mitigation goal is to return 3,210 hatchery adults to the area above Ice Harbor Dam. Based upon this adult goal and an estimated 0.65% smolt-to-adult survival rate, the target for smolt production was set at 490,000 fish.

Program specific goals include:

- Establishing an annual supply of brood fish that can provide an egg source capable of meeting mitigation goals.
- Restore and maintain the natural spawning population.
- Re-establish sport and tribal fisheries.
- Establish a total return of adult fish resulting from LSRCP activities in Oregon that meets the mitigation goal.
- Minimize the impacts of the program on resident stocks of game fish.

OBJECTIVES: Annual Operations Plan – 2011

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

Spring Chinook:

Imnaha River (029) Stock: Produce up to 420,000 smolts (16,800 pounds) for release into the Imnaha River.

Upper Grande Ronde (080) Stock: Produce 250,000 fish (10,000 pounds) for release into the Grande Ronde River. If production is less than 150,000 smolts from the conventional program, eggs from the Safety Net Adult Program (SNAP) will be used to maintain a total release of 150,000.

Produce 300 eggs for transfer to Wallowa Hatchery for the Safety Net Adult Program.

Lostine River (200) Stock: Produce 250,000 fish (10,000 pounds) for release into the Lostine River.

Catherine Creek (201) Stock: Produce 150,000 fish (6,000 pounds) for release into Catherine Creek.

Lookingglass Creek (81) Stock: Produce 250,000 fish (12,000 pounds) for release into Lookingglass Creek. Up to 250,000 Lookingglass stock fry will be transferred to Irrigon

Hatchery and reared from April to late September 2012 and then returned to Lookingglass for final rearing and release.

- 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 used 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

Spring/Summer Chinook:

Imnaha River (029) Stock: Entry of adults into the Imnaha River occurs from mid-May through September. Peak spawning occurs from mid-August to mid-September. Adults that will be used for broodstock are collected at the Imnaha Satellite Facility and transferred to Lookingglass Hatchery. Surplus adults and jacks are outplanted into Lick Creek and Big Sheep Creek, re-cycled through the fishery, distributed to charitable food banks, taken to Wallowa Fish Hatchery for M & E purposes, released above the weir to

spawn naturally, or distributed to tribal entities for ceremonial and subsistence use. Adults held at Lookingglass facility are spawned and fertilized eggs are incubated at Lookingglass Hatchery.

Upper Grande Ronde (80F): The Upper Grande Ronde Captive Brood Program is transitioning into the Safety Net Adult Program.

Upper Grande Ronde (080) Stock: Adults are trapped at the Upper Grande Ronde weir from May to July and transported to Lookingglass Hatchery. Spawning takes place in August and September.

Lostine River (200) Stock: Adults are trapped at the Lostine River weir from June to September and transported to Lookingglass Hatchery. Spawning takes place in August and September.

Catherine Creek (201) Stock: Adults are trapped at the Catherine Creek weir from May to July and transported to Lookingglass Hatchery. Spawning takes place in August and September.

Lookingglass Creek (81) Stock: Adults are trapped at the Lookingglass Creek weir from May to September and held at Lookingglass Hatchery. Spawning takes place in August and September.

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 is intended to reduce the retention time in downstream migration. Rearing on parent river water, or acclimation to parent river water for several weeks, is used to induce 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 and acclimation sites with least amount of interaction with native populations. The specific rearing and release strategies used are outlined below:

Spring/Summer Chinook:

Imnaha River (029) Stock: Rear 420,000 fish to a size of 25 fpp and transfer to the Imnaha Acclimation Pond in mid-March. Acclimate 420,000 fish for a minimum of two weeks. After two weeks, screens are pulled and smolts allowed to voluntarily release into the Imnaha River. On April 14, any remaining fish will be forced out. All fish will be fin-clipped and 250,000 will be coded-wire tagged prior to release.

Upper Grande Ronde (080) Stock: Rear 250,000 fish to 25 fpp for transfer to the Grande Ronde Acclimation facility in March. Acclimate and release into the Grande Ronde River in mid-April. All fish are ad clipped and coded-wire tagged prior to release.

Lostine River (200) Stock: Rear 250,000 fish to 25 fpp for transfer to the Lostine River Acclimation facility in early April for acclimation and release into the Lostine River. All fish are ad-clipped and 50% coded-wire tagged prior to release.

Catherine Creek (201) Stock: Rear 150,000 fish to 25 fpp for transfer to the Catherine Creek Acclimation facility in early April for acclimation and release into Catherine Creek. All fish are ad-clipped and 100,000 are coded-wire tagged prior to release.

Lookingglass Creek (81) Stock: Rear 250,000 fish to 20 fpp for release into Lookingglass Creek. Fry will be transferred to Irrigon in April for rearing until late September. This is due to space limitations at Lookingglass Hatchery. The fish will be returned to Lookingglass for final rearing and release. All fish are ad-clipped and 125,000 coded-wire tagged 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 Lookingglass Hatchery:

Spring Chinook:

Imnaha Stock Spring Chinook: Wild and hatchery adults are collected throughout the entire run. A total of 114 pairs are collected for brood stock. No more than 30 percent (684) of wild/ natural adults are kept for broodstock purposes. All wild/natural jacks are released above the weir. The remaining wild/natural fish are released above the weir. Hatchery adults are released above the weir in a 1:1 ratio of wild/natural to hatchery fish. Spawning matrices of 2 X 2 are used attempting to incorporate one wild/natural fish into each matrix.

Upper Grande Ronde (080) Stock: Adults are collected throughout the entire run. A total of 85 pairs are collected for broodstock. Up to 50% of the returning wild adults can be collected for broodstock; hatchery produced adults are used to make up the remainder of the broodstock goal. The spawning ratio of males to females is 1:1; adults are incorporated into a spawning matrix protocol to maintain genetic similarity between hatchery-origin and natural-origin populations. No captive progeny adults (F-1) will be used for brood.

Lostine River (200) Stock: Adults are collected throughout the entire run. A total of 70 pairs are collected for broodstock. The numbers of adults collected and the percentages of hatchery and wild broodstock vary according to a sliding scale based on total adult escapement. The spawning ratio of males to females is 1:1; adults are incorporated into a spawning matrix protocol to maintain genetic similarity between hatchery-origin and natural-origin populations. No captive progeny adults (F-1) will be used for brood.

Catherine Creek (201) Stock: Adults are collected throughout the entire run. A total of 41 pairs are collected for broodstock. The numbers of adults collected and the percentages of hatchery and wild broodstock vary according to a sliding scale based on total adult escapement. The spawning ratio of males to females is 1:1; adults are incorporated into a spawning matrix protocol to maintain genetic similarity between hatchery-origin and natural-origin populations. No captive progeny adults (F-1) will be used for brood. Surplus stock will be used to supplement Lookingglass Creek broodstock.

Lookingglass Creek (81) Stock: Adults are collected throughout the entire run. A total of 79 pairs are collected for brood stock. The numbers of adults collected and the percentages of hatchery and wild broodstock vary according to a sliding scale based on total adult escapement. The spawning ratio of males to females is 1:1; adults are incorporated into a spawning matrix protocol to maintain genetic similarity between hatchery-origin and natural-origin populations. Surplus CQ (201) stock will be used to supplement Lookingglass Creek broodstock if needed.

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 fish health control and disease prevention programs at all of its facilities to achieve these objectives. These programs include the following standard elements:

Control of Fish Health

- 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.
- 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 fish health 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.
- Implement 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 accepted fish culture techniques and parameters such as Density Index and Flow Index to optimize the quality of the aquatic rearing environment and minimize fish stress that can be conducive to infectious and noninfectious diseases.

Fish Health Activities at Lookingglass Hatchery and Imnaha Satellite Facility

Fish Health Monitoring

- Monthly health monitoring examinations are conducted on each spring/summer Chinook stock. The sample includes a minimum of 10 moribund/dead fish (if available) and 4-6 live fish per raceway. Results are reported on the ODFW Fish Health Examination report.
- 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 egg take. Necropsies on all prespawning mortality (up to 20 fish) are conducted by

Fish Pathology for bacteria, parasites and other causes of death. Additional examinations are conducted if mortality exceeds normal levels.

- No longer than 6 weeks prior to transfer or release, juvenile fish are given a pre-liberation fish health assessment.
- Tissue samples are taken for *Myxobolus cerebralis* detection on 60 fish during the pre-liberation fish health assessment.
- Whenever 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 appropriate treatment.
- Reporting and control of specific fish pathogens are conducted in accordance with the Fish Health Management Policy. Results from each examination 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 Pre-emptive Treatments

- Adult spring Chinook used for broodstock are injected with gallimycin/erythromycin and oxytetracycline for control of bacterial diseases.
- Eggs are spawned into colanders to remove ovarian fluid, fertilized, and then water-hardened in 100 ppm iodophor solution for 45 minutes to one hour before being placed into incubation. Incubation trays contain only one female's eggs per tray.
- Juvenile fish are administered medicated feed as needed for the control of bacterial infections.
- Formalin is used for control of parasites and fungus on eggs, juveniles, and adults. Treatment dosage and exposure time varies with 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.

Disinfection

- Each stock of fish and eggs are physically separated by raceways, incubator units, adult holding ponds and circulars.
- Disinfection footbaths are provided at the incubation facility's entrance and exit areas.
- All equipment routinely used in fish culture is disinfected with iodophor before and after use.
- Dead fish are disposed of in a manner that prevents introduction of disease agents to the waters of the state.
- Rearing units are cleaned on a regular basis. Cleaning frequency is recorded for DEQ purposes.
- Fish transport trucks are disinfected between hauling of different stocks of fish.
- Rearing units are disinfected as soon as possible after use and again before being used in the next rearing cycle.

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

Environmental Monitoring

Environmental monitoring is conducted at ODFW facilities to ensure these facilities meet the requirements of the National Pollution Discharge Elimination Permit authorized by the Oregon Department of Environmental Quality. Monitoring can identify when changes to hatchery practices are required. Long-term monitoring provides the ability to establish water quality impacts resulting from changes in the watershed including logging, road building, and construction. 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.

- Dissolved Oxygen (DO) – measured only during periods of low flows and high water temperatures.

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.
- Trap Data Sheets – details gender, fish length, marks, therapeutic treatments, and disposition from all adult fish that are trapped.
- Egg and Fry Report – records all egg and fry movements, treatments.
- Monthly Poned Report – updates fish culture activities of the current month
- Monthly Progress Report – report summarizing operational activities for the hatchery and all satellite facilities including fish culture, fish health, fish distribution, maintenance and safety.
- Fish Loss and Treatment Report – records fish health incidences 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 – quarterly report documenting any fish predators that may die at the hatchery facility.
- Fish Liberation Reports – details information regarding all fish releases.
- Chemical use, waste discharge monitoring, purchasing, budget, safety, vehicles, equipment, maintenance and alarm logs.

Hatchery Management Information System (HMIS): Computer system used to collect, report, summarize and analyze hatchery production data.

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.

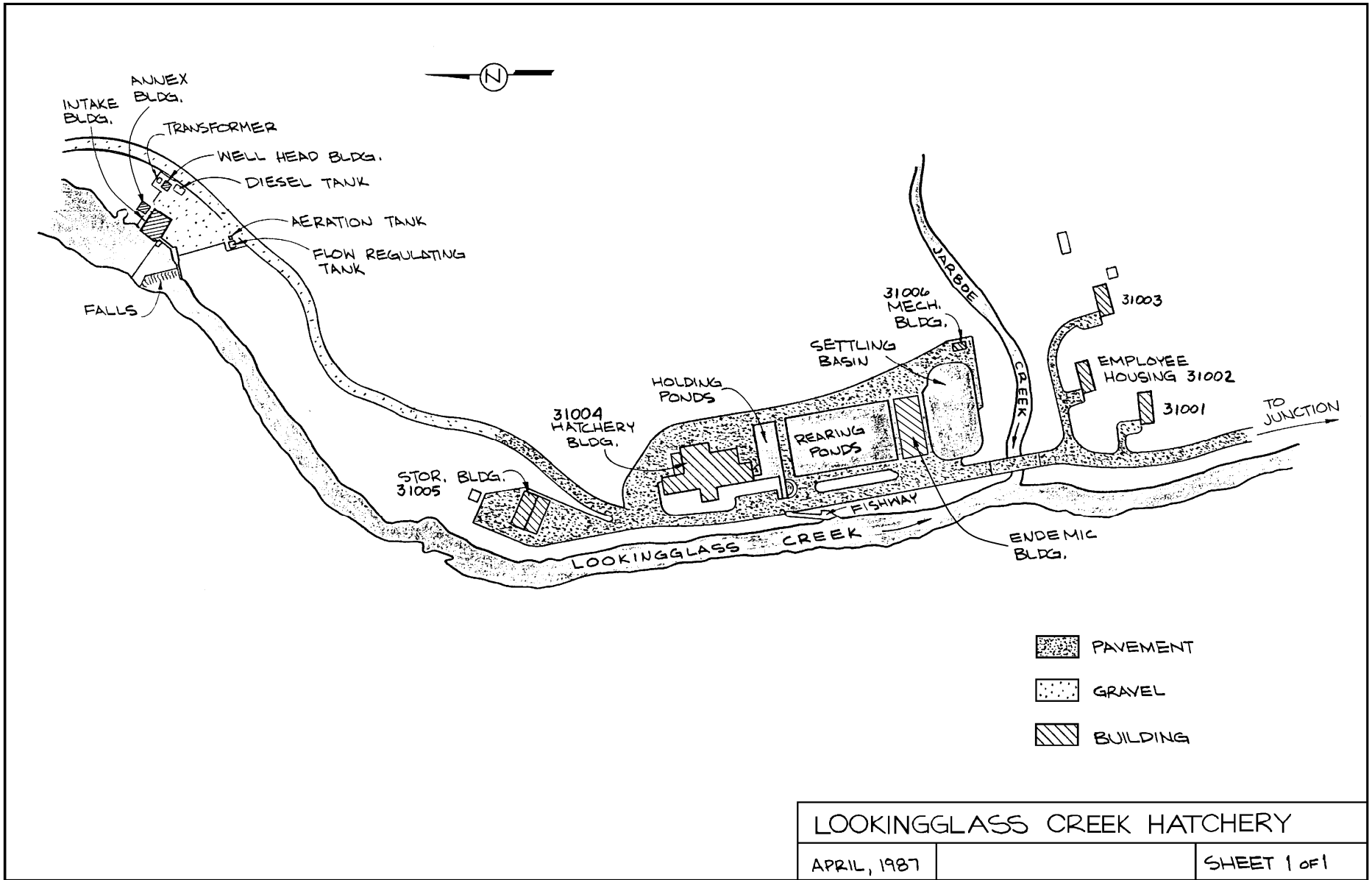
Streamnet ([www/streamnet.org](http://www.streamnet.org)): Hatchery return data are input into StreamNet, a cooperative information management and data dissemination project focused on fisheries and aquatic related data and data related services in the Columbia River basin and the Pacific Northwest. 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 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.

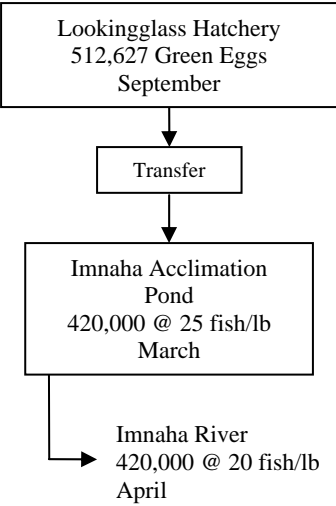
Other: Periodic meetings are held with the U.S. Fish and Wildlife Service and appropriate Tribal Co-Managers to discuss hatchery operations. An Annual Operating Plan is developed to guide hatchery operations throughout the calendar year.

Communication with the General Public

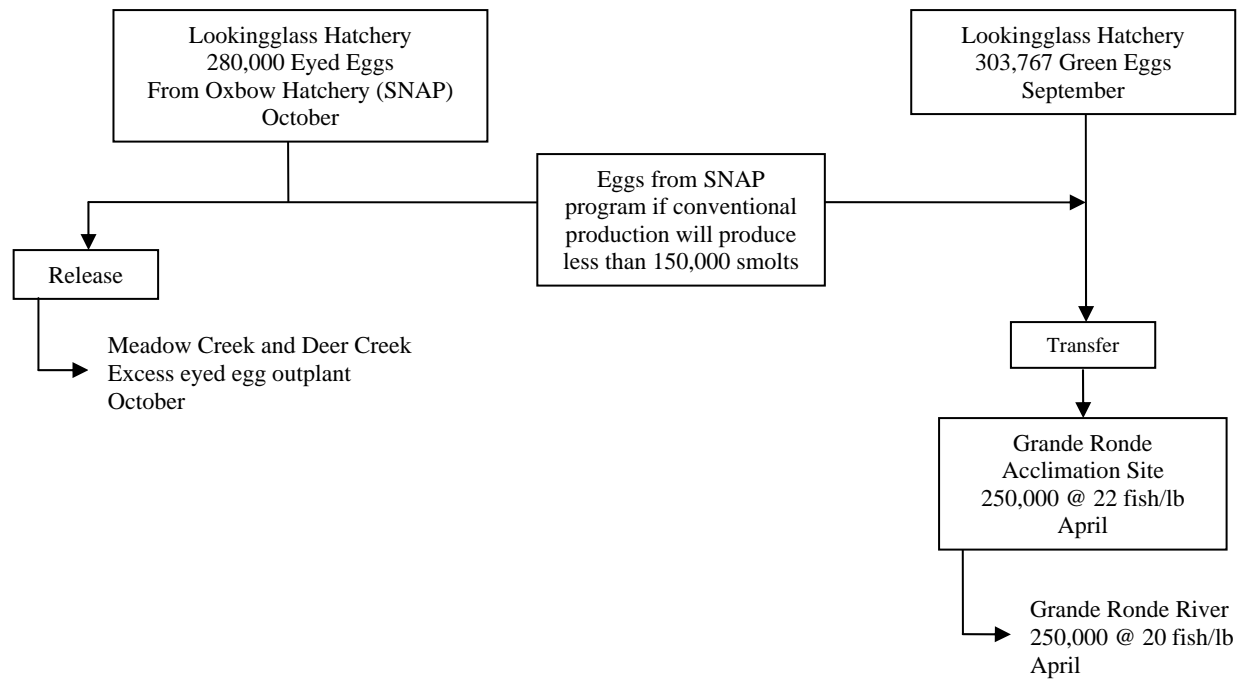
Lookingglass Hatchery receives approximately 300 visitors per year. The Innaha Satellite Facility receives 2,000 to 4,000 visitors mostly during the summer months. Lookingglass hosts some elementary and high school classes taking science and biology field trips.



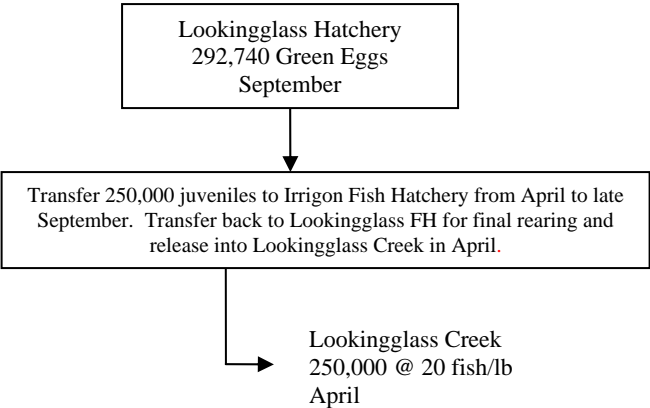
Lookingglass Hatchery
Spring Chinook Salmon – Stock 29 (Imnaha River and Tributaries)
(Adults from Imnaha Pond)



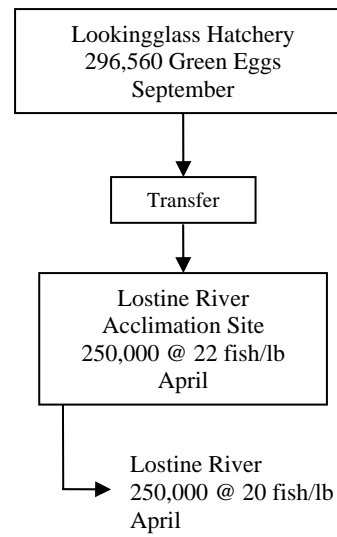
Lookingglass Hatchery Spring Chinook Salmon – Stock 80 (Upper Grande Ronde)



**Lookingglass Hatchery
Spring Chinook Salmon – Stock 81 (Lookingglass Creek)**



**Lookingglass Hatchery
Spring Chinook Salmon – Stock 200 (Lostine River)**



**Lookingglass Hatchery
Spring Chinook Salmon – Stock 201 (Catherine Creek)**

