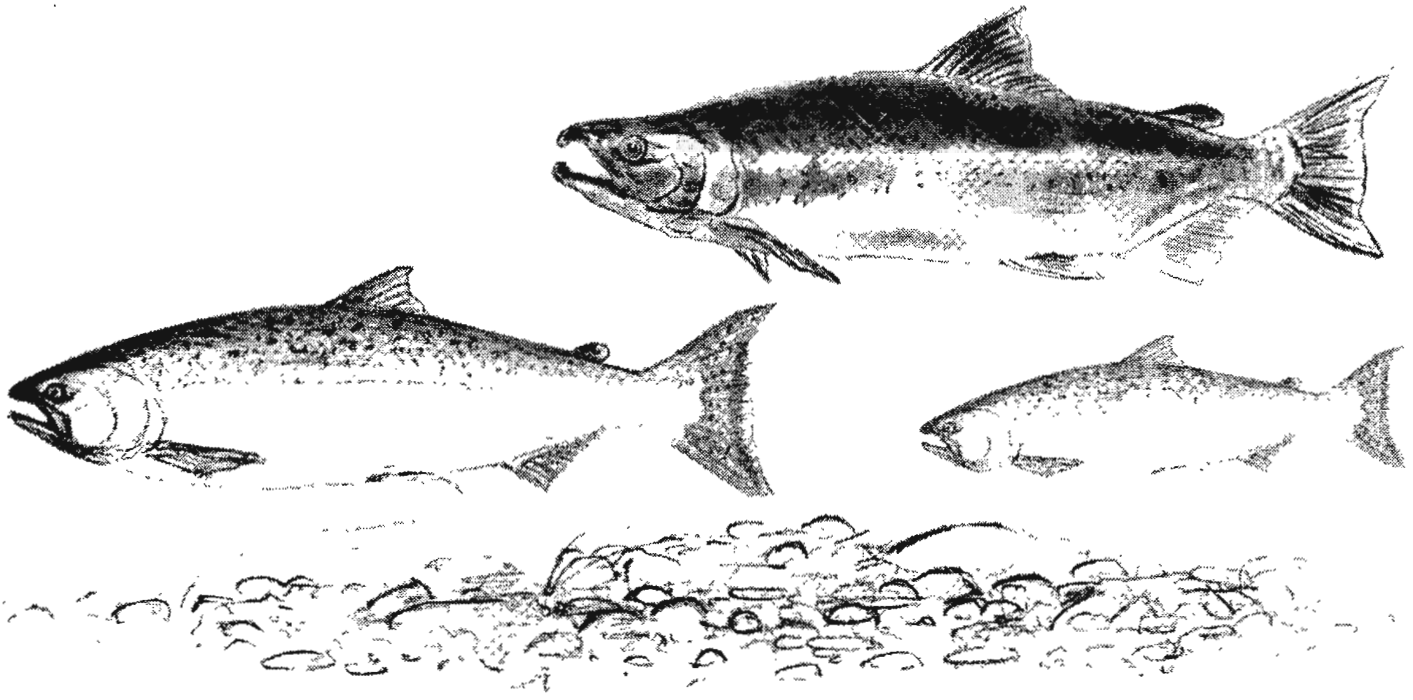
FEBRUARY 1998

GRANDE RONDE BASIN ENDEMIC SPRING CHINOOK SALMON SUPPLEMENTATION PROGRAM

Preliminary Environmental Assessment
DOE/EA–1173
DOE/BP-3018



BONNEVILLE POWER ADMINISTRATION

DISCLAIMER

GRANDE RONDE BASIN
ENDEMIC SPRING CHINOOK SALMON
SUPPLEMENTATION PROGRAM

Preliminary Environmental Assessment
(DOE/EA-1173)

Bonneville Power Administration
PO Box 3621
Portland, Oregon 97208-3621

February 1998

BONNEVILLE POWER ADMINISTRATION

Grande Ronde Basin Endemic Spring Chinook Salmon Supplementation Program

Preliminary Environmental Assessment (DOE/EA-1173)

SECTION 1: PURPOSE OF AND NEED FOR ACTION

1.1 Underlying Need for Action

As part of its responsibilities under the Northwest Power Act (Pacific Northwest Electric Power Planning and Conservation Act of 1980), Bonneville Power Administration (BPA) must **mitigate**[1] the loss of fish, wildlife, and related spawning grounds and habitat attributable to power production at federal hydroelectric dams on the Columbia River and its tributaries. The federal dams have been identified as a major source of mortality for the listed Snake River salmon stocks.

BPA also has responsibilities under the Endangered Species Act (ESA) of 1973 to operate in a way that does not jeopardize the continued existence of listed **species** and to use its agency resources to conserve listed species. In addition, for programs such as the one being proposed, BPA and U.S. Department of Energy (USDOE) policies direct BPA to consult with Native American Tribes and to conduct activities in accordance with federal trust responsibilities to the tribes.

Federal, state, and tribal fisheries managers have determined that severely declining numbers of spring chinook salmon returning to the Grande Ronde Basin in northeast Oregon constitute an emergency situation. These managers (i.e., National Marine Fisheries Service [NMFS], Oregon Department of Fish and Wildlife [ODFW], Nez Perce Tribe [NPT], and Confederated Tribes of the Umatilla Indian Reservation [CTUIR]) consider an **endemic** spring chinook salmon (*Oncorhychus tshawytscha*) **supplementation** program to be an important strategy needed to prevent the extinction of this stock and begin its rebuilding. In addition, the Draft Recovery Plan for Snake River Salmon (NMFS, 1995a), which includes the Grande Ronde Basin spring chinook salmon within its scope, identified the development of a Snake River spring/summer chinook salmon supplementation program as an action needed to promote the recovery of the species. Therefore, BPA is proposing to fund these programs to fulfill the need to prevent the extinction and begin the recovery of spring chinook salmon in the Grande Ronde Basin.

1.1.1 Purpose

Consistent with the related actions and processes (Section 1.1.3), BPA and its partners in the project—the ODFW, NPT, and CTUIR—want to achieve the following purposes through the implementation of the proposed program:

---

[1] The first reference to a word that is defined in the glossary (see Section 6) will be identified by boldface type.

- Maintain consistency with the Northwest Power Planning Council's (NPPC) Fish and Wildlife Program and NMFS's Draft Recovery Plan for Snake River Salmon.
- Enhance **natural production** of spring chinook salmon in the Grande Ronde Basin and increase the probability of survival for the remaining native **populations** through the use of a locally-adapted broodstock.
- Maintain the **genetic** attributes and life history characteristics of the naturally-spawning spring chinook salmon populations in the Grande Ronde Basin.
- Promote the protection and maintenance of tribal treaty rights.
- Utilize new knowledge on the use of **captive broodstock** as a means to assist the recovery of endangered species.
- Provide for administrative efficiency and cost-effectiveness.
- Protect other species and environmental resources.

1.1.2 Historical Perspective

In the late 1800s, the naturally-produced population of Snake River spring/summer chinook salmon was estimated at more than 1.5 million adult fish (NMFS, 1995a). NMFS (1995a) estimates the Snake River **threshold escapement level** for natural spring/summer chinook salmon is 11,000 to 22,000 adults per year. The **recovery escapement level** is estimated at 31,400 per year (NMFS, 1995a). The estimated total adult natural spring/summer chinook returns to the Snake River (as measured by counts at Lower Granite Dam) were only 1,721 in 1994 and 1,116 in 1995 (Washington Department of Fisheries and Wildlife [WDFW] and ODFW, 1996). The preliminary estimate for 1997 was somewhat higher at 3,487 (Norman, 1998), but this figure is still lower than the threshold escapement or recovery escapement levels. Due to the recent low numbers of adult returns, Snake River spring/summer chinook salmon were listed as threatened by NMFS in 1992.

The Grande Ronde Basin historically supported large **runs** of **naturally-produced** chinook salmon, but population declines in the basin have been similar to declines in the Snake River runs (ODFW, 1996). Specifically, the Upper Grande Ronde River, Catherine Creek, and the Lostine River were three of the most productive spawning and **rearing** areas in the Grande Ronde Basin. In 1994, only 3 spring chinook salmon **redds** were observed in the Upper Grande Ronde River, along with 11 redds in Catherine Creek and 16 redds in the Lostine River. Redd counts for these areas in 1997 were 19, 46, and 49 redds, respectively. By contrast, the corresponding estimates of redd numbers in 1957 were 478 in the Upper Grande Ronde River, 374 in Catherine Creek, and 893 in the Lostine River (ODFW, 1996).

1.1.3 Related Actions and Processes

Other activities to reverse the decline of endemic spring chinook salmon in the Grande Ronde Basin have been initiated as part of past or ongoing projects. For example, spring chinook salmon juveniles, referred to as **parr**, have been captured for broodstock by ODFW from the Upper Grande Ronde River, Catherine Creek, and the Lostine River since 1995. This activity required a Section 10 ESA permit, which was issued on August 7, 1995 (Permit No. 973). An application for a subsequent permit was prepared by ODFW (Carmichael, 1996). This application included an evaluation of the potential effects of this activity on the listed spring chinook salmon.. The permit application was approved by NMFS on August 14, 1996 (Permit No. 1,011).

In 1997, sufficient adult spring chinook salmon were available for collection and initiation of conventional supplementation. As a result, a modification to Permit No. 1,011 was requested to allow the collection of naturally-produced adult spring chinook salmon from each stream. This modification was approved on June 20, 1997 (Diaz-Soltero, 1997). Therefore, collection of both adults and juveniles has been addressed under previous Section 10 ESA permits and applications.

The Manchester Hatchery (in Puget Sound near Bremerton, Washington) and the Bonneville Hatchery (at Bonneville Dam) are currently being upgraded to accommodate additional facilities that could be used to implement the proposed Grande Ronde Basin Endemic Spring Chinook Salmon Supplementation Program. NMFS manages the Manchester Hatchery and ODFW manages the Bonneville Hatchery. BPA funding for the additional facilities was addressed in a Categorical Exclusion Environmental Analysis dated July 8, 1996. These facilities are therefore not discussed in this Preliminary Environmental Assessment (EA).

Additional tanks have already been added at the Lookingglass Fish Hatchery that could accommodate any fish from the proposed supplementation program. Because the new tanks were installed at the existing developed hatchery complex, they are not addressed in detail by this Preliminary EA.

1.2 Organization of This Document

This Preliminary EA is organized as follows:

- Section 1 defines the need, purposes, and historical context of the proposed program;
- Section 2 describes the program and explains each alternative in detail;
- Section 3 discusses the existing environment at the proposed sites and provides analysis of the environmental consequences of the Proposed Action Alternative and the No Action Alternative;

- Section 4 provides a list of the agencies and organizations consulted during this process;
- Section 5 is a list of references cited throughout this document; and
- Section 6 is a glossary of terms and a list of acronyms and abbreviations.
- Appendix A provides information on the environmental consultation, review, and permit requirements under the Proposed Action Alternative.

SECTION 2: ALTERNATIVES, INCLUDING THE PROPOSED ACTION

BPA proposes to fund a program designed to prevent the extinction and begin the rebuilding of spring chinook salmon stocks in the Grande Ronde River Basin in the Upper Grande Ronde River, Lostine River, and Catherine Creek in northeastern Oregon. These stocks comprise part of the population of Snake River spring/summer chinook salmon listed under ESA by NMFS in 1992 as threatened. This proposed program, the Grande Ronde Basin Endemic Spring Chinook Salmon Supplementation Program, would be funded by BPA and implemented in cooperation with ODFW, NPT, and CTUIR.

The proposed program includes the following two components to facilitate supplementation of endemic spring chinook salmon stocks in the Grande Ronde River Basin (see Figure 1):

Captive Broodstock: This component refers to salmon or other fish kept in captivity for at least a full life cycle. It involves the collection of juvenile fish from the wild in order to rear them to adulthood, spawn them in captivity, and then release their progeny. The offspring of adults from the conventional supplementation component could also be used as captive broodstock.

The progeny of the adults reared as captive broodstock would be raised in a hatchery to the **smolt** stage. When they are almost ready to migrate to the ocean, most would be transferred to **acclimation** facilities located adjacent to release sites. They would be kept in these natural production areas for up to 2 months for rearing and **imprinting**. The smolts would then be released to migrate downstream to the ocean. Some smolts could be retained at the hatchery to perpetuate the captive broodstock component of the program.

Conventional Supplementation: This component of the program includes the capture and artificial spawning of adults, followed by incubation of the eggs and the rearing of the young in a hatchery. Similar to the captive broodstock approach, fish would be transferred to acclimation facilities for short-term rearing and then released to a stream for migration to the ocean. Some may also be retained as captive broodstock. Fisheries co-managers (ODFW, CTUIR, and NPT) will establish criteria for management of collection of adults for conventional supplementation.

Other potential options could be used with either conventional supplementation or captive broodstock. For example, in years where there are surpluses of any given life stage (e.g., eggs or **fry**), the surpluses could be released into the streams. Overall, flexibility will be incorporated into both the conventional and captive broodstock components to take advantage of changing conditions, such as number of adults returning and survival of offspring.

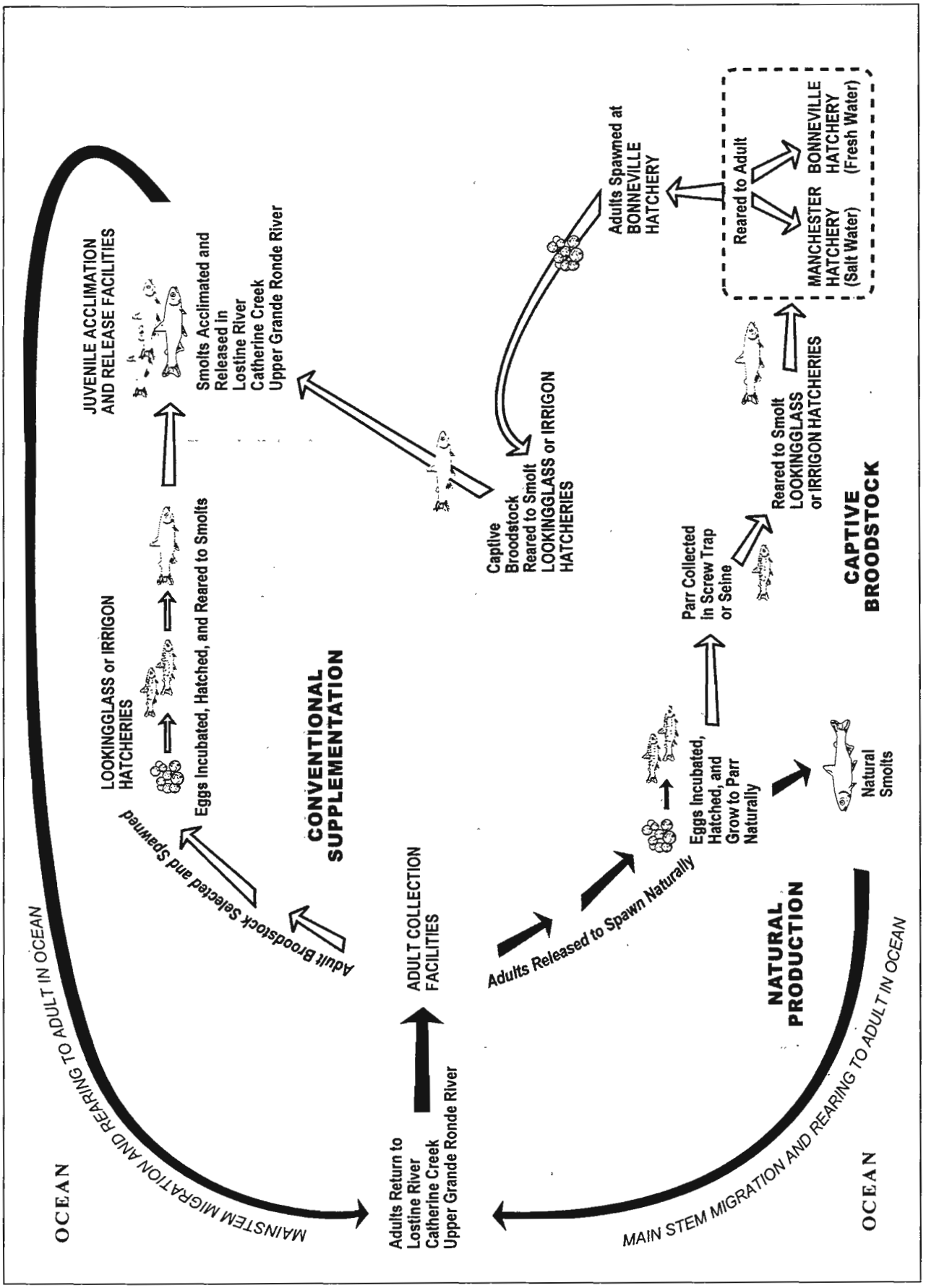


Figure 1. Captive Broodstock and Conventional Supplementation as Compared to Natural Production

Under the Proposed Action Alternative, BPA would provide the additional funding needed to continue the activities initiated in 1995 to conserve and rebuild spring chinook salmon stocks in the Grande Ronde Basin. The proposed program includes collection approaches similar to past or ongoing activities, but it also includes more effective and efficient collection facilities, as well as facilities for acclimation. The program also funds the development of other structures (e.g., short access roads and areas for temporary housing of on-site personnel).

This Preliminary EA evaluates the following two project alternatives:

Proposed Action Alternative: BPA would fund the construction, operation, and maintenance of facilities needed to implement a supplementation program for endemic Grande Ronde Basin spring chinook salmon (see Figure 2). Funding would also include the monitoring and evaluation of the program's effect on returning adult populations on the Upper Grande Ronde River, Catherine Creek, and the Lostine River.

The No Action Alternative: Monitoring and evaluation studies of spring chinook salmon distribution and survival resulting from natural production would continue, but with no further human intervention beyond that required to conduct such studies.

2.1 Proposed Action Alternative

The Proposed Action Alternative consists of two main components (see Figure 1). These components, as well as the monitoring and evaluation aspect of the Proposed Action Alternative, are described below:

Captive Broodstock: This component of the program will be relied upon most heavily during the initial 5 years of the program when run numbers are lowest. Conventional supplementation will be used as well, and over time as run strength increases, the goal is to shift entirely to a conventional supplementation program. The offspring of adult capture could also be used for the captive broodstock component. The main steps in the captive broodstock component of the program (see Figure 1) include the following actions:

- Capture spring chinook salmon parr from the Upper Grande Ronde River, Catherine Creek, and Lostine River for use as broodstock, using screw traps or seines (as previously done).
- Up to 500 parr would be collected from each stream.
- Rear parr to smolt size at the existing Lookingglass and/or Irrigon Fish Hatcheries;

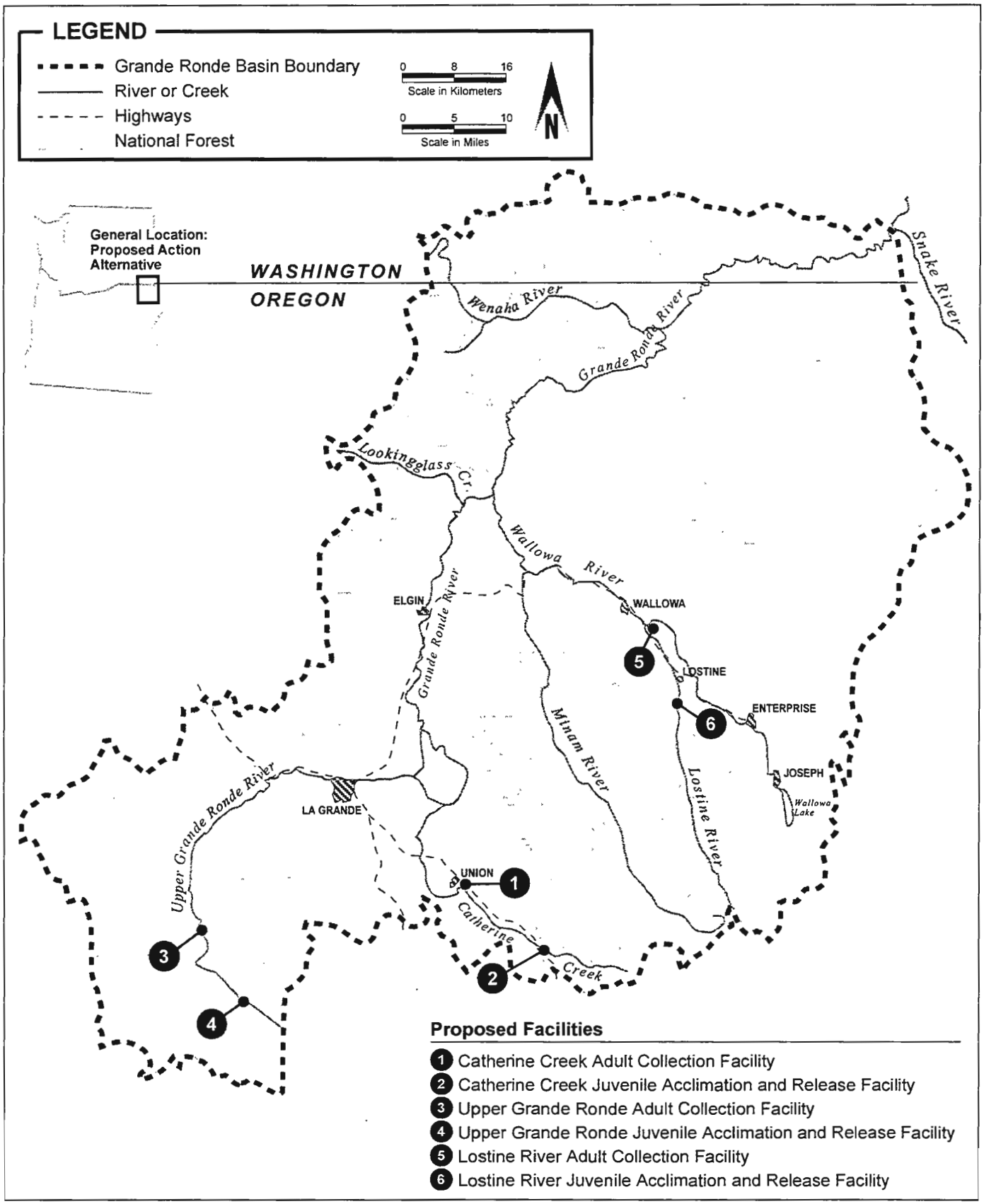


Figure 2. Sites of Proposed Adult Collection and Juvenile Acclimation and Release Facilities

- Transfer smolts to existing facilities at the Bonneville Fish Hatchery near Cascade Locks, Oregon and Manchester Hatchery near Bremerton, Washington, where they will be raised to maturity;
- Transfer adults from Manchester to Bonneville Fish Hatchery, and spawn all mature adults at Bonneville Fish Hatchery;
- Transfer eggs from Bonneville Fish Hatchery to Lookingglass and/or Irrigon Fish Hatcheries, where they will be raised to smolt size;
- Transfer smolt-size fish to proposed new acclimation and release facilities to be constructed in three target drainages, where they will be held for a short period of time (up to two months) for imprinting and released to migrate to the ocean. Up to 200,000 spring chinook salmon smolts would be released annually in each stream (i.e., up to 600,000 for the overall program).

Conventional Supplementation: This component of the program will be used when sufficient returning naturally-produced spring chinook salmon adults are available. It includes the following main steps:

- Collect naturally-produced adults from proposed new adult collection facilities on the Upper Grande Ronde River, Catherine Creek, and the Lostine River;
- Transfer these adults to the existing Lookingglass and/or Irrigon Fish Hatcheries for holding/spawning;
- Rear offspring to release size at the Lookingglass and/or Irrigon Fish Hatcheries;
- Transfer offspring to proposed new acclimation and release facilities constructed in three target drainages, where they will be held for a short period of time for imprinting and then released.

Monitoring and evaluation will be used to gauge the effectiveness of the program relative to its purposes. The results of the monitoring and evaluation will be used to modify details of the program actions, as needed.

A monitoring and evaluation plan will be developed in accordance with requirements of the ESA Section 10 permit (as modified) issued on June 20, 1997. The plan will be prepared by the fisheries co-managers (ODFW, CTUIR, and NPT) and submitted to NMFS (by ODFW) on or before March 1, 1998. This plan will describe approaches for:

- counting and sorting returning spring chinook salmon adults at adult collection facilities;
- monitoring the impact of activities at other program locations (e.g., juveniles trapping locations, juvenile acclimation and release facilities, and participating hatcheries);