

Supporting fish recovery in the Willamette Valley

An overview of the 2008 Biological Opinions



May 2010

Introduction to the Willamette Valley Project

The Willamette River is one of the largest tributaries in the Columbia River basin and contains a diverse and complex system of streams, natural habitat and human-made features. The Willamette Valley Project, built and operated by the U.S. Army Corps of Engineers, consists of 13 multipurpose dams and reservoirs, several fish hatcheries and approximately 92 miles of riverbank protection projects in the southern and central areas of the Willamette River watershed from Cottage Grove, Ore., to just north of Salem, Ore.

The Corps holds and releases water in its reservoirs during Oregon's rainy season to reduce the risks of potentially disastrous flooding in the Willamette Valley. After flood season, the Corps stores water for release during drier summer and fall months (when rivers run low) to improve water quality and conditions for migrating and spawning fish in the Willamette River and several of its tributaries. Stored water also supports summer recreation.

The Corps releases water from mid-April to the end of November for power generation and irrigation. Eight of the dams generate hydroelectricity, sufficient to power about 300,000 homes. The Bonneville Power Administration (BPA) markets the electricity generated at the dams, and the Bureau of Reclamation (Reclamation) sells a portion of the water stored in the reservoirs for irrigation.

Managing these uses and balancing demands for this water requires collaboration among federal, state and local agencies, tribal entities and stakeholders, especially during low water, drought or flood years.

Fish and the changing environment

The Willamette River basin historically supported large numbers of salmon and steelhead. However, even before the construction of the Corps dams, fish populations were in decline from settlement of the valley. Aggressive hatchery practices to boost commercial fisheries and provide fish eggs to hatcheries throughout the Columbia River basin contributed to this decline. Access to historic tributary habitat was blocked by barrier traps, or weirs, used to collect fish for eggs.

This history played a role in the decision to construct some Corps dams without fish passage facilities, as fisheries managers planned to compensate for the loss of wild salmon and steelhead with the building and operation of hatcheries. Several dams (Green Peter, Foster, Cougar and Fall Creek) originally had both upstream and downstream fish passage facilities in their design. Unfortunately these systems failed to provide effective and safe passage, and most were abandoned.

The dams block significant amounts of fish spawning and rearing habitat and the movement of sediment and large wood. Project operations over time have degraded downstream habitat by altering seasonal flows and water temperature patterns that are important for fish. Hatchery fish produced for mitigation have also had a negative effect on the genetic diversity and productivity of wild fish in the basin.

Over the decades, the numbers of salmon and steelhead returning to the basin from the ocean declined sharply, and those returning are now mostly of hatchery origin. Significant growth in human



Federal agencies will take actions to improve fish habitat in the Willamette River and its tributaries by restoring water flows, providing more natural river temperatures and rehabilitating streamside and floodplain habitat.

population, land development and the altering of the natural landscape still contribute to the decline of habitat necessary to support the natural lifecycle of fish in the basin, including resident fish Oregon chub and bull trout.

In response, the U.S. Fish and Wildlife Service (USFWS) listed Oregon chub as endangered under the Endangered Species Act in 1993. The agency listed bull trout as threatened in 1999. The National Oceanic and Atmospheric Administration’s National Marine Fisheries Service (NMFS) listed both the Upper Willamette River spring Chinook and the Upper Willamette River winter steelhead as threatened species in 1999. These two anadromous species travel to the ocean during their lifecycle and return to the fresh water of high Cascade tributaries to spawn.

Biological opinions support species recovery

The Endangered Species Act (ESA) protects species listed as “endangered” or “threatened.” It requires any federal agency proposing an action (or continuing an existing one) that might have an effect on an ESA-listed fish—such as operating a dam—to first seek the formal opinion of the USFWS or NMFS about the effects of their action. USFWS or NMFS may then issue biological opinions to the “action”

agency to ensure their actions do not further impact the continued existence of a listed species or adversely modify their critical habitat.

In July 2008 NMFS and USFWS each issued a biological opinion to the Corps, BPA and Reclamation (the Willamette Valley Project action agencies) to ensure that the continued operation of the Willamette Valley dams, reservoirs, hatcheries and 42 miles of the riverbank protection projects will not reduce the likelihood of survival and recovery of the four ESA-listed fish. The biological opinions include “reasonable and prudent” alternatives and measures, or actions, to minimize possible adverse effects on listed species and their critical habitat. They also require monitoring and reporting to ensure compliance with requirements.

The State of Oregon and NMFS continue their development of a long-term recovery plan for Upper Willamette River spring Chinook and the Upper



Actions under the biological opinions will improve habitat to support the normal timing of adult fish migration and the emergence of juvenile salmon. (Photo courtesy of EWEB)

Willamette River winter steelhead. This plan will be a road map to conserve and recover these fish so that they are no longer threatened or endangered and can be removed from the list. While the two Willamette Valley Project biological opinions cover only the actions of federal agencies, their implementation will provide a strong foundation for long-term recovery.

Willamette River Basin



Identifying and implementing actions

The biological opinions require actions that provide upstream and downstream fish passage at three dams (Detroit, Lookout Point and Cougar), temperature improvements downstream of at least one dam, improvements in downstream flows, screening of irrigation diversions, restoring habitat

and improving hatchery practices and facilities. The biological opinions also specify time frames for each action and include measures for coordination and research.

There are still many uncertainties about the best way to get fish past the Corps' tall dams and how well fish passage alternatives might work. Because of this, the biological opinions do not prescribe specific structures or operations, but rather include biological objectives



Research through the biological opinions will help chart a course toward increased fish survival during passage through the Willamette Valley dams and reservoirs.



Improving hatchery practices and modernizing facilities in the Willamette River basin will reduce the impacts of hatchery fish on wild fish populations and support the reintroduction of fish into habitat upstream of the dams.

such as improved water temperatures and safe fish passage at high-priority dams.

Since some of these actions will involve major investments, the agencies are using the best available science to evaluate potential improvements, individually and in combination with others. This process will identify actions that the agencies can carry out within their legal authority that are

- biologically beneficial,
- technically feasible,
- cost effective, and
- supportive of species recovery planning efforts.

Putting actions in place will call for changes, some sooner and more later, in how the agencies manage

Building on progress and collaboration

The protection and recovery of ESA-listed species will require an ecosystem-wide approach and the cooperative, interrelated efforts of many parties. It will take time, balance, collaboration and money.

Federal, state and local agencies and many Willamette Valley stakeholders are united in their commitment to further protect these species and their habitat. They have been working together for many years, along with private interests, on improvements essential for the successful protection and recovery of this Northwest treasure. They will continue to build on the progress and actions that are already in place.

the dams and reservoirs, both as a system and within specific tributaries. They will demand an increasingly complex balance of uses for a limited, and often unpredictable, supply of water.

For More Information

To learn more about the implementation of the 2008 Willamette Project biological opinions and to follow progress, please visit our Web site, currently: www.nwp.usace.army.mil/pm/programs/biop/home.asp.

Stay in touch with us through e-mail at Willamette@usace.army.mil, by telephone at 503-808-4766 or in writing to:

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For general information about the Corps' Willamette Valley dams and reservoirs (including recreation opportunities) call 541-937-2131 or visit www.nwp.usace.army.mil/op/v/home.asp.

