Final Environmental Impact Statement
Nez Perce Tribal Hatchery Program

Bonneville Power Administration

U.S. Department of Energy

Bureau of Indian Affairs

U.S. Department of the Interior

Nez Perce Tribe

July 1997

Final Environmental Impact Statement

Responsible Agencies: U.S. Department of Energy, Bonneville Power Administration (BPA); U.S. Department of the Interior, Bureau of Indian Affairs (BIA); Nez Perce Tribe (NPT).

Title of Proposed Action: Nez Perce Tribal Hatchery Program.

States Involved: Idaho.

Abstract: Bonneville Power Administration, the Bureau of Indian Affairs, and the Nez Perce Tribe propose a supplementation program to restore chinook salmon to the Clearwater River Subbasin in Idaho. The Clearwater River is a tributary to the Snake River, which empties into the Columbia River. The Final EIS includes a new alternative suggested by commentors to the Draft EIS. In the Proposed Action, the Nez Perce Tribe would build and operate two central incubation and rearing hatcheries and six satellite facilities. Spring and fall chinook salmon would be reared and acclimated to different areas in the Subbasin and released at the hatchery and satellite sites or in other watercourses throughout the Subbasin. The supplementation program differs from other hatchery programs because the fish would be released at different sizes and would return to reproduce naturally in the areas where they are released.

The Use of Existing Facilities Alternative proposes using existing production hatcheries and the proposed satellite facilities to meet the need. Facilities at Dworshak National Fish Hatchery, Kooskia National Fish Hatchery, and Hagerman National Fish Hatchery would be used as central incubation and rearing facilities.

The comments received on the Draft EIS and responses to the comments are in Chapter 10. Because of the comments received, summer chinook production proposed as part of the program has been dropped.

The Final EIS looks much the draft. Changes are underlined. Simple editorial changes and large areas related to summer chinook that were deleted are not marked. Additional appendices have been added in the Final EIS to respond to public comments.

BPA expects to issue a Record of Decision (ROD) in August 1997. The ROD will be mailed to agencies, groups, and individuals on the mailing list.

You can comment on the Final EIS by calling or writing to us. Call and leave your comments on a toll-free line, 1-800-622-4519, submit comments to BPA via our Internet address: *comment@bpa.gov,* or write to:

Public Involvement Manager
Bonneville Power Administration
P. O. Box 12999
Portland, Oregon 97212

To request additional copies of the EIS please contact BPA's document request line: 1-800-622-4520.

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For more information on DOE NEPA activities contact:

Carol Borgstrom, Director, Office of NEPA Oversight, EH-42, U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, DC 20585, 1-800-472-2756 or DOE NEPA WEB site www.eh.doe.gov/nepa/.

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Summary of Changes in the Final EIS

Chapter 1

Updated information has been added.

Chapter 2

The Proposed Action has been changed. The proposed supplementation program no longer includes summer chinook. Summer chinook production was removed because of comments received.

A new subsection of the Proposed Action discusses Adult Returns. The section on Monitoring and Evaluation has been expanded. New information about returns has been used in tables.

A new alternative has been added in response to comments. The Use of Existing Facilities Alternative proposes using existing production hatcheries and the proposed satellite facilities to meet the need. Facilities at Dworshak National Fish Hatchery, Kooskia National Fish Hatchery, and Hagerman National Fish Hatchery would be used as central incubation and rearing facilities.

New information about natural habitat restoration was included in response to comments.

Chapter 3

The background section on the Nez Perce Tribe has been deleted.

Updated resource information has been added in tables and in the text.

Chapter 4

Updated information on impacts has been added, including impacts from the new alternative.

Chapter 5

New information has been added.

Chapter 6

The list of preparers has been updated.

Chapter 7

Additional individuals and organizations have been added to the mailing list.

Chapter 8

Additional references have been included.

Chapter 9

Minor changes to the glossary have been made.

Chapter 10

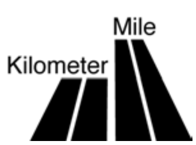
This is a new chapter that contains the comments received on the Draft EIS and responses to those comments.

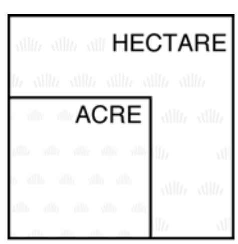
Appendices

Two Biological Assessments are included as appendices. The list of threatened and endangered species has been updated. The Executive Summary of the Monitoring and Evaluation Plan has been included as an appendix. The Decision Tree used in the Monitoring and Evaluation Plan has been added as an appendix.

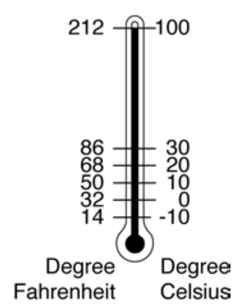
Metric Conversion Chart

Symbol	When You Know the Number of	Multiply by	To Find the Number of	Symbol
in	inches	25.4	millimeters	mm
ft	feet	0.3048	meters	m
mi	miles	1.6093	kilometers	km
ft^2	square feet	0.0929	square meters	m^2
ft^3	cubic feet	0.02832	cubic meters	m^3
ac	acres	0.4046	hectares	ha
lb	pounds (avdp)	0.4535	kilograms	kg
degrees F	degrees Fahrenheit	5/9(after subtracting 32)	degrees Celsius	degrees C
m	meters	3.2808	feet	ft
km	kilometers	0.6213	miles	mi
m^3	cubic meters	263	gallons	gal
m^3	cubic meters	35.3147	cubic feet	ft^3
ha	hectares	2.4710	acres	ac
kg	kilograms	2.2046	pounds (avdp)	lb
degrees C	degrees Celsius	9/5(after adding 32)	degrees Fahrenheit	degrees F





Hectare: about two and one-half acres



Summary

- The Purpose and Need for Action
- Alternatives
- Comparison of Alternatives and Impacts

This summary gives the major points of the Final Environmental Impact Statement (EIS) prepared for the Nez Perce Tribal Hatchery by the Nez Perce Tribe (NPT), the Bonneville Power Administration (BPA), the Bureau of Indian Affairs (BIA), and other interested parties.

Purpose and Need For Action

The Nez Perce Tribal Hatchery program responds directly to a need to mitigate for naturally-reproducing salmon in the Clearwater River Subbasin.

A century ago, as many as 16 million salmon and steelhead returned from the sea to spawn in the Columbia River Basin each year. Now, fewer than 2.5 million salmon and steelhead return annually: most return to hatcheries in the lower Columbia River; few return to spawn in the Clearwater River Subbasin. Naturally-reproducing salmon are critical to the ongoing survival of the species. Though there have been attempts to reestablish salmon runs using traditional hatchery practices, low adult returns indicate new methods are needed to help restore these runs.

Fewer salmon and steelhead return to the Columbia River Basin for many reasons. Natural events such as fire and floods altered the landscape, and streams and rivers used by fish. But human activities such as fishing, road building, mining, logging, land development, farming and ranching have caused the principal change in natural habitat used by fish and other species. Dams on the Columbia and Snake rivers, and their tributaries, including the Clearwater River (see Map 1), created migration barriers for fish and permanently altered the free-flowing nature and environment of the largest Northwest rivers.

Hydroelectric and flood control dams eliminated most of the Clearwater River salmon. In 1910, the Harpster Dam was built on the South Fork of the Clearwater River at Harpster. In 1927, Lewiston Dam was built at the mouth of the mainstem of the Clearwater River. Lewiston Dam prevented passage of spring, summer and fall chinook from at least 1927 to 1940, although steelhead were evidently able to pass. Passage facilities were upgraded in the 1950s, but counts of chinook salmon between

➲ For Your Information

Words and acronyms in bold and italics are defined in Chapter 9,* ***Glossary and Acronyms**. Some are also defined in sidebars.*

Naturally-reproducing *salmon are adult fish that spawn in a stream or river.*
Wild *salmon are defined in this document as fish that have not spent any part of their life history in an artificial environment, and are the progeny of naturally-reproducing salmon regardless of parentage. For example, the progeny of hatchery fish that have been raised in the wild are considered wild. This distinction is made so that spring chinook in the Clearwater can be defined as wild.*

1950 and 1957 ranged from only 7 to 63 fish, indicating that the indigenous run was probably eliminated by then. Harpster Dam was removed in 1963, which reopened the South Fork Clearwater. But Dworshak Dam was built at the mouth of the North Fork Clearwater River in 1974 and it blocked fish passage from that large river. Lewiston Dam was eventually removed in the winter of 1972-73, making most of the Clearwater River once again a free-flowing system.

Other human-caused and natural events such as fire, mining, agriculture, timber harvest, and road construction have shaped the character of the Clearwater River Subbasin. Activities have caused high runoffs, altered streamflows, increased sediments and nutrients and reduced the amount of riparian habitat in the lower mainstem and its tributaries.

The Clearwater River Fish Community

There exists a biological need to restore salmon, a vital component of the Pacific Northwest ecosystem, back into the Clearwater Subbasin's rivers and streams.

Historically, salmonids, sculpins, dace, and suckers dominated the Clearwater River fish community. Because of their physical size and prolific nature, salmon and steelhead were the most abundant and visible aquatic residents. They, along with older bull and cutthroat trout, dominated the fish community from the mouth of the mainstem Clearwater River up into its upper tributaries. Salmon and steelhead would go as far into the tributaries as possible while resident fish, like smaller cutthroat and bull trout, would live above the log jams and waterfalls, deep within the myriad of smaller streams. Suckers, dace and sculpins were most abundant in the lower mainstem reaches and their tributaries.

The Clearwater River today has lost the diversity that was part of the historic fish community. Most notably, indigenous chinook salmon populations are gone from the Clearwater River. Cutthroat and bull trout populations are in decline. Formerly abundant, Pacific lamprey now return in very low numbers. Steelhead, which managed to hang on during the dam building era, are no longer abundant nor distributed as widely. In addition, non-native brook trout, non-native rainbow and cutthroat trout have been introduced in headwater streams to establish sport fisheries and have altered the fish community through competition, predation, and reproduction. In the lower mainstem, non-native predators such as bass are present.

Hatchery Fish Production in the Clearwater River Subbasin

Many attempts have been made to increase the populations of salmon and steelhead in the Clearwater River Subbasin. Although reintroduction attempts met with some success, runs continued to decline after stocking ceased.

Conventional hatcheries focus on harvest augmentation. Adults are available to be harvested in the mainstem river corridors and ocean when forecasted adult returns exceed hatchery broodstock needs. Such hatchery operations do not emphasize rearing or spawning in the natural environment. Conventional hatchery practices have not been an effective means of restoring runs into the natural environment.

There exists a need for new technology to increase runs of naturally-reproducing salmon with the aid of hatcheries.

The Nez Perce Tribe

➲ For Your Information

The Nez Perce fished for salmon along the Columbia River and in the Clearwater River Subbasin.

They occupied a territory of over 5 million hectares (13 million acres) that included what is today north central Idaho, southeastern Washington and northeastern Oregon. The Nez Perce Tribe is a federally-recognized tribe with sovereign status over its lands, people and resources. The Tribe's governmental rights and authorities extend to any natural resources which are reserved or protected in treaties, executive orders and federal statutes. The United States has a trust obligation toward the Nez Perce Tribe to protect these rights and authorities.

Salmon and other migratory fish species are an invaluable food resource and an integral part of the Nez Perce Tribe's culture. Anadromous fish have always made up the bulk of the Nez Perce tribal diet and this dependence on salmon was recognized in the treaties made with the Tribe by the United States. The historic economic, social, and religious significance of the fish to the Nez Perce Tribe continues to this day, which makes the decline of fish populations in the Columbia River Basin a substantial detrimental impact to the Nez Perce way of life.

The Nez Perce Tribe has a legal, historic, economic, social, and cultural need to restore salmon runs.

Finding Solutions

In 1980, Congress passed the Northwest Power Act, which created the Northwest Power Planning Council and directed the Council to develop the Columbia River Basin Fish and Wildlife

Program. The program is designed primarily to address the impacts of the federal hydroelectric system on the fish and wildlife resources of the Columbia River Basin.

BPA has become the primary funding and implementing agency of the program. Under the Act, BPA has the responsibility to protect, mitigate impacts to, and enhance anadromous fish populations in the Columbia River Basin.

The Council recognized the opportunity to mitigate impacts to salmon runs in the Clearwater River Subbasin. In 1982, the Council authorized design and construction plans for fish production facilities on the Nez Perce Indian Reservation, and listed the facility in the Council's *1987 Fish and Wildlife Program* (Action Item 703(g)(2)).

The Nez Perce Tribe developed the *Nez Perce Tribal Hatchery Master Plan* (Larson and Mobrand, 1992) supporting documents, and the *1995 Supplement to the Master Plan* with a strategy to use a central hatchery to artificially propagate fish, and smaller satellite facilities to rear the fish. The Nez Perce Tribal Hatchery (NPTH) proposed supplementation to maintain or increase natural production to meet the need.

Purpose

Decision makers will use these purposes to evaluate the alternatives proposed to meet the need:

- Protect, mitigate, and enhance Columbia River Basin anadromous fish resources.
- Develop, increase, and reintroduce natural spawning populations of salmon within the Clearwater River Subbasin.
- Provide long-term harvest opportunities for Tribal and non-Tribal anglers within Nez Perce Treaty lands within four salmon generations (20 years) following project completion.
- Sustain long-term fitness and genetic integrity of targeted fish populations.
- Keep ecological and genetic impacts to non-targeted fish populations within acceptable limits.
- Promote Nez Perce Tribal management of Nez Perce Tribal Hatchery facilities and production areas within Nez Perce Treaty lands.

Scoping and Major Issues

Public scoping meetings were held on May 24, 1994, in Boise, Idaho, and on May 25, 1994, in Spalding, Idaho to determine the nature and scope of the issues of concern from the public and interested agencies. About 15 people attended each of the public meetings. BPA and BIA received 28 sets of written comments during scoping. Commentors raised these issues:

- Mainstream Columbia River passage problems.
- Genetic risks and the potential impact of the program on the genetic diversity of wild fish stocks.
- Impacts to wild anadromous and resident fish stocks through competition for space and food and diseases.
- The effectiveness of supplementation technology.
- Water quality impacts.
- The effect of excessive ocean and in-river harvest practices.
- Cost effectiveness.

Issues identified during the scoping process were discussed in the Draft EIS. The Draft EIS was distributed to agencies, groups, individuals and libraries in June 1996. A 45-day public review period ended on August 16, 1996. Two public meetings with an open house format were held in Boise and Lapwai, Idaho to review and receive comments on the Draft EIS. An additional comment period was opened on December 13, 1996 and ended January 27, 1997. Chapter 10 of this Final EIS records and provides responses to the comments on the Draft EIS. This Final EIS also provides updated information developed as a result of the comments received on the Draft EIS.

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Chinook *salmon are the largest salmon. The chinook has a greenish back, silver sides and belly. Chinook are long distance swimmers and travel to the farthest reaches of the Columbia Basin to spawn. The fish return from the ocean to the Columbia River in the spring, summer, and fall and are differentiated by the time of year they return. The term summer chinook is used in this document to refer to an early fall spawning, ocean-type chinook, similar to those currently found in the mid-Columbia River.*

Alternatives

Three alternatives, the Proposed Action, the Use of Existing Facilities Alternative, and the No Action Alternative, are being considered.

Proposed Action

The Proposed Action is a supplementation program that would rear and release spring and fall chinook (***Oncorhynchus tshawytscha***), biologically similar to wild fish, to reproduce in the Clearwater River Subbasin. Program managers propose techniques that are compatible with existing aquatic and riparian ecosystems and would integrate hatchery-produced salmon into the stream and river environments needed to complete their life cycle. Wild characteristics would be maintained, diseases would be controlled, fish would be adapted to the streams they are released into, and would be released using methods that maximize their survival in the wild.

The supplementation program would have three phases. The first (1-5 years) and second phases (6-10 years) of the program are the primary focus of this EIS. Phase I would begin outplanting efforts to reestablish naturally-reproducing salmon in selected tributaries of the Clearwater River Subbasin. Phase II would continue the effort using those returning adults to increase and stabilize production in project streams. Phase III (11-20 years) would create an opportunity for harvest, and would use ***adaptive management*** for specific actions based on the success of the first and second phases. Subsequent environmental documents would be prepared for Phase III as necessary.

The proposed program has many steps. First, eggs and sperm would be taken from broodstock. During Phase I, broodstock would be obtained from selected hatchery stocks identified in the program's genetic risk assessments. During Phase II, adults returning as a result of the supplementation actions would provide broodstock used for egg take. The fertilized eggs would then be incubated in two central hatcheries. Fish would be reared for a short time at the central hatcheries and then moved to acclimation facilities located on various rivers and streams to condition them to the natural environment. The specific stream and river reaches were chosen because they have suitable chinook habitat and are consistent with aboriginal fishing areas. Release locations, time of release, and age at release were selected to maximize survival and natural production. Table 2-1 summarizes the dimensions and requirements of NPTH facilities and Figure 2-1 provides a summary of operations.

Spring chinook would be reared at the Cherrylane Central Incubation and Rearing Facility until they are fingerling size. A portion of these fish would be outplanted as fingerlings in early summer into three different streams. The remaining spring chinook would be moved to acclimation ponds on three other streams to be reared until autumn when they would be released as presmolts. The spring chinook from both release strategies would then smolt and migrate downstream during spring of the following year.

Fingerling

Presmolt

Fall chinook would be reared at the Cherrylane hatchery and at Sweetwater Springs Central Incubation and Rearing Facility until they reach fingerling size. They would then be moved to acclimation rearing ponds within these facilities where a portion would be released as ***subyearling smolts*** directly into the

Subyearling smolt

Clearwater River during late spring or early summer. Remaining fish would be moved to other acclimation sites. They would be reared and imprinted on that source of water prior to being released as subyearling smolts in late spring or early summer. Fall chinook are expected to begin their seaward migration shortly after release.

The number of hatchery chinook released would be limited so that, when added to the number of wild chinook, the total would not exceed the amount of habitat available for that species. Each year, numbers for release would be recalculated, based on the results of the monitoring and evaluation program, to avoid exceeding the stream's ***carrying capacity***. All fish released would be marked with fin clips, coded wire tags, ***PIT tags***, visual implant tags or other forms of benign biological marks so that the hatchery fish can be distinguished from wild fish and the success of the program evaluated. Marking would also help track any fish that stray to other watersheds.

Several techniques would be used to count and capture adult chinook salmon returning from the sea such as temporary ***weirs***, fish ladders at acclimation sites and trapping facilities at Lower Granite Dam. Some adults would be used for broodstock; the remainder would be returned to the stream to be harvested or to reproduce naturally.

The actions proposed differ from many existing hatchery practices in the following ways:

- Supplementation spring chinook would be the offspring of cross-bred hatchery and wild adults in each generation.
- Spring chinook eggs would be incubated at ambient water temperatures to encourage natural rates of development.
- Fish would be reared in semi-natural ponds to increase survival in the environment. They would be conditioned by high velocity flows, exposure to natural feeds, minimal human contact and other elements of the natural environment.
- Fish would be released at different life stages to increase survival and minimize impacts to other fish.
- Fish would be released in several mainstem and tributary areas to establish spawning returns throughout the natural environment and optimize natural production.

Cherrylane

Mile
Kilometer

The Cherrylane hatchery site is on a flat bench on the south bank of the Clearwater River about 32 km (20 miles) east of Lewiston and adjacent to Highway 12 (see Map 3 and Photo 1).

The site is about 6 hectares (***ha***) (14 acres) and is used for agricultural production. The land, which is within the boundary of the Nez Perce Indian Reservation, is privately owned.

A hatchery building, water treatment facilities, rearing containers, effluent ponds, an operations and shop building, and two staff residences would be built on the site. The hatchery building would accommodate the spawning shelter, incubation room and early rearing area. The spawning shelter would be roofed with open sides and have receiving, fertilization and disinfection equipment.

Rearing containers, raceways, and ponds (circular or conventional) would be used to rear spring and fall chinook. Chinook would be early reared in approximately 32 circular ponds/raceway containers before being transferred to satellite facilities or directly released. Final rearing and release of 1,500,000 fall chinook would take place in on-site acclimation ponds.

Precautions would be taken to prevent bird predation, provide shading and cover, provide acclimation flows to condition fish before release, and prevent and control diseases when they occur. A fishway or fish ladder would also allow fall chinook adults imprinted to hatchery discharge water to return to the hatchery.

The operations and shop building would have an office, day room, washrooms, feed storage, chemical storage, laboratory, vehicle and tool storage, and shop work areas. Staff residences would be single-family, frame construction patterned after similar hatchery residences used in the Northwest. The site would be fenced and resident personnel would provide around-the-clock security to the hatchery grounds.

About 768,000 spring and 2,000,000 fall chinook would be incubated and reared at Cherrylane. Beginning in August, spring chinook eggs would be received for incubation. Then in November and December, fall chinook would be spawned, and their eggs incubated. Chinook eggs started at Cherrylane would be disinfected, fertilized and ***water hardened***. Fish would be incubated in the hatchery building in Heath trays. Each incubator tray would contain only the eggs of one female as a precaution against disease. Following incubation, fingerlings would be reared in containers until they reach their target weight for final rearing at satellite facilities or direct release to streams.

Fingerling

In February, about 500,000 fall chinook would be moved as fingerlings from the Cherrylane hatchery to the North Lapwai Valley satellite facility and reared and acclimated until release in May or June. The remaining 1,500,000 fall chinook would be moved to the acclimation ponds within Cherrylane itself. In May-June, about 265,000 of the spring chinook would be moved from the rearing containers at Cherrylane to satellite facilities located on Yoosa/Camp, Mill and Newsome creeks. In June, the remaining 503,000 spring chinook at Cherrylane would be released directly into three streams (Boulder, Warm Springs, and Meadow creeks) to complete final rearing in a natural environment.

Subyearling smolt

Also in June, the 1,500,000 fall chinook held on-site would be released from Cherrylane directly into the lower Clearwater River as subyearling smolts. The fall chinook would be released through a pipe from a collection area in the outdoor rearing ponds to a site in the river downstream of the water intake structure. Fish would be released in a controlled manner over an extended period of time to avoid short-term crowding, allow for some natural dispersal and to keep predators from concentrating in the release area.

Adult fall chinook returning to the Clearwater River would be held at Cherrylane from September through December and spawned on-site. Approximately 1,020 adults would be needed for maximum egg take.

Sweetwater Springs

Sweetwater Springs is located approximately 20 km (12 miles) southeast of Lewiston, Idaho. The proposed hatchery site is on land owned by IDFG and would occupy about 1.6 ha (4 acres) of the total 6 ha (15 acres) of property. The site contains an existing hatchery building with a spring-fed source. It is a small, relatively flat shelf of land at the headwaters of the westernmost fork of Sweetwater Creek. See Photo 2. The spring is the principal water source for this fork of Sweetwater Creek, and the stream eventually enters a canal which supplies water to the Lewiston Orchards Irrigation District Reservoir, Mann’s Lake.

While it has been possible to use the existing facilities temporarily, improvements would be needed to meet production goals. Facility improvements include upgrading the water supply and distribution system, installing an incubation water chilling system, new isolation incubation units, rearing containers, staff housing, and storage, lab, and equipment space.

The principal production planned at Sweetwater Springs is to incubate and rear about 800,000 fall chinook. During Phase I, eyed-eggs would be imported to Sweetwater Springs in October to begin incubation. After hatching, fry would be early-reared at the site. In February, 400,000 fish reared to fingerlings at 440 fish/kg (200 fish/lb) would be transferred to the Luke's Gulch satellite facility. In April, the remaining 400,000 fall chinook would be moved to the Cedar Flats satellite facility when they are about 154 fish/kg (70 fish/lb).

Satellite Facilities

Six satellite facilities would be developed to acclimate and release young fish, and to capture and hold returning adult broodstock. (See Map 2.) The extended rearing period and acclimation at the satellite facilities is designed to ensure juvenile imprinting and adult return to river reaches associated with the satellites. Adults returning to satellites would be trapped by weirs or small fish ladders at their outfall.

The basic facility includes the following components: water intake(s), water transfer pipeline, juvenile rearing ponds, adult holding ponds, water outfall line, personnel living quarters (trailer), and fish food storage. Facilities would be developed as close to streams as possible, usually within 50 m (165 ft), of the streambank. Site reclamation and landscape planning would be part of each site plan. The existing character of each area would be maintained as much as possible.

Hatchery Operations

Disease Management

Nez Perce hatchery managers would guard against the transmission of disease from hatchery to wild fish and from hatchery fish to hatchery fish using many measures. These include screening broodstock for disease, disinfecting water <u>at the central incubation and rearing facilities during the early life stages</u>, controlling water temperature to reduce infections, controlling incubation densities, controlling the incidence of disease in the hatchery, and by ensuring that fish slated for release into the natural environment have met strict fish health quality standards. Fish would be inspected before transfer to satellite facilities and again before they are released into streams. Common diseases such as bacterial kidney disease would be monitored routinely in hatchery and wild populations. Less common diseases would be monitored as necessary.

Disease control and monitoring practice would conform with standards developed by the Nez Perce Tribe Fish Health Policy (1994) and the Integrated Hatchery Operations Team (***IHOT***) (IHOT, 1994). The Nez Perce Tribe Fish Health Policy defines policies, goals, and performance standards for fish health management, including measures to minimize the impacts to wild fish.

Egg Take and Incubation

Chinook production would follow specific management protocols to ensure that healthy fish are produced for reintroduction in the Clearwater River Subbasin. Fish would be supplied either as gametes shipped to the site and held in quarantine until disease testing and screening are completed, or as eyed-eggs imported from a certified quarantine incubation facility outside of the Clearwater River Subbasin.

After adults start returning, egg take would occur at the various satellite facilities and Cherrylane. Broodstock would be screened for specific pathogens. When ready to spawn, gametes from males and females would be taken and kept separate. Care would be taken to have as antiseptic conditions as possible.

Rearing Techniques

The NPTH would use innovative rearing techniques that have not been used as standard methods by other hatchery programs in the Columbia River Basin. Incubation and rearing water temperatures, rearing containers, rearing densities, release strategies, and broodstock management are different from those conventionally used in most facilities. The overall goal is to produce and release a fish that will survive to adulthood, spawn in the Clearwater River Subbasin and produce viable offspring.

Subyearling smolt

Water temperatures in incubation and rearing containers would be controlled to best suit supplementation goals. Fall chinook would require an accelerated incubation and growth schedule to produce mature subyearling smolts in May and June. Naturally-produced subyearling smolts in the Clearwater River grow slowly in the cold river water and typically do not emigrate until July or August when lower Snake River flows and dam passage conditions are not as beneficial to their downstream migration. NPTH fall chinook subyearling smolts would be programmed to grow to a mature size sooner using the warmer groundwater. They would then be of a suitable size to migrate in June when flow through the Snake and Columbia River hydrosystem is currently managed to benefit chinook survival.

Spring chinook will be incubated and reared in water that approximates the temperature regime of the streams where fish would eventually be released. This stock of chinook spends more time rearing in the Clearwater River Subbasin than do the subyearling migrants, and their natural emigration dates correspond to periods when hydrosystem operation facilitates passage. Consequently, temperatures in their rearing environment will be controlled to maintain growth rates consistent with those in their receiving streams.

<u>After incubation and emergence, spring chinook fry would be kept in the early rearing containers until they are able to swim and take feed (about 3 weeks). In March to April, they would be</u>

moved to the outdoor early rearing areas containing circular or raceway type rearing vessels which would incorporate the use of NATURES type rearing designs:

➲ For Your Information

NATURES is a natural rearing system that employs overhead cover, instream structure and substrate and unintrusive feed delivery systems.

- substrate
- subsurface feeding
- shading
- exposure to natural food
- velocity alteration to enhance swimming ability
- instream cover
- exposure to predators.

They would be reared in these containers until transferred to satellite facilities in May and June or released directly into the streams as fingerlings in June and July.

Fall chinook would spend two to four weeks in the early rearing area after incubation and emergence in mid January. In February they would be moved to the acclimation ponds at Cherrylane or to the North Lapwai Valley satellite.

During final rearing, the fish will be kept in ponds designed and operated to further incorporate NATURES rearing strategies and to simulate natural conditions. Ponds would be designed without hard, straight lines. Artificial features such as undercut banks, logs and other structures would be placed in the ponds and fish would have a place to hide and learn to avoid other fish. Predator response would be induced by exposing the fish to birds and fish released into ponds (e.g., seagulls, mergansers, bull trout or squawfish). Human activity around the ponds would be discouraged, and shading and overspray will be used to obscure overhead vision. Shading would also moderate warm summer water temperatures. Underwater feeding options would be pursued to avoid conditioning young fish to be fed by humans. Water flows in ponds would be increased to exercise and build physical stamina of fish to adapt to stream or river conditions following release. Fish would be reared at relatively low densities.

Release Techniques

Hatchery fish would be released at several different life stages to optimize survival, to evaluate different strategies, and/or be consistent with natural migratory behavior.

Fall chinook would be released as subyearling smolts. This migratory behavior is typical of lower elevation, larger river spawners. The fish would be released into the rivers during spring runoff in May and June when they weigh about 110 fish/kg (50 fish/lb). They would either join other outmigrants in the high flows or would reside in the river for awhile, and move downstream as water temperatures warm.

Most spring chinook would be released directly into stream habitats as fingerlings. Meadow, Warm Springs and Boulder creeks were selected for outplanting sites. These streams provide quality habitat. Fish would be released into these streams in June and July when they would be about 220 fish/kg (100 fish/lb). They would be transported to the streams by truck, and distributed by helicopters throughout the reaches of accessible spring chinook habitat. The Tribe would work with the USFS to minimize any impacts from the helicopters to the wilderness resource. The proposed size and timing of release were selected to correspond to favorable stream conditions for growth and survival. Fish released directly into the streams are expected to sustain higher mortality during the summer than ponded fish, but survivors are expected to gain a long-term fitness advantage through their experience of living under natural conditions.

The remaining spring chinook production would be moved in May at 440 fish/kg (200 fish/lb) to acclimation ponds at Yoosa Creek, Mill Creek and Newsome Creek. Fish would be confined in the acclimation ponds until September, and from that point on would be allowed to exit the ponds on their own free will. At this time, the fish would average about 44 fish/kg (20 fish/lb). The ponds would be drained in mid-October, and the remaining fish would be forced to enter the receiving streams. The September-October timeframe corresponds to the fall migratory pulse that occurs naturally in Idaho's spring chinook populations. This migratory pulse is stimulated by decreasing day lengths and cooler water temperatures and appears to be related to chinook seeking more favorable overwinter conditions in the mainstem rivers. The migratory pulse has been found through monitoring and evaluation trapping in Lolo and Meadow creeks in 1993-95 and is known in the Imnaha, South Fork Clearwater River and South Fork Salmon River from other smolt monitoring projects (NPT, 1996). The proposed release strategy would increase survival during the growing season, reduce competition among hatchery and wild fish for limited food resources, and better prepare pond-reared fish for living under natural conditions following their release.

NPTH hatchery fish would be released over a large geographic area to maximize the use of available rearing habitat in the Clearwater River Subbasin and to avoid overwhelming local anadromous and resident fish populations.

Adult Returns

Adult return numbers were generated by a spreadsheet model. The model follows hatchery and naturally-produced spawners through their life cycle, calculating juveniles produced in natal streams and subtracting out mortalities accrued as the fish grow, leave the streams, travel out into the ocean and back again to the natal streams or hatchery satellite. It also incorporates the hatchery:wild spawning protocols recommended for NPTH.

The adult return model uses a series of assumed survival rates by life stage within its iterations:

Spring Chinook Parr-To-Smolt Survival — The assumed survival rate to smolt for spring chinook released from satellite ponds is 19.5 percent. The assumed survival rate for spring chinook to smolt from direct stream releases is approximately 10 percent.

Spring Chinook Smolt-to-Adult Survival — The assumed survival rate for smolt-to-adult for spring chinook from satellite facilities is 0.4 percent (essentially double the current smolt-to-adult survival for Rapid River Hatchery fish at 0.2 percent). The assumed survival rate for smolt-to-adult for spring chinook from direct stream releases is 0.6 percent (triple the current smolt-to-adult survival rate for Rapid River fish).

Fall Chinook Subsmolt-to-Smolt Survival — The assumed subsmolt-to-smolt survival rate for fall chinook is 50 percent, which is essentially the post-release survival, and is based on a natural-type early rearing strategy.

Fall Chinook Smolt-to-Adult Survival — The assumed survival rate for smolt-to-adult for fall chinook is 0.8 percent (double the current 0.4 percent smolt-to-adult survival from Lyons Ferry 1984-1986 brood coded wire tag returns).

Adult Collection

Collecting adults would provide information about the success of the program in addition to providing broodstock. The number of returning adults would be used to calculate smolt-to-adult and adult-to-smolt (or parr) survival rates. Adult salmon produced by the NPTH program are expected to be abundant enough in 5-10 years to begin collecting them for use as hatchery broodstock (Phase II). Adults would be captured near satellite facilities using various methods.

Temporary weirs and adult traps would be placed in 11 streams that would either receive outplants of hatchery fish or would serve as experimental controls. The purpose of the structures is to count and sample returning adults so that supplementation success can be evaluated and to secure enough hatchery and wild fish for broodstock purposes. Depending on the species, weirs would be operated from late May through mid-September.

Fall chinook broodstock would be obtained from adults ascending the fish ladders at Cherrylane, Cedar Flats and Luke's Gulch and from adults captured at the weir on Lapwai Creek. Permanent adult collection systems - fishways or fish ladders - are proposed for the Cherrylane, Cedar Flats and Luke's Gulch facilities. These would allow those adults imprinted to the water source or chemical attractants to return to the facilities directly for broodstock. The adults ascending Lapwai Creek would encounter a weir near the satellite site, be captured and transported to Cherrylane.

A portion of the fall chinook broodstock might also be captured at Lower Granite Dam. Collection of fish at Lower Granite would concentrate on unmarked, wild returning spawners. These fish would be cross-bred with fish returning to the central incubation and rearing facilities or satellite facilities. The exact portion of the run that can be used for NPTH would require coordination with other agencies.

Broodstock Source and Management

Since not enough wild chinook salmon return to the Clearwater River Subbasin today to serve as a source of broodstock, the supplementation program would use broodstock from other locations. The following sources – all hatcheries – are being considered for broodstock during Phase I:

- spring chinook – Rapid River stock, which includes Rapid River, Dworshak, Clearwater and Lookingglass hatcheries and the Kooskia Hatchery; and,
- fall chinook – Lyon's Ferry Hatchery stock.

Final selection of the donor stock to use in NPTH would depend on coordination with NMFS, IDFG, and the U.S. v. Oregon Production Advisory Committee of the Columbia River Fish Management Plan. Acquisition of broodstock would also be determined through negotiation by the NPT within these forums. During Phase I of the implementation, it is assumed that broodstock acquisition would be coordinated annually. Eggs would then be distributed to the central hatcheries.

When the first generation fish return as adults, they would be collected using weirs to trap them. The adults would then be trucked or moved to the nearest adult holding pond for that species.

The NPTH is designed to ensure a balance of hatchery and wild spawners in both hatchery and streams. Some returning hatchery fish would be permitted to spawn with wild fish in the river or streams. Likewise, some returning wild fish would be spawned in the hatchery.

Spring Chinook — The Nez Perce Tribe would use a sliding scale based on the abundance of adult chinooks returning to the Clearwater River Subbasin to determine the ratio of hatchery-to-wild fish used for broodstock and mating protocols. The ratios favor wild fish for natural spawning as the wild population increases.

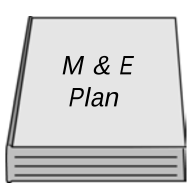
Fall Chinook — For the near future, the breeding of hatchery-reared and wild spawners applies only to spring chinook. Capture methods for obtaining fall chinook in the natural environment would require further exploration before it becomes feasible to cross-breed a significant portion of the wild run with hatchery fish. Consequently, breeding of wild and hatchery fall chinook spawners would be limited until such time that the unmarked run increases to a much higher level.

Harvest Management

An important goal of the supplementation program is to produce surplus adult fish for harvest. Harvest rates would be controlled to sustain wild and hatchery production. Population growth may be slow, requiring several years before harvest can occur. The Nez Perce Tribe would coordinate harvest management with other fisheries agencies in the basin. Tribal ceremonial harvest may occur at a controlled level to provide for the cultural and religious needs of the Nez Perce people. Tribal subsistence and non-tribal recreational fishing would be permitted only after predicted run sizes indicate that natural spawning and broodstock collection goals would be met.

Monitoring and Evaluation Plan

The Proposed Action would use adaptive management to guide hatchery operations. Monitoring and evaluation is a key part of adaptive management.



Five pairs of treatment and control streams have been identified for monitoring and evaluating the success of spring chinook supplementation. The treatment streams would be planted annually with juvenile spring chinook. Control streams would not be planted until some determination can be made of program success. Information gained during Phases I and II would be used to make the decision. Overall success of the program would be evaluated by adult returns.

Meadow Creek is an experimental unit separate from the treatment and control streams. Its purpose is to study short-term experiments that evaluate different release techniques in hopes that adaptive management can be more effective in implementing recovery of fish populations.

Costs

Capital construction would cost about <u>$16 million (1997 dollars)</u>. Annual operations and maintenance costs after all facilities are fully developed would cost about <u>$1,000,000 (1997 dollars)</u> and monitoring and evaluation would cost about $500,000 (<u>1997 dollars</u>) annually. Harvest management is not included in the cost estimate.

<u>Use of Existing Facilities Alternative</u>

<u>Commentors to the Draft EIS asked that existing facilities be reexamined as an alternative to construction of the Cherrylane central incubation and rearing facility. Additional information was gathered to respond to these comments.</u>

<u>This alternative would use space at existing hatchery facilities to incubate and rear chinook salmon for restoration in the Clearwater River Subbasin. Facilities at Dworshak National Fish Hatchery, Kooskia National Fish Hatchery, Hagerman National Fish Hatchery, and Clearwater Hatchery were considered. The use of Clearwater Hatchery was dropped from consideration because the Nez Perce Tribe prefers to use surplus space at the hatchery to produce coho salmon. The Sweetwater Springs central incubation and rearing facility, and satellite facilities described for the Proposed Action would also be built and used.</u>

<u>*Dworshak National Fish Hatchery*</u>

<u>Dworshak National Fish Hatchery is located at the confluence of the North Fork Clearwater River and the mainstem Clearwater River near the unincorporated town of Ahsahka, in north-central Idaho. (See Map 1.) The facility consists of 84 Burrows ponds, 42 raceways, 3 adult holding ponds, 128 deep troughs, and 45 stacks of vertical incubators. Water use ranges from 102-315 m^3/min (27,000 to 83,000 gpm) from the North Fork Clearwater River below Dworshak Dam via a direct line from the dam and water pumped from the river directly adjacent to the hatchery.</u>

Hagerman National Fish Hatchery

Hagerman National Fish Hatchery is next to the Snake River in southern Idaho, about 8 km (5 miles) southeast of the town of Hagerman (see Map 1). The facility consists of 102 raceways, 66 starter tanks and a display pond. It currently rears summer steelhead for off-station release into the Salmon and Snake rivers as part of the LSRCP and rainbow trout for Dworshak reservoir mitigation. Water temperature is a constant 15 degrees C (59 degrees F). Raceways are organized into two systems, each system with three tiers for serial re-use of water. The amount claimed is 2.6 m^3/sec (92.5 ft^3/sec) from six major collecting structures.

Kooskia National Fish Hatchery

Kooskia National Fish Hatchery is located in north-central Idaho, about 120 km (75 miles) southeast of Lewiston in northwest Idaho County. The hatchery is in a narrow valley of Clear Creek, just upstream of the confluence with the Middle Fork Clearwater River. The facility consists of 12 raceways, 6 Burrows ponds, 42 circular starter tanks, 32 rectangular starter tanks, and 1 adult holding pond. Water rights total 51 m^3/min (13,456 gpm) from six wells and Clear Creek. Just over half the water is from Clear Creek. Water available for hatchery use ranges from 17-32 m^3/min (4,389 gpm to 8,527 gpm), with the majority supplied from Clear Creek. The hatchery is operated with a water re-use system that incorporates bio-filters between uses.

Kooskia National Fish Hatchery is not a stand alone facility. It is operated as a satellite facility of Dworshak NFH. Adults are trapped at Kooskia NFH, however, because of warm Clear Creek temperatures, fish must be transferred to Dworshak NFH for maturation and spawning. Eyed eggs are returned to Kooskia NFH in October.

Proposed Facility Production

Fall Chinook

The water at Dworshak National Fish Hatchery and Kooskia National Fish Hatchery is too cold for the accelerated growth needed for a June 1 release date with fish at 110 fish/kg (50 fish/lb). Instead, 500,000 fall chinook would be reared at Hagerman NFH to 110-130 fish/kg (50-60 fish/lb) by May 15. The fish would then be trucked up to the Clearwater and acclimated until released in June at the North Lapwai Valley satellite facility. Another facility would have to rear rainbow trout intended for Dworshak Reservoir mitigation that are currently reared at Hagerman NFH.

Spring Chinook

Kooskia National Fish Hatchery and Dworshak National Fish Hatchery would be used to rear about 800,000 spring chinook to fingerling/parr size 220-440 fish/kg (100-200 fish/lb). Fish would then be released into the direct release streams (Meadow Creek, Boulder Creek and Warm Springs Creek). The remainder would be moved to the spring chinook satellite sites for final rearing (see Figure 2-11.)

Facility Improvements

A 15-unit Heath incubator stack would be installed at Kooskia NFH and at least one unit of Dworshak NFH holding pond raceways would be converted to an adult holding pond. At Dworshak NFH, about 20 tanks would be installed and the chillers would be upgraded. Fry could also be put in ponds and raceways earlier at 550-880 kg/fish (250-400 fish/lb), which would require small mesh screens in the holding pond raceways.

At Hagerman NFH, to chill the eyed eggs, the existing chiller would be upgraded. A backup generator would be installed for the chiller.

Hatchery Operations

Disease Management

Currently used disease management measures would be used at the hatcheries. The USFWS has Fish Health Policy and Implementation Guidelines and disease prevention programs at all of its facilities (IHOT, 1996). These guidelines include disease control and disease prevention measures.

Egg Take and Incubation

During Phase I, fall chinook eggs would be imported as described in the Proposed Action. Spring chinook eggs would come from either returns to Dworshak/Kooskia or imported from Rapid River.

At the hatchery, different stocks from the different streams and mating strategies would not be isolated from each other. Incubation density would not necessarily be limited to one female per tray.

If the adult returns are sufficient for meeting broodstock needs in Phase II, egg take would occur at the various satellite facilities. Broodstock egg take, handling, and spawning protocols would be the same as those described for the Proposed Action.

Rearing Techniques

This alternative would employ rearing techniques commonly used for existing production at these facilities. The ability to accelerate fall chinook incubation and growth would be accomplished by incubating and rearing fish at Hagerman NFH. Upgrading the chillers at Dworshak and Kooskia would allow for incubating and early rearing spring chinook at water temperatures similar to those of the Proposed Action.

After incubation and emergence, spring chinook fry will be kept in conventional raceways which would ***not*** be able to incorporate the use of:

- substrate
- subsurface feeding
- exposure to natural food
- velocity alteration to enhance swimming ability
- instream cover
- exposure to predators.

The only NATURES type rearing technique that could be employed at the existing facilities is shading (Miller, January 28, 1997). Spring chinook would be reared in the raceways until transferred to satellite facilities in May and June or released directly into the streams as fingerlings in June and July.

Fall chinook would likewise be reared in conventional raceways at Hagerman and then moved to the North Lapwai Valley satellite for final rearing before release.

During final rearing, at the satellites, the fish would be reared in the same conditions, using the same techniques as described in the Proposed Action.

Fish would not be reared at low densities until they are transferred to the satellite facilities. Typical rearing densities employed at the existing facilities would be used for fish during the early rearing portions of their life cycle.

Release Techniques

Release techniques for this alternative would be the same as those described for the Proposed Action.

Adult Returns

The Use of Existing Facilities Alternative does not produce enough returns to meet the broodstock needs for the program. The differences are caused by the lesser number of fall chinook in this alternative (500,000 at Hagerman versus 1,500,000 at Cherrylane) and the different survival rates applied to juvenile life stages for the fish produced at the existing facilities. Fall chinook returning from production at Sweetwater Springs, Cedar Flats and Luke's Gulch are the same as in the Proposed Action.

The differences and rationale for changes in juvenile survival rates are as follows:

Spring Chinook Parr-To-Smolt Survival — The assumed survival rate to smolt for spring chinook released from satellite ponds is 19.5 percent, which is the same as for the Proposed Action.

The assumed survival rate for spring chinook to smolt from direct stream releases is approximately 7 percent. This is less than that used for the Proposed Action because it is based on a 40 percent post-release survival (fingerling to parr and overwinter survival are the same as the Proposed Action).

Spring Chinook Smolt-to-Adult Survival — The assumed survival rate for smolt-to-adult for spring chinook from satellite facilities is 0.18 percent (essentially double the current smolt-to-adult survival for Dworshak fish at 0.09 percent). Smolt-to-adult survival rates were doubled just as they were for the Proposed Action because it is assumed that measures taken for salmon recovery will be successful and that migratory passage conditions will be improved such that at least a 1:1 replacement rate occurs. The Dworshak NFH smolt-to-adult return rates were applied rather than those for Rapid River NFH because Dworshak NFH has its own record of returns.

The assumed survival rate for smolt-to-adult for spring chinook from direct stream releases is 0.27 percent (triple the current smolt-to-adult survival rate for Dworshak Hatchery fish). As in the Proposed Action, smolt-to-adult survival rates were tripled for spring chinook with direct releases because it is assumed that these fish would have an acquired fitness advantage by their extended rearing in the natural environment in addition to the benefits accrued by salmon recovery efforts.

Fall Chinook Subsmolt-to-Smolt Survival — The assumed subsmolt-to-smolt survival rate for fall chinook is the same as for the Proposed Action (50 percent) because the fish would be reared at North Lapwai Valley for a time under NATURES type circumstances.

Fall Chinook Smolt-to-Adult Survival — The survival rate for smolt-to-adult for fall chinook is 0.18 percent (double the current 0.09 percent smolt-to-adult survival for Dworshak NFH spring chinook). Survival rates were doubled assuming salmon recovery efforts are successful.

Adult Collection

The adult collection program would be the same as for the Proposed Action, except broodstock needs would not be met. It is assumed that donor stock from some hatchery source would be provided to make up for the lack of eggs.

Broodstock Source and Management, Harvest Management, and Monitoring and Evaluation

The broodstock source and management, harvest management, and monitoring and evaluation would be the same as described for the Proposed Action.

Costs

Costs for this alternative would be about $8 million (1997 dollars).

No Action Alternative

The No Action Alternative is traditionally defined as the no build alternative. This No Action Alternative assumes that new facilities would not be built and that the supplementation program would not be carried out. The Nez Perce Tribe, BPA, BIA, the Council and others would rely on fish mitigation actions taken by other parties to achieve reestablishment of chinook fish runs in the Clearwater River Subbasin. This part of the Council's Fish and Wildlife Program would not be implemented.

Alternatives Eliminated From Consideration

BPA, BIA, the Nez Perce Tribe and others studied a variety of alternatives to meet the need including using acclimation facilities in the Salmon River Subbasin, and natural habitat enhancement and restoration. After study, these alternatives were eliminated from further consideration because they would not meet the need.

Comparison of Alternatives and Summary of Impacts

The Proposed Action would have the greatest amount of tribal harvest, employment, and management autonomy for the Nez Perce Tribe. The Existing Facilities Alternative would have lesser amounts and the No Action Alternative would result in no change in tribal harvest and management, and would create a loss in employment.

Potential for disturbance of cultural resources is greatest in the Proposed Action, less in the Existing Facilities Alternative and the least in the No Action Alternative. In any action alternative, the impact would be low because of monitoring and the ability to apply mitigative plans.

Impacts on geology and soils are expected to be low and short-lived for the Proposed Action and the Existing Facilities Alternative. Because of the additional construction at Cherrylane under the Proposed Action, impacts are expected to be greater in magnitude than for the Existing Facilities Alternative, but would still be low. No impacts are expected from the No Action Alternative.

Impacts to groundwater and surface water quantity and quality would be low for the Proposed Action and the Existing Facilities Alternative, although more groundwater would be used in the Proposed Action. No impacts to groundwater or surface water would result from implementation of the No Action Alternative.

Cherrylane is located outside the floodplain. Impacts from both action alternatives would be the same and are expected to have no effect on the floodplain. Although water collection systems and some satellite sites are within the 100-year floodplain, no rise in flood elevation, displacement of flood waters, storage volume or local increase in flood stage would be caused by either alternative. No impacts to the floodplain are expected from the No Action Alternative.

Eighteen categories of impacts were evaluated for the fisheries resource and they ranged in magnitude from none to moderate. The greatest impacts would occur from implementation of the Proposed Action. This alternative has the greatest potential for restoring naturally-spawning and rearing populations of salmon in the Clearwater Subbasin than the other alternatives. As a result, the aquatic ecosystem could return more toward a dependence on salmon as a principal component of the ecosystem.

The action alternatives would result in the same short-term level of displacement and disturbance on individual wildlife species during construction. The Proposed Action has the greatest potential for beneficial impacts to those species dependent on fish for forage. The No Action Alternative will do nothing to improve the availability of forage, thus posing some detrimental impacts in comparison, although this alternative would not cause habitat disturbance by construction activities.

Moderate impacts are expected to vegetation as a result of either action alternatives and would stem from the removal of riparian vegetation for satellite and central incubation and rearing facilities construction. Impacts to the wetland at Yoosa/Camp Creek site would be moderate, depending on the number of trees removed and the amount of fill entering the wetland. The amount of area impacted and mitigation strategies would be determined after final designs are completed. At that time locations for mitigation would be coordinated with the appropriate agencies and land managers. At Luke's Gulch impacts to a seasonal wetland would be low. The No Action Alternative would have no impacts on vegetation.

Land use would change at all sites affected by implementation of the action alternatives. Moderate levels of impacts are assessed for those sites at which land use changes from agriculture to fish production (Cherrylane, North Lapwai Valley, Luke's Gulch). Land use changes at other satellite sites would be low. Impacts would be smaller in magnitude in the Existing Facilities Alternative than the Proposed Action because of the elimination of the Cherrylane site. No impacts are expected with the No Action Alternative.

Recreational use changes would result from an increase in fishing associated with larger fish runs in the action alternatives. Again, greater change in fishing might be expected with the Proposed Action. No changes would result from the No Action Alternative.

Socioeconomic impacts resulting from short-term construction, long-term employment, changes in property and sales taxes and the revenue brought in by greater fishing opportunities would be beneficial and greater with implementation of the Proposed Action than the Existing Facilities Alternative. No economic impacts would be accrued with the No Action Alternative.

Moderate impacts to visual resources would occur at Cherrylane, Luke's Gulch, and North Lapwai Valley. Low impacts are expected at the other satellite sites and at Sweetwater Springs. Because of the inclusion of Cherrylane, greater impacts are expected from the Proposed Action than the Existing Facilities Alternative. No impacts are expected from the No Action Alternative.

Low impacts to air quality are expected from implementation of the action alternatives and would be caused by vehicle emissions, construction activities and pumps. No impacts are expected from the No Action Alternative.

An increase risk of fire caused by new facilities and workers in otherwise rural and forested areas could result from the implementation of the action alternatives. Because of the inclusion of Cherrylane, greater impacts would occur from the Proposed Action than the Existing Facilities Alternative. No impacts are expected from the No Action Alternative.