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NEZ PERCE TRIBAL HATCHERY PROGRAM

DRAFT ENVIRONMENTAL IMPACT STATEMENT SUMMARY

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Draft Environmental Impact Statement Summary

Nez Perce Tribal Hatchery Program

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Bonneville Power Administration

U.S. Department of Energy

Bureau of Indian Affairs

U.S. Department of the Interior

Nez Perce Tribe

June 1996

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Summary

- The Purpose and Need for Action
- Alternatives
- Impacts

This summary gives the major points of the Draft 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.

1.1 Purpose and Need For Action

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

➡ For Your Information

Naturally-reproducing salmon are adult fish that spawn in a stream or river.

Wild salmon are the progeny of naturally-reproducing salmon regardless of parentage. The offspring of naturally reproducing fish that have been raised in a hatchery are considered wild.

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

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.

1.1.1 The Clearwater River Fish Community

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.

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

Nez Perce Tribal Hatchery Project Study Area

Map 1
Clearwater River Subbasin

1.1.2 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.

Traditional 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. Traditional hatchery practices have not been an effective means of restoring runs into the natural environment.

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

For Your Information

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

1.1.3 The Nez Perce Tribe

The Nez Perce once were one of the largest Plateau tribes in the Northwest and occupied a territory that included north central Idaho, southeastern Washington and northeastern Oregon.

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 cultural need to restore salmon runs within its treaty lands.

1.2 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.

1.3 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.

1.4 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.

1.5 Alternatives

Two alternatives, the Proposed Action and the No Action Alternative are being considered.

1.5.1 Proposed Action

➔ For Your Information

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.

The Nez Perce Tribal Hatchery is a supplementation program that would rear and release spring, summer, 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 has three phases. The first (1-5 years) and second phases (6-10 years) of the program are the primary focus of the Draft 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.

Fingerling

Fingerlings are juvenile fish varying in length from 38 mm to 114 mm (1.5 to 4.5 inches).

Smolts are young salmon that are physiologically ready for the transition to saltwater.

Presmolt

Presmolts

Juvenile spring chinook salmon that are 100-150 mm (4-6 inches) long in the fall. They smolt and migrate to the ocean the following spring.

Subyearling smolt

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. 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 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 1 summarizes the dimensions and requirements of NPTH facilities and Figure 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.

Summer chinook would be reared at the Sweetwater Springs Central Incubation and Rearing Facility until they reach fingerling size. They would then be moved to one or two acclimation facilities to continue rearing for several months and to imprint on the river water. They would be released as subyearling smolts in late spring or early summer and are expected to begin their seaward migration shortly thereafter.

Fall chinook would be reared at the Cherrylane hatchery until they reach fingerling size. Most of the fish would be moved to acclimation rearing ponds within the facility itself and would be released as subyearling smolts directly into the Clearwater River during late spring or early summer. Remaining fish would be moved to another acclimation site located farther downstream. 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 also 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

Site	Program (Note 1)	Release Goals			Fish Culture Components (Note 2)								Site Area	Adult V
		Number	#/kg (#/lb)	metric tons (tons)	Cp	Bs	Ic	RrF	RrS	Ac	Ri	hectares (acres)		
Sweetwater Springs T33N, S4, R4W	SuCh					*	*	*	*			1.6 (4)		
Luke's Gulch (South Fork Clearwater) T31N, S28, R4E	SuCh	400,000	110 (50)	3.63 (4)	*	*		*	*	*	*	1.2 (3)		
Cedar Flats (Selway) T32N, S25, R7E	SuCh	400,000	110 (50)	3.63 (4)	*	*			*	*	*	1.2 (3)		
		800,000		7.26 (8)										
Cherrylane T37N, S35, R3W	FCH	1,500,000	110 (50)	13.61 (15)	*	*	*	*	*	*	*	6 (14)		
North Lapwai Valley T36N, S20, R4W	FCH	500,000	110 (50)	4.54 (5)	*	*			*	*	*	1.2 (3)	yes	
		2,000,000		18.14 (20)										
Cherrylane T37N, S35, R3W	SCH					*	*	*	*			6 (14)		
Yoosa/Camp Creek (Lolo Creek) T35N, S12, R6E	SCH	150,000	44 (20)	3.4 (3.8)	*	*		*		*	*	0.8 (2)	yes	
Mill Creek (Mill Creek) T29N, S34, R4E	SCH	40,000	44 (20)	0.91 (1)	*	*		*		*	*	0.8 (2)	yes	
Newsome Creek T30N, S31, R7E	SCH	75,000	44 (20)	1.7 (1.88)	*	*		*		*	*	0.8 (2)	yes	
Boulder Creek (Lochsa)	SCH	83,000	220 (100)	0.377 (0.415)	*						*		yes	
Warm Springs Creek (Lochsa)	SCH	20,000	220 (100)	0.09 (0.10)	*						*		yes	
Meadow Creek (Selway)	SCH	400,000	220 (100)	1.81 (2)	*						*		yes	
Cedar Flats (holding for adults captured at Meadow Creek)	SCH					*							yes	
Eldorado Creek (Yoosa/Camp control)	SCH				*								yes	
John's Creek (Mill Creek control)	SCH				*								yes	
Tennile Creek (Newsome Creek control)	SCH				*								yes	
Fish Creek (Boulder Creek control)	SCH				*								yes	
Brushy Fork (Warm Springs Creek control)	SCH				*								yes	
		768,000		8.29 (9.14)										

1. SuCh = Summer Chinook, FCH = Fall Chinook, SCH = Spring Chinook

2. Cp = Capture Adults, Bs = Hold Breedstock, Ic = Incubation, RrF = Rear Fry/Fingerlings, RrS = Rear Smolts, Ac = Acclimate Smolts, Ri = Release Site.

3. Combined Program for FCH and SCH: Overlap between incubation for FCH and SCH and overlap between rearing of SCH and acclimation of FCH.

4. GW = Groundwater, SW = Surface Water, U = Unlimited Supply, NA = Not Applicable.

5. Water information from NPT data, lowest flow measured over five years, 1990-95. North Lapwai Valley from USGS 1974-94.

[illegible]

Approximate	
Weight	Length
440/kg (200/lb) =	57 mm (2.28 in)
220/kg (100/lb) =	70 mm (2.80 in)
154/kg (70/lb) =	80 mm (3.20 in)
110/kg (50/lb) =	90 mm (3.60 in)
44/kg (20/lb) =	140 mm (5.60 in)

Figure 1
Incubation, Rearing, Acclimation, and Release Sites

be marked 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 such as temporary weirs would be used to count and capture adult chinook salmon returning from the sea. Some adults would be used for broodstock; the remainder would be returned to the stream to be harvested or to spawn naturally.

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

- Supplementation fish 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 natural living fish.
- Fish would be released in several mainstem and tributary areas to establish spawning returns throughout the natural environment and optimize natural production.

Specific components for each of the proposed sites, such as exact location of water source and discharge lines, orientation and location of ponds and housing facilities, location of temporary weirs and access road locations have not been developed. They will be determined when the final engineering designs are completed. At that time, more in-depth consultation will be required, specifically with the U.S. Forest Service, on development activities within National Forest lands.

Some proposed facilities may be changed or dropped if new information suggests modifications are required. The program is designed to be flexible and to allow changes over its life through adaptive management.

1.5.1.1 Cherrylane

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 2). 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. Rearing containers, raceways, and ponds would be used to rear spring and fall chinook. Chinook

would be early reared 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.

A fishway or fish ladder would also allow fall chinook adults imprinted to hatchery discharge water to return to the hatchery.

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 eggs would be spawned, and their eggs incubated. 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 to satellite facilities located on Yoosa/Camp, Mill and Newsome creeks. In June, the remaining 503,000 spring chinook 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 will be needed for maximum egg take.

The facility would require a maximum of 30.3 m³/min (8,000 gpm) of water. Water would be supplied from two sources: wells and the Clearwater River. Two effluent settling ponds would be used to collect water when raceways are cleaned. Solids collected would be dried and applied to land or disposed of at an approved sanitary landfill. Liquid effluent would be discharged to the Clearwater River downstream of the hatchery's water intake. Fish carcasses would be disposed of at a landfill or could be used as fertilizer. A septic system would be provided for human wastes. Any chemicals used would be handled, applied and disposed of in accordance with state and federal regulations.

NEZ PERCE TRAIL

AL HATCHERY

LEGEND

INCUBATION & REARING FACILITIES

- Spring and Fall Chinook
-Cherrylane
- Summer Chinook
-Sweetwater Springs

SATELLITE FACILITIES

- Spring Chinook
 - A - Yoosa/Camp Creek
 - B - Mill Creek
 - C - Newsome Creek
- Summer Chinook
 - D - Cedar Flats
 - E - Luke's Gulch
- Fall Chinook
 - F - North Lapwai Valley

RELEASE SITES

- Spring Chinook direct release sites

WEIR SITES

- Spring Chinook
 - 1 - Mill Creek
 - 2 - Johns Creek
 - 3 - Tenmile Creek
 - 4 - Newsome Creek
 - 5 - Meadow Creek
 - 6 - Lolo Creek
 - 7 - Eldorado Creek
 - 8 - Fish Creek
 - 9 - Boulder Creek
 - 10 - Warm Springs Creek
 - 11 - Brushy Fork

- Reservation

KILOMETERS

0 2 4 6 8 10

MILES

0 2 4 6 8 10

Map 2

Facilities and Release Sites

1.5.1.2 Sweetwater Springs

Sweetwater Springs is located approximately 20 km (12 miles) southeast of Lewiston, Idaho. 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. Improvements would be needed to meet NPTH production goals. The water supply originates from within a large concrete spring box that collects water from a hillside spring. The spring box prevents contaminants from entering a pipeline that flows directly to the hatchery. An estimated 3.4 m³/min (900 gpm) water supply can be developed with improvements. Water temperature varies between 9-10 degrees C (48-50 degrees F) year-round. Water quality is suitable for rearing fish without treatment. 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. Wastewater and electrical services would be provided. Bottled water would be used for domestic purposes. A new on-site septic tank and drainfield would be provided for wastewater service.

The principal production planned at Sweetwater Springs is to incubate and rear about 800,000 summer 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 summer chinook would be moved to the Cedar Flats satellite facility when they are about 154 fish/kg (70 fish/lb).

1.5.1.3 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.

Luke's Gulch

Luke's Gulch is on a flat bench above the South Fork Clearwater River upstream from Kooskia at River KM 13 (Mile 8). The site is forested and is tribal land. In February, the proposed facility would receive about 400,000 summer chinook fingerlings at 440 fish/kg (200 fish/lb) from the Sweetwater Springs hatchery. The fingerlings would be reared through June and released into the South Fork Clearwater River when they are at 110 fish/kg (50 fish/lb). Returning adults would be captured or induced to return by a fishway into the pond. They would be held from July through October and spawned on-site. Two hundred-seventy-two adults are needed for maximum egg take from this site.

A combination of well and river water would be used to rear fish. A combination of groundwater and river water would be used as an attractant for adults and to moderate holding pond temperatures. Water quality and supply are adequate for the program.

Cedar Flats

Cedar Flats is a developed site about 1.6 km (1 mile) on a flat bench next to the Selway River at River KM 8 (Mile 5) in part of an old Job Corps facility being used by the U.S. Forest Service. The site has an existing water supply intake, wastewater treatment facility, power and other necessary utilities. A new river water intake, acclimation holding ponds and working facilities would be needed. A trailer for staff and temporary storage units would be located at the trailer court nearby.

The portion of the Selway River that flows past the site is designated a *Recreational River* in the Wild and Scenic Rivers System. The facilities planned would be designed with the USFS to blend with other existing uses and not conflict with seasonal float boaters.

In April, the Cedar Flats satellite facility would receive about

Summary

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

Beginning in May, adult spring chinook captured at the Meadow Creek weir would be transported down to the ponds at Cedar Flats. Approximately 405 spring chinook would be held there through spawning in September. The broodstock would provide the eggs needed for production at Meadow Creek, Warms Springs Creek and Boulder Creek and the fish would be spawned on-site.

In June, summer chinook adults would be returning to the Selway River. Adults captured from the river and those returning directly to the facility by the fishway would be held in the ponds from June through October and spawned on site. Two hundred seventy-two adults are needed for maximum egg take.

North Lapwai Valley

The North Lapwai Valley site is an alfalfa field on the west bank of Lapwai Creek about 1.6 km (0.8 mile) upstream from its mouth at the Clearwater River (River Mile 12). The flat, 10 ha (25 acre) site is owned by the Nez Perce Tribe. The site is close to the town of Lapwai, so no permanent on-site housing is planned. Initially, well water would be used for rearing. Later, water from Lapwai Creek would be mixed with groundwater to imprint and acclimate fish to this area and to moderate the water temperature.

Fingerling

In February, this satellite facility would receive about 500,000 fall chinook fingerlings at 440 fish/kg (200 fish/lb) from Cherrylane. Fish would be reared through June and released at 110 fish/kg (50 fish/lb) through a pipeline, channel or other structure into Lapwai Creek. Beginning in late September, returning adult fall chinook would be captured by a temporary weir at the facility site. After capture, adults would be placed in containers, transported to Cherrylane where they would be held in ponds until mature, and then spawned. Three hundred-forty adults are needed for maximum egg take at this site.

Yoosa/Camp Creek

The Yoosa/Camp Creek site is next to U.S. Forest Service Road No. 103, southwest of the Musselshell Camp in the Clearwater National Forest. The site is located in a stand of cedar and pine on the western bank of Yoosa Creek about 10 m (33 ft) downstream of the confluence of Yoosa and Camp creeks. Ponds with irregular shapes are planned to conform with the site and to avoid removing large trees. A house trailer would be provided for seasonal workers. All water for this site would be diverted from surface flows from both creeks through a low pressure line to a headbox. Sufficient flow exists to meet the needs for the site. No more than one half of either creek would be diverted for rearing purposes so as not to adversely impact the instream habitat.

Fingerling

In May, about 150,000 spring chinook fingerlings from Cherrylane at 440 fish/kg (200 fish/lb) would be brought to this site. The fish would be acclimated for an early October release before the onset of winter. When the fish are at 44 fish/kg (20 fish/lb), they would be allowed to exit on their own into Yoosa Creek through a pipeline, channel or other structure. The site would also be used to hold returning adults captured at the Lolo Creek weir site. Adults would be held from May through September and spawned on-site. One hundred thirty-six spring chinook are needed for maximum egg take.

Mill Creek

Presmolt

The Mill Creek site is next to U.S. Forest Service Road No. 309, Hungry Ridge Road, between the west bank of Mill Creek and the road. The site is a forested inclined bench about 3.2 km (2 miles) upstream of its confluence with the South Fork Clearwater River. Facilities development would affect approximately 0.8 ha (2 acres) of land. Due to the small size and limited production (40,000 presmolts) at this site, portable type containers may be used. Personnel would be housed seasonally in a small trailer from May through October. Water taken from Mill Creek would meet the needs for the site.

In May, about 40,000 spring chinook fingerlings at 440 fish/kg (200 fish/lb) would be brought from Cherrylane for rearing through October. In October, presmolts at 44 fish/kg (20 fish/lb) would exit on their own into Mill Creek through a pipeline. Beginning in May, adult spring chinook returning to Mill Creek would be trapped in a temporary weir and held in ponds until spawned. Thirty-six spring chinook are needed for maximum egg take.

Newsome Creek

This site is along the east bank of Newsome Creek about 70 m (230 ft) upstream of the confluence of Beaver Creek. The site is next to U.S. Forest Service Road No. 1853 and is about 5 km (3 miles) upstream from the confluence of the South Fork Clearwater. The site was dredge mined in the early 1900s and has been graded into a level plateau. Facilities would require about 0.8 ha (2 acres) of land. Ponds for adults and juveniles would be constructed in the bench next to Newsome Creek. A temporary trailer with a small generator would be provided at the site. Water would be taken from Newsome Creek through a screened intake and surface mounted pipeline and distribution box.

In May, about 75,000 spring chinook fingerlings at 440 fish/kg (200 fish/lb) would be brought from Cherrylane for rearing through October. In October, presmolts at 44 fish/kg (20 fish/lb) would exit the pond on their own into Newsome Creek. Presmolts would exit through the effluent pipeline. Returning adults would be held at the site also. They would be captured from May through September and spawned on-site. Sixty-eight adult spring chinook are needed for maximum egg take.

1.5.1.4 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 before use where necessary, controlling water temperature to reduce infections, controlling incubation densities, controlling the incidence of disease in the hatchery, cleaning effluent where necessary, 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 Subbasin and produce viable offspring.

Water temperatures in incubation and rearing containers would be controlled to best suit supplementation goals. Fall and summer chinook will 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 and summer chinook subyearling smolts would be programmed to grow to a mature size sooner using the warmer groundwater. They will 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 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.

During final rearing the fish will be kept in ponds designed and operated 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 allowing fish a place to hide and learn to avoid other fish. 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. 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. Low rearing densities will enhance survival and reduce temperature induced stress during the warmer summer periods, particularly for those fish kept through the summer at Yoosa/Camp, Mill and Newsome Creek.

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 and summer 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 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 will be allowed to exit the ponds on their own free will. At this time, the fish will average about 44 fish/kg (20 fish/lb). The ponds will be drained in mid-October, and the remaining fish will 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. The proposed release strategy will 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 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 will either receive outplants of hatchery fish or will serve as experimental controls. Additional weirs and traps would be used to collect summer and fall chinook in the vicinity of hatchery and release sites. Depending on the species, weirs will be operated from late May through early December.

A variety of collection methods would be explored for wild and hatchery-produced fall and summer chinook. These fish are mainstem river spawners and full-length weirs spanning the rivers are unfeasible. However, partial weirs may be possible on side channel habitats found on river islands. Other options would be to collect a portion of the returning adults as they pass Lower Granite Dam or to use boat seines. Visual implant tags in conjunction with adipose fin clips could be used to identify the adults at Lower Granite Dam. Permanent adult collection systems – fishways or fish ladders – are also 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. Figure 2 shows adult collection methods and numbers. Table 2 shows predicted annual adult salmon returns, adults available for broodstock, natural spawning and harvest in 20 years. Weir sites are shown on Map 2.

Collection Sites

Clearwater River
(Cherrylane)

Lapwai Creek

Lolo Creek

Mill Creek

Newsome Creek

Meadow Creek
(includes broodstock for
Boulder Ck. & Warm Springs Ck.)

S. Fork Clearwater River
(Luke's Gulch)

Selway River
(Cedar Flats)

Captured Methods

Fall Chinook (Sept.-De.)

Spring Chinook (May-June)

Spring

June - Oct.

June - Oct.

Adult Collection Methods

Weir

Boat capture
(seining, electro-
fishing, angling)

Capture at
Lower Granite

Fish Ladder

Adult holding
ponds

(#)

Number of adults
collected

(Sept.- Dec.)

Months adults
collected

Figure 2
Adult Collection

Table 2 Expected Adult Salmon Returns

Stream	Total Adult Returns	Adults Available for Broodstock	Adults Available for Natural Reproduction	Adults Available for Harvest
Spring Chinook				
Lolo Creek (1)	373	136	162	75
Mill Creek (1)	95	36	46	13
Newsome Creek (1)	173	68	51	54
Boulder Creek (2)	147	67	60	20
Warm Springs (2)	34	16	14	4
Meadow (Selway) (2)	684	322	244	118
Number at 20 years	1,506	645	577	284
Summer Chinook				
Luke's Gulch (3)	743	276	298	169
Cedar Flats (3)	743	276	298	169
Number at 20 years	1,486	552	596	338
Fall Chinook				
Cherrylane (3)	2,359	788	960	611
North Lapwai Valley (3)	780	258	320	202
Number at 20 years	3,139	1,046	1,280	813
(1) Assumes postrelease survival is 65% and smolt-to-adult survival is double the current rate. (2) Assumes postrelease survival is 65% and smolt-to-adult survival is double the current rate (because fish have acquired a fitness advantage due to extended rearing in the wild). (3) Assumes postrelease survival is 50% and smolt-to-adult survival is double the current rate.				

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, and Clearwater hatcheries and the Kooskia Hatchery;
- summer chinook – mid-Columbia stock; and,
- fall chinook – Lyon's Ferry Hatchery stock.

Final selection of the donor stock to use in NPTH will depend on coordination with NMFS, IDFG, and the U.S. vs. Oregon Production Advisory Committee of the Columbia River Management Plan. Acquisition of broodstock will also be determined through negotiation by the NPT within these forums. During Phase I of the implementation, it is assumed that broodstock acquisition will be coordinated on an annual basis. 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. 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 (Cramer, 1992 and 1995) (see Table 3). The ratios favor wild fish for natural spawning as the wild population increases.

1.5.1.5 Harvest Management

An important goal of the supplementation program is to produce surplus adult fish for harvest. Harvest rates would be regulated to sustain wild and hatchery production. Population growth may be slow, requiring 20 years or longer before harvest can occur.

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

Table 3
Hatchery (H)
To Wild (W)
Spawner Ratios

Natural Returns	Brood for Hatchery	Fertilization Procedure	Spawners for Wild
Greater than Broodstock Goal for Hatchery	At least 50% W	Random, H x W	At least 33% W.
Fewer than Broodstock Goal for Hatchery	At least 33% W	Random, H x W to extent possible	At least 25% W. 12 pair minimum
Between 12 to 24 Pairs	Keep all W males: Male ratio = 3H:1W H females equivalent to H + W males	Split-cross W males; each to two H females.	Release all W females. Female ratio = 3H:1W H males equivalent to H+W females.
Fewer than 12 Pairs	Keep all W fish + capacity H fish. Spawn and rear H + W separately. Smolt release for W + captive brood.	Matrix for W. Random for H.	100% H up to spawning habitat capacity

natural spawning and broodstock collection goals would be met. Surplus hatchery fish would be targeted, allowing weaker wild stocks to rebuild to self-sustaining levels.

The Nez Perce Tribe would coordinate harvest management with other fisheries agencies in the basin.

1.5.1.6 Monitoring and Evaluation Plan

Monitoring and evaluation would enable managers to determine whether the supplementation program is achieving its stated goals, and would provide information that can be used to revise program goals and supplementation strategies. A monitoring and evaluation plan was developed for the proposed program (Steward, 1996). The plan uses risk assessment and prioritization techniques to define the magnitude and significance of risks associated with the program, then proposes strategies for avoiding undesirable impacts and collecting the information necessary to evaluate program success.

Five pairs of treatment and control streams have been identified for monitoring and evaluating the success of spring chinook supplementation. (See Table 4 and Map 2.) 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. 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.

Table 4
Treatment/Control
Stream Pairs

Treatment Stream	Control Stream
Lolo Creek	Eldorado Creek
Mill Creek	Johns Creek
Newsome Creek	Tenmile Creek
Boulder Creek	Fish Creek
Warm Springs Creek	Brushy Fork Creek

1.5.1.7 Costs

Capital construction would cost about \$18-20 million (1995 dollars). Annual operations and maintenance costs after all facilities are fully developed would cost about \$800,000 (1995 dollars) and monitoring and evaluation would cost about \$500,000 (1995 dollars) annually. Harvest management is not included in the cost estimate.

1.5.2 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 recovery 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.

1.5.3 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, using existing production facilities, and natural habitat enhancement and restoration. After study, these alternatives were eliminated from further consideration because they would not meet the need.

2.1 Potential Impacts from the Proposed Action

2.1.1 Nez Perce Tribe

The Proposed Action has the ability to affect several important aspects of tribal life. Primary are salmon harvest, and its associated cultural and subsistence implications, employment, and fisheries management.

2.1.2 Cultural Resources

Under this alternative, judicious design and choice of alternative sites would avoid any direct impacts to the five cultural properties identified. Monitoring of site locations during construction would minimize potential straying onto sites while allowing for immediate recognition of previously unknown/buried cultural deposits.

Most of these sites can be avoided by use of alternative locations or locating activity away from the cultural resource, therefore impacts would be low. In instances where avoidance is not feasible, mitigative plans would need to be developed in accordance with National Historic Preservation Act of 1966. No cumulative impacts are expected.

2.1.3 Geology and Soils

Seismic hazards have been identified for the Cherrylane site. Seismic hazards for this site would be considered when the facilities are designed. All facilities would be designed to withstand earthquake intensities of V or as identified by the local and state earthquake building codes. The Proposed Action would have low overall impacts on geology.

Disturbance of the ground surface and subsurface, and vegetation removal during site clearing, road building and facility construction increase the risk of soil erosion and may change soil physical characteristics. Areas most vulnerable include soils prone to erosion, mass movement or compaction, steep slopes, and areas where extensive clearing is required. Most impacts are from construction and would be short term. Impacts are greatest during and immediately after construction or until revegetation, drainage, and erosion controls are established. Long-term impacts could be caused by local changes in erosion and runoff rates from site or road construction. Site restoration and mitigation would reduce both short-and long-term impacts and the effect erosion, sedimentation, and soil compaction could have on other resources such as water, fisheries, and vegetation.

Stream channels adjacent or close to the North Lapwai Valley, Yoosa/Camp Creek, Newsome Creek and Mill Creek satellite sites would be altered by channel excavation and bank riprap used to establish intake structures, to place instream boulder anchors and perhaps bank anchors to support fish weirs, and to place tripods and fence panels for weirs.

River channels adjacent or close to Cherrylane, Luke's Gulch and Cedar Flats would be altered by channel excavation and bank riprap used to establish intake structures and fish ladders, to place instream boulder anchors and perhaps bank anchors to support fish weirs, and to place tripods and fence panels for weirs.

Stream channels in Meadow Creek, Boulder Creek, Warm Springs Creek, Johns Creek, Eldorado Creek, and Tenmile Creek would be altered to place instream boulder anchors and perhaps bank anchors to support fish weirs, and to place tripods and fence panels for weirs.

Helicopters would be used to fly fish in to all direct release sites. No construction would occur. Minor instream disturbance should be expected at all weir sites within the South Fork Clearwater River, Selway, and Lochsa drainages, but the soil properties would not change.

No significant, long-term adverse impacts on soils are expected from the Proposed Action. Soil impacts would be localized and their effects would be manifest only at the individual sites. No cumulative impacts would occur.

2.1.4 Water Resources

2.1.4.1 Groundwater

The main impacts to groundwater would occur at the hatchery sites and at the North Lapwai Valley and Luke's Gulch satellite sites. Groundwater production wells would be used at Luke's Gulch. The drawdown created by the wells could cause groundwater levels to decline in nearby existing domestic and stock wells, with impacts greater in nearby dug wells than drilled wells. This volume would be easily replaced through groundwater recharge due to the nature of the soils and rivers nearby. Mitigation may be required for these impacts to nearby wells depending on severity. The use of groundwater at the North Lapwai Valley site is not anticipated to impact adjacent groundwater users. All fish would be released by the middle of May which is the beginning of the irrigation season in the Lapwai Valley area and the period of maximum seasonal recharge for the aquifer.

Discharges would meet federal and state water quality standards and guidelines, and would satisfy all permit requirements. Hatchery effluents would be routinely monitored to assure compliance with water quality standards. Overall impacts on groundwater quality are low and no mitigation is required.

2.1.4.2 Surface Water

Construction of the central incubation and rearing facilities and satellite ponds would disturb the ground and add impervious surfaces to the sites, which may lead to increased or rerouted runoff and sediment carried into streams. Increased runoff is expected to be short-lived and is not expected to exceed a stream's ability to carry sediment away from the site. It is not expected to change a stream's substrate. Some bankside and riparian vegetation would be removed or disturbed that may affect shade on a very limited scale. No change in water temperatures is expected. Most construction activities would occur away from the channel, and would be mitigated by erosion control, removing the least amount of trees as possible, and revegetating the site after construction. Impacts would be low and short term.

Hatchery operations are expected to cause low impacts to water quality. Discharges of chemical and organic pollutants would meet federal and state water quality standards and guidelines, and would satisfy all permit requirements.

No cumulative effects are anticipated. Impacts would be limited to the facility sites and would not cause an overall change in conditions of either the receiving streams or the Clearwater River Subbasin.

2.1.5 Floodplains

The proposed program would require the construction of structures adjacent to or in the floodplain (hatchery and satellite facilities) and/or within the active stream channel (weirs). In general, all facilities within the 100-year floodplain would be designed to be either temporary, non-obstructive to floodwaters, or both.

While final facility design completed for each site would determine the actual risk of flooding and the facilities that need to be protected, a number of general conditions will be established for all sites.

- All facilities will be as high above active drainages as possible.
- No flood flow barriers will be built.
- Damage to riparian vegetation will be avoided where possible.

- Piping will be buried where possible.
- Electrical equipment will be portable where possible.
- Portable equipment will be removed at the end of the season.

No direct or cumulative impacts on floodplains are expected.

2.1.6 Fish

Program activities would cause a variety of effects on the environment and its fisheries. Effects, both detrimental and beneficial, would come from four major sources:

- the design, siting, and construction of hatchery facilities;
- hatchery operations and management;
- fish interactions; and
- human-fish interactions.

Table 5 summarized potential impacts.

2.1.6.1 Fish Categories

Targeted chinook are the hatchery chinook produced by the NPTH and the wild populations from which they are drawn or introduced.

- For spring chinook, this includes hatchery fish released into Lolo, Newsome, Mill, Meadow, Boulder and Warm Springs creeks, fish produced by adults returning from the hatchery releases that spawn in the wild, and fish produced from any unsupplemented runs that occur in a stream before the Proposed Action begins.
- For fall chinook, this includes the hatchery fish released into the mainstem Clearwater River at Cherrylane and Lapwai Creek, fish produced by adults returning from outplants that spawn in the wild, and fish produced in the mainstem Clearwater River before the Proposed Action begins.
- For summer chinook, this includes hatchery fish released into the South Fork Clearwater at Luke's Gulch and the Selway River at Cedar Flats, and fish produced by adults returning from outplants that spawn in the wild.

Non-targeted chinook are non-NPTH chinook (both hatchery or wild) originating within and outside the Clearwater River system encountered during outmigration, in the ocean, or on the return to the Clearwater River Subbasin.

Table 5 Summary of Potential Impacts

Causal Factors	Targeted Chinook	Non-Targeted Chinook	Other Salmonids	Non-Salmonids
Siting and Construction of Hatchery Facilities				
Site Disturbances	Low	None	Low	Low
Channel Alterations	None	None	None	None
Water Intake and Discharge Structures	Low	None	Low	Low
Hatchery Operations and Management				
Water Gains and Losses	Low	None	Low	Low
Water Quality	Low	None	Low	Low
Fish Traps, Live Boxes, Ladders, and Weirs	Moderate	Moderate	Moderate	Low
Broodstock Selection and Maintenance	Moderate	Low	None	None
Mating Protocols	Low	Low	None	None
Incubation and Rearing Practices	Low	None	None	Low
Fish Health Management	Low	Low	Low	Low
Release Methods and Numbers	High	Moderate	Low	Moderate
Fish Interactions				
Competition	Low	Low	Moderate	Low
Chinook as Predator	Low	Low	Low	Low
Chinook as Prey	Low	Low	Low	None
Reproduction and Genetic Exchange	Moderate	Low	None	None
Disease Transmission	Low	Low	Low	Low
Human-Fish Interactions				
Non-Tribal Management Actions	Low	Low	Low	Low
Fishing	Low	Low	Low	Low

- For spring chinook this includes fish encountered during outmigration, in the ocean, or in Clearwater River tributaries or hatcheries that were not derived from streams occupied by targeted spring chinook.
- For summer and fall chinook, this category of fish includes those fish encountered during outmigration, while in the ocean, or during return to rivers other than the Clearwater that were not derived from outplants of targeted chinook.

Other salmon and trout includes steelhead, bull trout, cutthroat trout, and brook trout. Effects to this category of fish are primarily discussed relative to streams that are the focus of the targeted spring chinook populations.

Non-salmonids are all other fish species. Effects to this category of fish are discussed relative to streams and rivers that are the focus of the targeted spring, fall and summer chinook populations.

2.1.6.2 Siting and Construction of Hatchery Facilities

Hatchery facilities would necessarily be situated close to stream channels. The construction of NPTH facilities would have physical impacts that relate to site disturbances, channel alterations, and the placement of water intake, conveyance, and discharge structures.

Site Disturbances

Site disturbances may change the behavior and disrupt the distribution of individual fish adjacent to and downstream of the sites, but the overall biological impact to targeted chinook, other salmonids and non-salmonid populations is expected to be low. The amount of habitat and number of fish affected by these changes would be small relative to the total habitat available. No significant change in abundance or trend in fish populations is expected. Non-targeted chinook are not present in the receiving streams, and therefore would not be impacted.

No cumulative impacts from site disturbances at facility sites are anticipated. Impacts are expected to be localized and short-lived.

Channel Alterations

During construction, fish residing within the area of activity would be displaced, and some might be killed. Longer-term impacts caused by the structures may include disrupting the behavior and distribution of individual fish next to and

downstream of the sites. But construction and placement of channel structures is not expected to incur significant biological impacts for targeted chinook, non-targeted chinook, other salmonids and non-salmonid populations. No change in abundance or trend in fish populations is expected. Impacts are expected to be localized and short-lived.

No cumulative impacts are anticipated by channel alterations at facility sites.

Water Intake and Discharge Structures

If structure screens fail, non-hatchery fish may enter and hatchery fish may exit the facility. Unintentional releases of hatchery fish from screen failure are not expected. Any non-hatchery fish that enter the hatchery because of screen failure in the flow distribution system would either be reared along with hatchery fish, returned to the stream, or retained for broodstock.

Site disturbances may disrupt the behavior and distribution of individual fish adjacent to and downstream of the sites, but the overall biological impact to targeted chinook, other salmonids and non-salmonid populations would be localized and short-lived. The amount of habitat and number of fish affected by these changes would be small relative to the total habitat available. No significant change in abundance or trend in fish populations is expected. Impacts would be low.

Non-targeted chinook are not present in the receiving streams, and therefore would not be impacted.

No cumulative impacts are expected at facility sites.

2.1.6.3 Hatchery Operations and Management

The central incubation and rearing facilities at Cherrylane and Sweetwater Springs, and the six satellite rearing facilities would release water, fish, organic and inorganic wastes, and pathogens.

Water Gains and Losses

The potential for adverse fisheries impacts is greatest at the Yoosa/Camp Creek, Newsome Creek and Mill Creek sites. These are smaller streams that would have their flows reduced by 34 percent, 24 percent, and 11 percent, respectively, for a distance of up to 300 m (984 ft) of stream. The amount of habitat available, passage conditions, and food production would be negatively impacted in these reaches, particularly during September, when water needs are greatest in relation to overall streamflow. Larger systems, such as Lapwai Creek, the Selway,

South Fork Clearwater, and lower mainstem Clearwater, would not be affected to any great extent since the amount of water withdrawn would be a small fraction of the total streamflow.

Flow alterations caused by hatchery operations would not significantly affect the viability of any fish population. Because of the location and the relatively small area affected, fish are expected to move either upstream or downstream, or exist at smaller densities within the impacted segment. However, because a decrease of fish abundance within the impacted stream reaches is predicted for Yoosa Creek, Newsome Creek and Mill Creek, the impact to targeted chinook, other salmonids and non-salmonids for these sites was rated as moderate. No impact is expected on targeted chinook, other salmonids, and non-salmonids at other release and satellite sites. Consequently, the combined impact to these categories of fish from water gains and losses is rated low. No impact is expected on non-targeted chinook in any area.

Water diversions at all facility sites would not cause any change in status or trend of fish populations so no cumulative impacts are expected.

Water Quality

Any water quality changes resulting from the proposed facilities may disrupt the behavior and distribution of individual fish adjacent to and downstream of the sites, but the overall biological impact to targeted chinook, other salmonids and non-salmonid populations is expected to be low. The amount of habitat and number of fish affected by these changes would be small relative to the total habitat available. Non-targeted chinook are not present in the receiving streams, and therefore would not be impacted.

No cumulative biological impacts to fisheries status or trend would result from the addition of nutrients from facility discharges.

Fish Traps, Ladders, and Weirs

Fish impacts on Lolo and Meadow creeks from traps were rated as moderate for targeted chinook, other salmonids and non-salmonids. No impact is expected to the four fish categories at any other site.

The traps operated on Lolo and Meadow creeks would add to cumulative impacts to targeted chinook and other salmonids (particularly steelhead) that emigrate from these drainages. Traps are operated by other management agencies farther down in the Clearwater, Snake, and Columbia river systems, in addition to

those operated on the fish bypass and transport systems at the mainstem dams. Repeated trapping and sampling of the same individual fish might cumulatively increase the rate of mortality.

Cherrylane, Luke's Gulch, and Cedar Flats facilities would be equipped with fish ladders so that managers may collect returning hatchery adults on an as-needed basis. No detrimental impacts are expected to be caused by the ladders themselves. However, non-hatchery fish may commingle with hatchery spawners and ascend the fish ladder as part of a group. Depending on the mating protocols, they may be kept in the facility to be spawned, or released to the river. If kept in the hatchery, their progeny would be returned to the rivers with fish reared at NPTH facilities. No impact is expected to occur to any of the four fish categories by the fish ladders.

Operating fish weirs may block, delay, or otherwise disrupt the movements and distribution of fish. These include returning adult chinook, late run steelhead, late run cutthroat trout, late run suckers, or early running bull trout. Juvenile life stages, and other fish species, are less likely to be affected. Weirs can stress, injure, or kill fish if improperly designed and operated. Weirs may also prevent adults that have temporarily strayed above the weir (dip-ins) from returning downstream and migrating to other areas to spawn.

Impacts of weir operation and overall effects of this category as moderate to targeted chinook, other salmonids and non-targeted chinook (fish returning to control streams - Johns Creek, Tenmile Creek, and Eldorado Creek, or straying fish). No impact is predicted for non-salmonids.

The proposed weirs would have cumulative impacts to spring chinook and other salmonids in the Clearwater River Subbasin. Under existing conditions, weirs are operated on several streams (Big Canyon Creek, Clear Creek, Crooked River, Red River, Walton Creek, Fish Creek, Running Creek, and historically, the upper Lochsa, and Brushy Fork Creek) in the Subbasin to conduct research and collect hatchery broodstock. Adding at least eight weirs would cause adverse impacts to be spread over a wider geographical range. Should the adverse impacts become the rule and not the exception, a decrease in run size and redistribution of spawning, perhaps to less favorable areas downstream, might occur.

Broodstock Selection and Maintenance

The broodstock maintenance program developed for the Proposed Action protects targeted populations from extinction, loss of genetic variability and domestication selection by using wild-to-hatchery spawner ratios that permit wild runs to build to sustainable levels within a reasonable period of time. Once well-established, wild fish from the targeted population would provide up to 50 percent of the hatchery broodstock. Until such

time, variable wild:hatchery ratios would be permitted so that the percentage of wild fish in hatchery and naturally-reproducing populations increases as the number of returning wild fish increases. Regardless of escapement level, wild fish would be incorporated into hatchery broodstock at slightly higher percentages than in the naturally-reproducing population to provide added protection against the risk of domestication selection in the hatchery. To minimize the risk of extinction, proportionately greater numbers of hatchery fish would be allowed to spawn naturally if the wild population drops to critically low levels.

Despite actions taken to minimize impacts, broodstock selection and maintenance has the potential to have moderate impacts on targeted and low impacts on non-targeted chinook populations. Other salmonids and non-salmonids would not be affected.

Adult Holding and Spawning

Potential impacts to targeted and non-targeted chinook populations are low. Although individual adults would die, overall abundance of targeted populations is still expected to increase by the supplementation program. Straying of non-targeted chinook into NPTH facilities is not expected to be significant. No impacts are expected to other salmonid and non-salmonid populations.

The Proposed Action would add to adult mortalities caused by holding and spawning operations of other hatcheries in the Columbia River Basin. Because hatchery intervention is more likely to cause an increase in populations by decreasing mortality at younger ages, cumulative impacts are not expected to be significant.

Incubation and Rearing Practices

NPTH has been designed to incubate and rear fish under as natural conditions as possible to maximize their survival following release. Rearing density, temperature, light, water velocity, feeding, and other environmental attributes would be maintained at levels that foster the development and expression of wild-type behaviors and other survival related traits among hatchery fish. Because of the use of techniques to maintain wild-type characteristics among hatchery fish, the potential impact on targeted populations is low. Non-targeted chinook, other salmonids and non-salmonids are not expected to be affected. Cumulative impacts are not expected.

Fish Health Management

Fish rearing practices, waste removal, and prophylactic treatment of disease outbreaks within the hatchery would help maintain acceptable pathogen levels. Even if disease were to be transmitted, the overall impact would probably be negligible since wild fish are widely dispersed and tend to be disease-resistant. Consequently, the impact of transmitting diseases from hatchery to non-hatchery fish (all four categories of fish) is considered low. No cumulative impacts are anticipated.

Methods and Magnitude of Release

The location, method, timing, and magnitude of release of chinook would have high biological impacts on targeted chinook, low impacts on non-targeted chinook and moderate impacts to other salmonids and non-salmonids. High impact was given to targeted chinook because this activity could cause a dramatic increase in population status and trend over time. Impact to non-targeted populations is not predicted to cause a long-term increase or decrease in their abundance or trend over time. A moderate impact was assigned to other salmonids and non-salmonids because a reduction in abundance of these fish populations could occur if supplementation becomes successful and chinook once again become the most common inhabitant of salmon streams.

Cumulative impacts expected include an increase in salmon populations and a redistribution of other fish populations based on resources available within the streams and rivers targeted for supplementation. Non-targeted chinook could also be affected.

2.1.6.4 Fish Interactions

Competition

Targeted Chinook Populations — The overall impact of competition on the targeted population would be low, and limited primarily to spring chinook in freshwater habitats. Cumulative impacts are not anticipated.

Non-Targeted Chinook Populations — NPTH chinook would have a low impact on non-targeted chinook populations. The total number of hatchery and wild fish produced under NPTH would not exceed the natural production capacity of the Clearwater system, and therefore should not cause a disproportionate reduction in the amount of food and space available to commingled stocks.

Proposed hatchery releases of spring and fall chinook would cause cumulative impacts to non-targeted chinook, but the effects would not be detrimental to the recovery of endangered chinook

stocks. Fall chinook releases are not expected to cause cumulative detrimental impacts. Summer chinook production could cause some cumulative detrimental impacts as a result of competition with other salmonids when their release is considered in conjunction with other anadromous salmonid releases in the Columbia River Basin.

Other Salmonid Species — Competitive interactions between chinook and other salmonids, primarily young cutthroat trout, would have moderate impacts. Due to their extensive use of mainstem habitats during outmigration, hatchery fall and summer chinook are apt to interact less with these species and no impact is predicted.

Restoration of habitat use and reallocation of resources that existed prior to the elimination of salmon from salmon habitat could result and would be a cumulative impact.

Non-Salmonid Fish Species — Potential competition-related impacts on resident non-salmonids are low. Although chinook may deplete food supplies in the short-term, especially in the immediate area of release, they are not expected to significantly reduce in number or otherwise lower the viability of resident fish species. Restoring a salmon run and bringing in nutrients would be positive cumulative impacts.

Predation

NPTH Chinook as Predators — The effects of NPTH chinook on predator-prey dynamics in the Columbia River estuary and ocean cannot be accurately predicted since little is known of the role of chinook in the ecology of these systems. NPTH chinook would prey on other species of fish in these areas but a change in status or trend of other species as a result of their predation is not expected.

Overall, the potential impact of predation by NPTH fish on all categories of fish was rated as low. Cumulative impacts are not anticipated for spring and fall chinook. For summer chinook production, some detrimental cumulative impacts might be expected.

NPTH Chinook as Prey — Somewhat greater, but still minor impacts are expected from NPTH chinook as prey. Direct and indirect impacts of chinook-as-prey on other fish resources would be low. The numerical abundance might stimulate and increase predator populations, but chinook would also be the principal prey for predators. However, effects caused by releases of summer chinook by NPTH combined with other hatchery releases in the Columbia River Basin, could add to predation risk for non-targeted chinook, a cumulative impact.

Reproduction and Genetic Exchange

Targeted Chinook Populations — Reproductive and genetic impacts to the targeted population of spring and fall chinook would be low. Summer chinook could pose a moderate level of impact to targeted fall chinook populations. Because of the potential for impact between summer chinook and fall chinook, the overall impact for this category is moderate. Cumulative impacts are not expected.

Non-Targeted Chinook Populations — Impacts to non-targeted populations of spring chinook would be low. No impacts are anticipated to non-targeted chinook from fall chinook releases. The effects of NPTH summer chinook straying are not expected to cause an adverse interaction with non-targeted populations. Overall impact on non-targeted chinook stocks due to reproduction and genetic exchange is expected to be low. Cumulative impacts are not anticipated.

Other Salmonid Species — No impacts are predicted. No cumulative impacts are expected.

Non-Salmonid Fish Species — No impacts are expected. No cumulative impacts are expected.

2.1.6.5 Potential Impacts on Listed Species

Overall, no to low impacts on listed species are expected. The construction and operation of the hatchery would have little or no impact to fish mortality of listed fish, and would not interfere with recovery actions or otherwise impede the recovery of spring/summer chinook and sockeye salmon. Endangered fall chinook populations would be supplemented and increased by the NPTH program. Any incremental loss of individuals of listed species would be offset by the restoration of viable, productive, and self-perpetuating populations of wild chinook in the Clearwater River.

The Proposed Action would be modified to address ESA concerns by imposing harvest restrictions that minimize impacts on endangered Snake River salmon.

2.1.7 Wildlife

No impacts to waterfowl are expected. Temporary displacement of upland game birds occupying the sites is expected during construction activities, but it is expected to be short term and would pose no significant impact to the population. Impacts to fur bearers are expected to be minimal

and potentially beneficial. If supplementation recovers salmon populations, the forage base for otter and mink would increase over a wide area.

Impacts to big game would be local from temporary displacement of animals during disturbance. However, the impact would be insignificant because the size of the facilities is small, facilities would be built along existing, open roadways, and there is ample displacement habitat in upland watersheds.

Overall impacts to osprey and their habitat is expected to be beneficial. Physical disturbance of nesting sites because of construction or operation of the facilities is not expected. Implementing the Proposed Action would result in an immediate increase of forage for raptors by the addition of hatchery-produced smolts migrating in the mainstem. If supplementation proves effective, long-term benefits would also occur as production of naturally-spawning fish and their progeny increases in mainstem rivers.

No impacts to harriers, such as the marsh hawk, are expected. There may be some temporary displacement during construction of satellite facilities.

2.1.7.1 Threatened and Endangered Species

Bald Eagle — The Proposed Action would not adversely impact the bald eagle. If supplementation is successful, tributary and mainstem salmon production would increase the potential food base for the eagles. However, it would probably take place over a longer timeframe. The provision of a high quality prey base would undoubtedly increase the growth and survival of eagle populations in the lower Clearwater River Valley and would supplement carrion food sources of eagles along upper watershed areas.

Grizzly Bear — The proposed program would not adversely impact the grizzly bear. There is a potential to benefit the grizzly bear via an enhanced food resource if supplementation is successful in recovering and sustaining the salmon populations.

Gray Wolf — Wolves are believed to inhabit the Clearwater and Nez Perce National Forests. There have been reports of gray wolf sightings in some of the tributary drainages where the satellite sites would be located (Lolo Creek and lower Selway River). However, there have been no confirmed reports of breeding pairs, pack formation, young pups, or denning within the area.

Peregrine Falcon — There would be no impacts to the Peregrine falcon because populations are outside the program area.

No cumulative impacts on the wildlife resources of the area would occur.

2.1.8 Vegetation

Facilities at Cherrylane, Sweetwater Springs, North Lapwai Valley, Cedar Flats, Mill Creek and Newsome Creek would create no to low impacts to vegetation.

The Yoosa/Camp Creek site is characterized as an undisturbed, forested jurisdictional wetland covering 0.6-0.8 ha (1.5-2 acres). This wetland stabilizes and intercepts sediment, acts as storage for floodwaters, and provides wildlife habitat. Development of this site would remove about 0.5 ha (1.2 acres) of wetland. Development would include installation of ponds and an access road. Impacts to the wetland would be moderate, depending on the number of trees removed and the amount of fill entering the wetland. A complete wetland delineation would be conducted to determine the amount of impacted area and mitigation strategies would be developed to have no net loss of wetland area and minimize impacts on any remaining wetlands.

At Luke's Gulch impacts to a seasonal wetland would be low. An access road would be built across the wetland which, depending on the length and amount of fill, could be authorized under an Army Corps of Engineers Nationwide Permit. Mitigation would be developed to minimize impacts. A wetland delineation would also be conducted.

Operations at all the satellite facilities should have no other impacts on riparian vegetation. No cumulative impacts to vegetation are expected.

No impacts on riparian vegetation are expected at spring chinook direct release sites; low impacts are expected at weir sites.

2.1.8.1 Threatened and Endangered Species

There would be no impact to federally-listed or forest-listed threatened, endangered, or sensitive species. No federally-listed plant species are known to occur in the vicinity of the various program areas.

2.1.9 Land Use

Moderate impacts are expected at Cherrylane, Sweetwater Springs, Luke's Gulch and North Lapwai Valley. Low impacts are expected at the other sites. The proposed satellite facilities, weir sites and control/treatment stream strategies located on national forest system lands are consistent with current forest plans. In addition, continued implementation of current and proposed activities identified in the forest plans, such as grazing, recreation, mining or timber sales would not be affected by the additional

facilities and land uses proposed as long as forest plan standards are maintained; therefore, no amendments to forest plans are necessary. No cumulative impacts on land use in the area are expected.

2.1.9.1 Recreation

The proposed program would have a positive impact on recreational fishing in the area; however, this is not expected to occur until after the runs of chinook salmon have reestablished themselves in the Clearwater River Subbasin. The facilities planned for Cedar Flats would be designed with the USFS so they would not affect Selway River float boaters as they pass by. The Tribe will work with the USFS to minimize impacts to wilderness resources from helicopter trips. Impacts would be low due to the low number of trips required, release sites are located on the edge of the wildernesses, the amount of time the helicopters would be in the wilderness, and the fact that the helicopter would not land in the wildernesses unless an emergency occurs. The Tribe would consult with the USFS on final location of weir sites to avoid conflicts with recreation and other resources.

2.1.10 Socioeconomics

Total employment to operate all of the proposed facilities for the proposed program would require approximately 30 people, half full-time and half part-time. This would be a positive impact in the area, and help reduce the high unemployment in the four county area. Additional local and state sale taxes would be collected during construction. No cumulative impacts on socioeconomics in the area are expected.

2.1.11 Visual Resources

The impact level at Cherrylane, Cedar Flats, North Lapwai Valley would be moderate. The impact level at Sweetwater Springs, Yoosa Camp Creek, Mill Creek and Newsome Creek would be low. At Luke's Gulch, impacts would be low to moderate. Most sites could be screened. No impacts are expected at proposed spring chinook direct release sites and weir sites. No cumulative impacts to visual resources are expected.

2.1.12 Air Quality

Short-term construction activities and longer-term operations would create short-term and long-term air pollutant emissions at Cherrylane and Sweetwater Springs. Impacts to local air quality would be low. No air quality standards would be exceeded. Operation of both Cherrylane and Sweetwater Springs would create vehicle exhaust emissions from facility operators driving to and from the sites. These impacts would be long term, but minor. Overall impacts to the air quality at the central hatcheries would be low.

No impacts to air quality are expected at the satellite sites during construction and operations except short-term impacts. At Luke's Gulch a generator would be used for the pump station. The on-site generator would operate two months of the year and would cause low impacts to air quality in the area. No cumulative impacts to air quality are expected.

2.1.13 Public Health and Safety

Development of facilities for the Proposed Action would not impact the levels of police, fire, and health services that exist throughout the Clearwater River area.

2.2 Potential Impacts from the No Action Alternative

Implementation of the No Action Alternative would preclude impacts to resources associated with the construction and operation of hatchery facilities, and preclude risks related to the introduction of hatchery-reared fish into the natural environment.

The No Action Alternative would not achieve program goals. Existing facilities and production strategies would be unable to produce the number or type of hatchery fish needed.