

# Section 1

## INTRODUCTION: COLUMBIA RIVER BASIN FISH AND WILDLIFE AND THE NORTHWEST POWER ACT

*“The Council shall promptly develop and adopt...a program to protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, on the Columbia River and its tributaries...affected by the development, operation and management of [hydroelectric projects] while assuring the Pacific Northwest an adequate, efficient, economical, and reliable power supply.”*

*--Pacific Northwest Electric Power Planning and Conservation Act of 1980*

### 1.1 THE NORTHWEST POWER ACT AND THE REGION'S FISH AND WILDLIFE

Ever since the Northwest Power Act was passed in 1980, the Columbia River Basin's fish and wildlife have been the subject of increasing attention, not just from groups that are dependent on the river or its fish, but from the public at large. A major goal of the Act is to address the impacts that the region's hydroelectric dams have had on fish and wildlife. The Act pays particular attention to anadromous fish -- salmon and steelhead -- and the impact of hydroelectric dams on these fish. The Columbia Basin's anadromous fish, the Act says, "...are of particular significance to the social and economic well-being of the Pacific Northwest and the Nation and are dependent on suitable environmental conditions substantially obtainable from the management and operation of the Federal Columbia River Power System and other power generating facilities on the Columbia River and its tributaries." During the past decade, significant efforts and money have been spent to protect and rebuild the affected populations.

But those efforts have not been enough to rescue some species. Some of the region's salmon and steelhead runs have been declining at alarming rates, so alarming that, since 1990, certain populations have been the focus of national, as well

as regional attention. In mid-November 1991, to no one's surprise, the National Marine Fisheries Service officially declared Snake River sockeye salmon an endangered species. In April 1992, the Fisheries Service designated Snake River spring/summer and fall chinook as threatened species. In August 1994, these fish were reclassified as endangered species. The 1992 declarations triggered a set of actions required under the federal Endangered Species Act of 1973. One of these actions is the development of recovery plans. The National Marine Fisheries Service assembled a team of experts who developed recommendations for a Snake River salmon recovery plan in May 1994. The Fisheries Service plans to prepare its recovery plan in early 1995.

The urgent need for adequate efforts to rebuild the dwindling Snake River salmon populations is underscored by the condition of the runs themselves. These populations are at perilously low numbers. Consider these figures reported by the Oregon and Washington departments of fish and wildlife. In 1975, these agencies estimated the Snake River sockeye population at 255 adult fish returning to the mouth of the Columbia River to begin the journey to spawn. In 1993, the number was 19 fish. In 1986, the departments estimated the Snake River fall chinook population at 2,796 fish returning to the mouth of the Columbia. In 1993, the number was 1,636. After subtracting harvest and an estimate of the losses to other

causes, only 742 of these fish are believed to have passed all eight dams on the journey to spawn above Lower Granite Dam. In 1994, the estimate was even lower -- 400 to 500 fish.

Historically, these runs have been declining. River velocities generally have been declining as well during the critical spring migration period for juvenile salmon, although some of these declines in water velocity have been offset by the water budget called for in this program. Additionally, salmon are cold-water fish that are particularly susceptible to changes in water temperature, yet average water temperatures in the Columbia -- measured at Bonneville Dam -- have been rising steadily since the 1940s, according to the Washington and Oregon fisheries departments (see Figures 1-1 and 1-2).

All of this is bad news for the salmon, and for steelhead as well, which support popular recreational fisheries in the Columbia and Snake. These facts, combined with the Endangered Species Act, send a clear message that the region must redouble its efforts to protect its fish, especially those that spawn naturally in rivers rather than in hatcheries. The Northwest Power Planning Council's concern is not just for those runs that have been placed on the national endangered species list, but for all salmon runs in the Columbia Basin.

The Council was created in part to give the region an opportunity to design and implement a program for protection of all anadromous and resident fish and wildlife in the Columbia Basin, rather than having narrowly focused recovery programs developed in Washington, D.C., or in federal court. The Council believes that if its program is fully implemented, future Endangered Species Act listings could be unnecessary. Full implementation of the program also could help keep contentious fish and energy disputes out of court. An effective fish and wildlife rebuilding effort must go beyond the immediate listed stocks if our region ever is to get off the Endangered Species Act treadmill.

In addition, the region has other legal obligations that must be met regarding fish and wildlife, and which are complemented by the Council's program. These include: tribal treaty fishing rights, Executive Order tribal rights, salmon rebuilding obligations of the Pacific Salmon Treaty with Canada and requirements of the federal Clean Water Act. These necessitate measures beyond those to remove listed salmon stocks from the Endangered Species list.

Fortunately, the Northwest did not lose time debating whether Snake River sockeye and the other listed runs -- spring, summer and fall chinook -- are in fact threatened or endangered. Building on its decades of experience with salmon, the Northwest began developing its own regional plan in 1991 for those species that are most critically depleted, as well as for other salmon and steelhead populations basinwide.

Important groundwork for the salmon rebuilding effort was laid in a Salmon Summit convened in late 1990 by the region's Governors and Oregon Senator Mark Hatfield. The summit, made up of the user, policy and interest groups connected with the Columbia Basin's waterways, came up with critical short-term measures that were implemented in 1991 to stem further decline. Those measures bought the region time.

From there, development of a regional salmon rebuilding plan moved to the arena of the Northwest Power Planning Council, the interstate body that has provided a regional forum for the past 12 years through its Columbia River Basin

Fish and Wildlife Program. The Council, whose members are appointed by the Governors of Idaho, Montana, Oregon and Washington, develops its program under the Northwest Power Act.

Just as the endangered species petitions for Snake River salmon underscored the critical condition of some Columbia Basin salmon runs, the petitions also highlighted the need to address impacts on salmon at every stage of their life cycle. After the Salmon Summit, the Governors asked the Council to expand its focus to address all activities that impact salmon, not just the hydroelectric system.

The Council took up where the Salmon Summit left off in the spring of 1991 by initiating a process to amend its fish and wildlife program. The result was the 1992 Strategy for Salmon.

That strategy was challenged in lawsuits filed by environmental groups, industries and an Indian tribe. In September 1994, the Ninth Circuit Court of Appeals, which has jurisdiction over lawsuits filed against the Council, issued its opinion. In short, the court remanded the Strategy for Salmon to the Council with instructions to make clear findings in the program on recommendations for program measures, while observing that the Council should take bolder actions to protect the fish and give greater deference to the region's fish agencies and Indian tribes when they submit recommendations for program measures.

Earlier in 1994, pursuant to commitments made in the Strategy for Salmon, the Council had begun a process of amending the strategy. Thus, the court's opinion provided valuable assistance in that process.

This document, the 1994 Columbia River Basin Fish and Wildlife Program, resulted from the amendments, which were approved in a 6-2 vote. A minority opinion can be found in Appendix E. In the 1992 Strategy for Salmon, the Council concluded that additional measures would be needed to enhance salmon survival in the Snake and Columbia rivers, and the Council committed to seek improved information about those measures and consider them in the 1994 amendment process. These additional actions, including a phased strategy for implementing reservoir drawdowns, are detailed in Section 5 of the 1994 program. The

Council intends that the elements of this program be adapted as needed and as new information becomes available. Not only has the Council provided flexibility to make changes as appropriate, it has designed the program to add to the region's knowledge of fish and wildlife.

Such a program, developed with regional input, should prove to be an essential guide for federal agencies in devising recovery plans for fish or wildlife listed under the Endangered Species Act. Without it, the federal government or courts would be left to impose a plan of their own. A regional plan, based on extensive input from all the basin's interest groups as well as Northwest citizens, has the advantage of reflecting the unique values, perspective and interests of the region.

But this document represents much more than a guide to recovery actions. It is the first truly comprehensive strategy for fish and wildlife in the Columbia River Basin. It is a long-range plan to amend river operations, increase productivity, repair habitat and refine harvests. It is designed to balance competing river uses while strengthening and rebuilding fish runs throughout the basin. The Council's aim is to make future Endangered Species Act petitions unnecessary and ultimately to produce healthy and harvestable populations of salmon and steelhead, as well as protect resident fish and wildlife.

Regarding resident fish -- those that don't migrate to the ocean during their lives -- this program recognizes that these fish suffered from many of the same impacts as salmon. In 1994, for example, the Kootenai River white sturgeon was added to the federal endangered species list. The Council's goal for resident fish is to recover and preserve the health of populations that were injured by the hydropower system, where feasible. If it is not feasible to mitigate losses where they occurred, then these losses will be mitigated elsewhere in the basin.

The Council's goal for wildlife is similar. Some flood plain and riparian habitats that are important to wildlife were inundated when reservoirs behind the dams filled with water. A number of other dam-related impacts altered land and streamside areas where wild birds and animals live. The goal for wildlife in this program is to achieve and sustain levels of habitat and species productivity that fully

mitigate wildlife losses resulting from the construction of dams.

Funding for resident fish and wildlife mitigation proceeded at low levels in the past, and the Council expects these activities will get a higher percentage of the Bonneville Power Administration's fish and wildlife program budget in the future. Bonneville, as the region's federal electrical power marketing agency, funds the majority of actions called for in this program, using revenues from the sale of electricity. The Council adopted a level of approximately 15 percent of the fish and wildlife budget for resident fish and 15 percent for wildlife -- leaving 70 percent for salmon -- as an appropriate budget planning target.

## 1.2 HISTORICAL PERSPECTIVE

### 1.2A Key Principles from the Northwest Power Act

Mainstem river survival improvements, habitat and production measures, and harvest regulations all must work toward rebuilding healthy fish and wildlife populations. Drawing a blueprint for these changes ultimately requires a judicious consideration of all the standards of the Northwest Power Act. Within this framework, however, several points deserve emphasis:

- **System approach:** In developing the Columbia River Basin Fish and Wildlife Program, the Council must deal with the Columbia River and its tributaries as a system. This system touches a broad range of human activities: hydropower production, navigation, flood control, agriculture, recreation and many other land and water development activities. Opportunities for improved coordination and cooperation, as well as for increased conflict, are enormous. Building a fish and wildlife program that properly accounts for these activities requires the broadest possible involvement of the public and affected interests.

- **Regional power supply:** While the fish and wildlife program must “protect, mitigate and enhance fish and wildlife affected by the development, operation and management” of Columbia River Basin hydropower facilities, it must do so in a way that ensures the region “an adequate, efficient, economical and reliable power supply.” This concept is discussed further in Section 1.8. The Council has called for aggressive exploration of structural changes to the hydropower system, such as reservoir drawdown strategies, as well as non-structural changes, such as innovations in system operations, seasonal power exchanges, water use efficiencies and the like. These non-structural innovations in particular will require careful integration of power system, fish and wildlife, and other water needs.
- **Federal responsibilities:** The Northwest Power Act explicitly gives Bonneville the authority and responsibility to use its legal and financial resources “to protect, mitigate, and enhance fish and wildlife to the extent affected by the development and operation of any hydroelectric project of the Columbia River and its tributaries in a manner consistent with ... the program adopted by the Council ... and the purposes of this Act.” The Act further requires Bonneville and the federal hydropower project operators and regulators to take the program into account to the fullest extent practicable at each relevant stage of their decision-making processes.
- **Public involvement:** The Council is required to consult with a variety of groups in the Northwest and to maintain comprehensive programs for public participation. This program reflects those requirements.
- **Fishery management:** The region’s fish and wildlife agencies and Indian tribes (often described collectively in this program as the “fishery managers”) play a special role in the program. The program must complement the agencies’ and tribes’ existing and future activities, and also must be consistent with the legal rights of Columbia Basin tribes.
- **Best available scientific knowledge:** In considering fish and wildlife recommendations, the Act requires the Council to rely on the best available scientific knowledge. Because that knowledge often is incomplete, future research, particularly regarding salmon, should focus on critical uncertainties. The region must take pains to monitor actions and make adjustments where advisable.
- **Lowest cost alternatives:** Where equally effective means of achieving the same sound biological objective exist, the Council chooses the alternative with the lower economic cost. The Council is committed to finding ways to do such analysis. In addition, the Council expects that Bonneville will do additional work on cost-effectiveness in its implementation of habitat measures.
- **River flows:** The Act specifically recognizes that salmon depend on “suitable environmental conditions substantially obtainable from the management and operation” of power generating facilities of the Columbia River Basin. The Council is directed to adopt measures to “provide flows of sufficient quality and quantity between such facilities to improve production, migration and survival of such fish as necessary to meet sound biological objectives.”
- **Equitable treatment:** The Act requires federal implementing agencies to manage and operate hydropower facilities to provide “equitable treatment for fish and wildlife with the other purposes for which such system and facilities are managed and operated.” Therefore, the Council’s determinations regarding salmon and fish and wildlife survival in the main bodies of the Columbia and Snake rivers, where the major federal dams are located, aim to meet the needs of salmon with a level of certainty comparable to that accorded the other operational purposes.

## 1.2B Program Development

The Council adopted its first Columbia River Basin Fish and Wildlife Program in 1982. The program was amended in 1984, 1987, 1991-1993 and 1994. The 1994 Columbia River Basin Fish and Wildlife Program supersedes previous versions

of the program and includes some measures from previous programs that were not completed, but remain relevant.

The Northwest Power Act directed the Council to develop this program and make periodic major revisions by first requesting recommendations from the region's federal and state fish and wildlife agencies, appropriate Indian tribes (those within the basin) and other interested parties. These recommendations are to include measures that Bonneville and other federal agencies can implement to protect, mitigate and enhance fish and wildlife affected by hydroelectric dams; objectives for developing and operating hydroelectric dams in a way designed to protect, mitigate and enhance fish and wildlife; and coordination of fish and wildlife management, research and development (including funding).

From the beginning, the level of public participation has far exceeded the Council's expectations. The quantity and quality of the comments are evidence that the Council, the fish and wildlife agencies, Indian tribes, Bonneville, federal project operators and regulators, utilities and the public are committed to solving the basin's fish and wildlife problems permanently. The interest in this program and the amount of thought, time and effort put into this process have been exceptional.

## **1.2C Role of the Council and Other Agencies**

In adopting the Northwest Power Act, Congress expected to overcome the harm to fish and wildlife caused by Columbia River hydroelectric dams. To that end, the Act anticipates that the Council and the federal implementing agencies will cooperate to achieve the goals set by Congress, as well as respect the role each has to play. Fish and wildlife protection, mitigation and enhancement will never occur if each agency tries to substitute its individual judgment for the scientific knowledge, expertise and judgment of those who went before.

The Council is a planning, policy-making and reviewing body. It develops and monitors implementation of this fish and wildlife program,

which is implemented by the Bonneville Power Administration, the Corps of Engineers, the Bureau of Reclamation and the Federal Energy Regulatory Commission and its licensees.

In the case of program measures involving non-federal projects, the processes of the Federal Energy Regulatory Commission must be respected. Under the Federal Power Act, the Federal Energy Regulatory Commission must review a program measure and the license of the affected hydroelectric project to determine if the license can and should be amended.

In developing and amending the fish and wildlife program, the Council incorporates into a draft amendment document qualifying recommendations or modifications of recommendations received from outside parties, along with proposals the Council initiates on its own.

When the Council issues draft amendments, an extensive public comment period is initiated, which includes public hearings in each of the four states and consultations with interested parties. During the development of the initial program and the subsequent amendment proceedings, public comments resulted in thousands of pages of testimony from groups and individuals. After closing the comment period and following a review and deliberation period, the Council adopts final program measures.

Adoption of the amended program must occur within a year of the deadline for receiving recommendations for amendments. When the Council declines to adopt any recommendation, it must explain, as part of the program, why the recommendation is less effective than the existing program measures or why it is inconsistent with the standards for program measures set up by the Act.

The Council is calling on the parties identified as program implementors to report to the Council on their progress. If the measures are not being implemented, the parties should explain why. For its part, the Council is committed to monitoring and evaluating implementation of this program much more aggressively than in the past. It will do so through audits -- shared regionally and with the National Marine Fisheries Service -- and through

oversight activities associated with Council meetings.

The Council has not attempted to distinguish between those measures where the Council believes it has direct authority and those measures where that authority belongs to others. Ultimately, the successful recovery of salmon, steelhead, resident fish and wildlife populations depends less on legal authority than on cooperation. Only through the committed and enthusiastic participation of all affected parties will a full recovery be achieved.

## **Bonneville**

1.2C.1 As part of the effort to remain competitive and avoid conflicts of interest, and to minimize duplicative implementation efforts under the fish and wildlife program, explore the potential for improving program implementation through an agreement transferring the administration of Bonneville's fish and wildlife program funding functions to an entity created by the Columbia Basin's federal and state fish and wildlife agencies and Indian tribes, or in the absence of such an entity, to the U.S. Fish and Wildlife Service. In these discussions, consider the need for rebuilding targets, and the means to secure a commitment on the part of the implementing entity to carry out the Council's fish and wildlife program. The discussions should also consider mechanisms to hold the implementing entity or agency accountable for results, perhaps through the use of independent audits. The discussions should also explore an implementation work plan development process, which identifies measures to be funded, and an implementation budget and planning target covering a three-to five-year period. Report to the Council by December 31, 1995, on the status of the discussions and the provisions of any tentative agreement that may be reached. If approved by the Council, implement the agreement. If an agreement has not been

reached, report on the status of negotiations and the issues under discussion.

## **1.2D Lessons of the Past Decade**

Today, the Columbia River Basin Fish and Wildlife Program is not quite 13 years old, about the age of three generations of salmon. Unfortunately, the problems for the basin's fish have been more than a century in the making. Human activities ranging from fishing to agriculture to power production took a toll, and so did natural events such as drought, floods and ocean conditions.

If 13 years have not been enough time to arrest the salmon's decline, it has been time to teach the region some important lessons. Any approach to fisheries recovery will require contributions from all who benefit from the river. And a rebuilding plan must be comprehensive. Piecemeal efforts simply have not been effective.

The challenge is best illustrated by the salmon's extensive environment, an environment defined by migratory habits that recognize no governmental boundaries. Salmon hatch in inland headwaters and travel downstream to mature in the ocean. Depending on the species, after one to five years, usually three to five, they return to the river. Thanks to an extraordinary homing instinct, they make their way to their home tributary where they will spawn and die. This wide-ranging environment, sometimes encompassing thousands of miles, became the arena for salmon recovery efforts in the 1980s.

During that decade, for the first time, the region looked at a coordinated approach involving the salmon's habitat; their passage down the rivers, particularly the mainstems of the Columbia and Snake; their harvest; and their production (both natural and artificially aided). This coordination echoes pleas to take an ecosystem approach to recovery under the Endangered Species Act, and it remains the foundation for a recovery plan in the 1990s.

While the foundation laid in the past decade for a systemwide approach was sound, the focus of the 1980s proved too narrow. The fish and wildlife

program's interim goal was to double runs, but not at the expense of genetic diversity. Overall runs ranged between about 1.5 million and 4 million in the 1980s. However, some weaker runs continued to decline, thereby threatening genetic diversity and fitness. It became more apparent that the diversity of the runs, not just the number of fish, was an important consideration.

Despite some gains made in the early 1980s, overall salmon and steelhead populations are about a fifth of their pre-development run size, and only about 20 percent of the remaining fish spawn in the rivers. (See Figure 1-3.) Most wild and naturally spawning stocks are declining. (See Figures 1-4, 1-5 and 1-6.)



The Council is concerned about all weak stocks of fish and wildlife in the basin. The program gives highest priority to ratepayer-financed mitigation for weak, but recoverable, native fish populations injured by the hydropower system. The Council prefers to rebuild native species in native habitats, where feasible, but recognizes that this must be done carefully to avoid impacts on existing populations.

The Council continues to support increasing resident fish populations where salmon runs cannot be rebuilt. Such substitutions have been part of the fish and wildlife program since the early 1980s. Under the program's direction, and in consultation with state agencies and Indian tribes, hatcheries have been built to raise and release resident fish.

## 1.2E Expanded Focus

The endangered species listings for Snake River salmon dramatically underscored the need to make preserving diversity of salmon runs a higher priority. This renewed focus also affected the Council's own role. Previously, the Council's fish and wildlife program had addressed primarily the effects of the hydropower system on salmon and steelhead.

With the endangered species listings, it became clear that a realistic recovery effort had to be broader, involving all river uses: power production, flood control, agriculture, navigation, water supply, recreation, land development practices and fishing. When the Northwest Governors, Congressional delegation and the National Marine Fisheries Service looked to the Council to produce a comprehensive recovery plan, they also asked the Council to assume this broader role. The Council has done so. It developed an integrated plan that seeks contributions from all river users.

## 1.3 COSTS AND RESPONSIBILITIES

### 1.3A Principles Governing Costs

Congress established three major principles in the Northwest Power Act to govern the economic costs for measures in this fish and wildlife program. First, hydropower ratepayers are to pay only for those measures designed to deal with the effects of hydropower development and operations. Second, measures must protect, mitigate and enhance fish and wildlife while assuring the region an adequate, efficient, economical and reliable power supply. Third, program measures must use the alternative with the lowest economic cost where equally effective ways of reaching the same sound biological objective exist. The Council has taken specific steps in the following program areas to further the economic principles set down by Congress.

- **Salmon and steelhead losses and goal:** As part of the 1987 Fish and Wildlife Program, the Council conducted an extensive analysis to estimate the scope of losses of salmon and steelhead related to hydropower development and operations. It concluded that from 5 million to 11 million fish have been lost due to the effects of hydropower. As a result, the program's goal of doubling the current run size of 2.5 million salmon and steelhead is well within the scope of hydropower-related losses. (See Section 4.1: Salmon and Steelhead Goal.)
- **Salmon and steelhead policies:** The policies that will guide efforts toward the doubling goal are designed to help promote sound ratepayer investments. For example, the program calls for assessing the genetic risks of proposals related to producing more fish. Genetic diversity among fish is essential to the long-term productivity of salmon and steelhead stocks in the basin. The program also emphasizes the crucial need for passage at the dams and adequate river flows between the dams on the mainstem Columbia and Snake rivers if fish produced with ratepayer funding in the tributaries and in hatcheries are to survive. The program's salmon and steelhead production policy calls for developing "master plans" to resolve potential conflicts among increased production, mixed-stock harvest and other objectives, such as gene conservation,

before the Council approves ratepayer funding of new artificial production facilities. In its harvest management policy, the program calls on harvest managers to regulate catch, including mixed-stock harvest, to support ratepayer-funded production and passage efforts. The program's adaptive management policy encourages projects to be designed to produce information that will reduce biological uncertainty and aid future decision-making.

- **Cost estimates for program measures:** The Council has reasonably accurate cost estimates for measures in the program. These estimates either were provided to the Council or were developed by Council staff. There is a problem, however, in that Bonneville is understandably reluctant to provide cost estimates for projects it later will negotiate with contractors. The Council expects to resolve this problem in the future so that the cost of specific measures can be estimated with more precision.
- **Research priorities:** The program focuses ratepayer-funded salmon and steelhead research into six areas of emphasis, each aimed at improving the effectiveness of existing production and passage facilities and techniques.
- **Monitoring and evaluation:** The Council is committed to a monitoring and evaluation program to promote sound ratepayer investments in salmon and steelhead projects. Changes in salmon and steelhead run sizes will be evaluated to determine whether those changes are due to ratepayer-funded efforts or to other causes. Monitoring and evaluation also will provide feedback so that ineffective actions can be identified and changed.
- **Water budget evaluation:** The program reflects the need to examine the effectiveness of the water budget and to explore alternative proposals to provide river flow benefits to fish while minimizing impacts on the power system or to resident fisheries.
- **Dam passage:** The program emphasizes installation of bypass systems and use of fish transportation, while also calling for investigation of the use of surface bypass and

limited spill, as the long-term method to improve fish passage around mainstem dams.

- **Resident fish and wildlife criteria:** The program includes criteria that specifically tie resident fish and wildlife mitigation projects to hydropower-related losses of those species and their habitat.
- **New hydropower development:** Measures calling for conditions on new hydropower development should help protect against new hydropower generation that would undermine ratepayer-funded enhancement of salmon and steelhead, resident fish and wildlife.
- **Contributions from others:** Throughout the program, the Council recognizes that non-hydropower factors also have contributed significantly to declines in fish and wildlife in the basin. Flood control operations, irrigated farming, overfishing, logging and mining are among them. As a result, the program notes the need for complementary funding or other efforts from sources other than hydropower ratepayers.

The Northwest Power Act anticipates that Bonneville will play an active role in this program's implementation by requiring the agency to take the necessary steps to ensure the "timely implementation" of the Act in a "sound and businesslike manner" In addition to fulfilling the duties imposed on the other agencies, Bonneville also is to use the powers provided by the Act and other relevant laws, and the finances available in the Bonneville fund, to protect, mitigate and enhance fish and wildlife. These actions are to be consistent with both the requirements of the Act and with the Council's program. Bonneville has the authority to buy, sell and exchange electrical power, provide transmission services, propose power rates, and participate in power system planning and operations.

With the division engineer for the Corps of Engineers, the Bonneville administrator also acts as the U.S. entity in carrying out the provisions of the Columbia River Treaty regarding use of Columbia River Basin water stored in Canadian reservoirs. All these provisions indicate that federal project operators and regulators, particularly Bonneville,

are expected to ensure that their decisions reflect this program and other requirements related to fish and wildlife.

### 1.3B Three Types of Costs

There are three significant categories of fish and wildlife costs that affect the Bonneville Power Administration's rates:

#### Project Costs

Bonneville funds construction of hatcheries, habitat projects, research and other fish and wildlife initiatives in the Council's program. The budget for these projects currently amounts to between \$80 million and \$90 million each year. The Council estimates that the new projects adopted in this program could add about \$25 million to Bonneville's project budget. The average annual budget would therefore total \$115 million a year. The Council expects that some of the additional activities described in these measures can be funded through modifications of existing projects.

#### Repayment Obligations

Bonneville repays the U. S. Treasury for most of the costs of passage facilities at the Columbia and Snake river federal dams. These are the original fish ladders, the screens and bypass systems whose installation at the dams began in the 1980s, and the juvenile salmon transportation facilities. The annual payment for these existing facilities was about \$60 million in 1994. The Council estimates that it will cost an additional \$95 million a year, beginning in 1998, to repay the cost of the additional investments for dam modifications in this program. Bonneville's total fish and wildlife repayment obligation would then average about \$155 million each year.

#### Foregone Hydropower Revenues

When the Council adopts measures to change river operations to provide improved flows for salmon, Bonneville is not able to make as much money from power sales as it could before. In many winters, Bonneville must buy power from other suppliers to allow the reservoirs to store water for spring and summer salmon flow releases. Spill and lowered mainstem reservoir

levels also reduce the ability of individual dams to generate electricity.

In 1984, the Council adopted its first "water budget" and in 1989, adopted a spill agreement. These measures reduce Bonneville's power sale revenues by an average \$55 million a year. The interim flow operations of the 1992 Strategy for Salmon added approximately \$45 million in average annual revenue impacts to Bonneville. Together, those earlier measures resulted in a net revenue impact to Bonneville averaging about \$100 million annually. The Council estimates that the impact to Bonneville from the foregone revenue and additional energy purchases necessary to implement the measures in this program will average an estimated \$57 million annually, beginning in 1995. This average annual cost will rise to nearly \$80 million in 1999. Thus, the total revenue impact to Bonneville from foregone revenue and replacement power purchases for salmon operations will average approximately \$157 million, beginning in 1995, and increase to \$180 million in 1999.

These additional costs are significant. Together with the cost of the current program, total program costs will amount to approximately \$450 million per year on average. Elsewhere in this document, the Council discusses the impact of these costs on Bonneville's continued ability to be an economic supplier of electricity. The Council believes there is a need for the federal government to assist Bonneville with and share in these costs through adjustment of Bonneville's Treasury repayment obligations, general appropriations or other mechanisms.

#### Potential Rate Increases

To evaluate these costs in terms of their effect on Bonneville's rates, the Council looked at possible rate impacts, assuming that no federal assistance is provided. When incorporated into Bonneville's total budget, the Council estimates that these costs could translate into about a 6 percent wholesale rate increase by 1997, rising to about a total of 9 percent by 2015, as these additional measures are implemented. This is the increase to Bonneville's wholesale customers. The

Council estimates that the cost to a typical residential ratepayer would be about a 4 percent increase in the home electricity bill in 1997, rising to 6 percent by 2015. Stated another way, these estimates predict that typical Northwest monthly electricity bills will increase by about \$2 a month by 1997 and a total of \$3 a month in 2015, to pay for the additional salmon measures called for in this program.

Additional cost analysis is included in Appendix B. Those costs are reported in levelized dollars.

### **1.3C Regional Funding and Staffing**

Because it is a regional program to rebuild weak salmon stocks, the Council's program calls for participation and funding by state and federal entities and others.

All levels of government must bear responsibility for adequately funding and staffing salmon rebuilding measures, or run the almost certain risk that the recovery effort will be delayed, with potentially disastrous results.

Until now, most salmon rebuilding costs have been borne by electric power consumers through the Bonneville Power Administration pursuant to the provisions of the Northwest Power Act. To the extent that measures -- including off-site measures and programs -- respond to the impacts on salmon by the region's hydroelectric system, these costs are appropriate. But salmon runs were diminished, and rebuilding measures are required, because of a variety of other causes. The costs of responding to these other causes should be shared by all responsible parties. The Council will work with the states, Bonneville and other federal agencies to clarify funding responsibilities.

The Council intends to make cost-effectiveness an important part of the program. A successful program is one that provides permanent restoration of salmon runs at the lowest cost. Such a program cannot be restricted to any one life stage, but must comprehensively include all stages. Short-term, least-cost calculations are not part of this plan, but aiming for long-run success is.

## **1.4 COUNCIL COMMITMENTS**

The Council finds this program to be consistent with the purposes of the Northwest Power Act. The Council has evaluated the measures included in this program on the basis of the recommendations, supporting documents, consultations and public comment contained in its record. It has determined that the measures will protect, mitigate and enhance fish and wildlife affected by the development, operation and management of hydroelectric facilities located on the Columbia River and its tributaries, while assuring the Pacific Northwest an adequate, efficient, economical and reliable power supply. The Council also has determined that these measures meet the list of program requirements contained in Section 4(h)(6) of the Act.

The Council is committed to a stringent program of monitoring and evaluating progress to ensure that the region's investment in fish and wildlife pays off. Rebuilding targets and performance standards are being instituted to provide explicit means of measuring progress. The Council will modify or eliminate activities that do not provide sufficient progress toward stated goals and objectives, and will consider other actions.

In comments on drafts of this plan, several parties have raised concerns about the effects that drafting upriver storage reservoirs for salmon flows could have on resident fish and wildlife in headwater areas. The Council does not intend to address the environmental problems of salmon by indiscriminately shifting environmental problems to upriver areas. It is committed to avoiding such impacts as much as possible, and to monitoring and evaluating them should they occur. Section 903(b)(1) of the 1987 Fish and Wildlife Program has been included in the revised program. See Section 10.3A.

Other comment received in public review of this program made it clear that the region is divided over the scientific merits of some major measures to rebuild fish populations. Three issues that remain intensely debated are the relationship of increased flows to fish survival, transportation and the proper role of supplementing wild and naturally spawning fish populations with hatchery-reared fish. These will be examined closely under the Council's program.

The Council also strongly believes that the region must work to improve its understanding of the interdependence among fish, wildlife and human activities, such as power system operations, harvest, water use and land management. Relatively minor changes in any one of these can appear to have minor impacts on salmon. Taken together, they can have significant cumulative impacts.

The Council is obligated to base its decisions on the best available scientific knowledge. But in some cases, even the best data are sketchy. The Northwest Power Act and the Endangered Species Act processes make it clear that salmon stocks cannot wait for complete resolution of the debate. The Council has chosen to act now, recognizing that the actions can be modified as new information is available.

## **1.5 OTHER RESPONSIBILITIES**

The Council believes that the Northwest Power Act required changes in planning, operations, regulation and other decision-making processes to implement this program and fulfill the Act's fish and wildlife objectives. To address that necessity, the Council has adopted measures designed to ensure that program measures are viewed as hard constraints on the hydroelectric power system to the full extent required by the Act. Bonneville is to act in a manner that is consistent with the program when it signs contracts, grants billing credits, acquires resources and takes other action pertinent to this program. The Federal Energy Regulatory Commission is to initiate appropriate proceedings to implement program measures promptly at non-federal projects.

All federal project operators and regulators are to integrate program water flow measures into power system rule curves, consider the use of Canadian storage as a source of water for fish flows, and maintain all fish facilities at their projects in good repair. The Council also urges these operators and regulators to develop mutually satisfactory consultation and coordination

arrangements with fish and wildlife agencies and tribes. Ultimately, the Council expects federal project operators and regulators to implement program measures or explain in detail why they cannot do so.

The Council is an interstate compact. Its members are appointed by the Governors of the Northwest states. The Council is not a federal agency. Its program is developed under the Northwest Power Act, not the National Environmental Policy Act nor the Endangered Species Act. However, most of the program's specific measures are implemented by federal agencies.

To facilitate federal implementation, the Council explores environmental impacts of its proposals as fully as possible within its amendment process. Federal agencies are encouraged to make use of the Council's evaluation so that the region can act promptly to protect salmon and steelhead while complying fully with National Environmental Policy Act and Endangered Species Act requirements. The Council commits itself to working with the federal agencies to integrate the Council's processes with the National Environmental Policy Act and Endangered Species Act processes.

In determining the sources of water for fish and power flows as well as protecting fish in and around storage reservoirs, the use of Columbia River Basin water stored in Canadian reservoirs, as well as such water stored in reservoirs in the United States, must be considered. In general, fish flows, as well as reservoir levels and nutrient retention times required to protect resident fish in and around storage reservoirs, should be accommodated in all planning, management and operations conducted under the Columbia River Treaty between the United States and Canada.

## **1.6 INDIAN RIGHTS**

In writing the Northwest Power Act, Congress stressed the importance of recognizing the legal rights of Indian tribes in this program. Section 4(h)(6)(D) of the Act requires program measures to be consistent with the legal rights of Indian tribes. Section 10(e) emphasizes that nothing in the

Act affects or modifies Indian rights. Section 10(h) confirms that the Act does not limit Indian water rights. The full scope of Indian rights and their application in specific situations remains unclear. In some cases, those rights are being litigated. The Council is not in a position to adjudicate those rights and does not purport to do so in this program (see Section 14).

Nonetheless, the Council recognizes that the decline of fish and wildlife, particularly listed salmon and resident fish populations, poses problems for Indian tribes to whom the U.S. government has special responsibilities. The Council's program must be consistent with the rights of these tribes. The Council is committed to meeting its own responsibilities and to helping the federal agencies meet theirs, while addressing the needs of the region's fish and wildlife.

## 1.7 WATER RIGHTS

Congress and the Council recognize that this program must be implemented within a complex scheme for allocating rights to use Columbia River Basin water. As noted in the Northwest Power Act, and in of this program, nothing in this program authorizes appropriation of water, affects rights to water or jurisdictions over water, or establishes the respective rights to water of the federal government, individual states, Indian tribes or individuals. The Council assumes that the federal implementing agencies will work hard to develop cooperative and creative ways to implement the program's water flow measures with those requirements in mind.

The Council will continue to consult with Indian tribes, state water agencies, and the federal project operators and regulators to provide assistance in these matters. The Council is particularly mindful that the states are considering the increasing effects on fish of water diversions in the Columbia and Snake river systems, and taking into account both those effects and this program as they develop their individual water resource management programs.

## 1.8 ASSURING THE REGION AN ADEQUATE, EFFICIENT, ECONOMICAL AND RELIABLE POWER SUPPLY

The Ninth Circuit Court of Appeals in *NRIC v. Northwest Power Planning Council* characterized the fish and wildlife provisions of the Northwest Power Act as “[a]ttempting to balance environmental and energy considerations.”<sup>1</sup> The Council's fish and wildlife program must consist of measures to “protect, mitigate, and enhance fish and wildlife affected by the development, operation, and management of [hydropower] facilities while assuring the Pacific Northwest an adequate, efficient, economical, and reliable power supply.”<sup>2</sup> The measures in the remainder of this program address the first part of this requirement. The findings below address the second part of the requirement.

Attached as an appendix to this program are two analyses that are relevant to these findings. The first is Part I of Appendix B, which is a power system/rate analysis of the adopted mainstem measures (and alternative proposed measures), which estimates the power impacts, costs (including capital costs) and rate impacts of these measures. The second, Appendix C, is a broader analysis, “Assuring an Adequate, Efficient, Economical and Reliable Power Supply and the Ability to Carry Out Other Purposes of the Power Act.” This report examines the elements of the Act's power supply standard from a number of angles, and, most important for these findings, analyzes whether and how the cost, rate and power impacts of the Council's anadromous fish measures can be accommodated by changes in the power system and still assure the region an adequate, efficient, economical and reliable power supply. The following findings are distilled from those analyses:

<sup>1</sup> *NRIC v. Northwest Power Planning Council* slip opinion at p. 10879 (9th Cir. 1994).

<sup>2</sup> 16 U.S.C. § 839b(h)(5).

- The Council has not departed from utility industry standards for an adequate and reliable power supply. If fish recovery measures do not allow enough time or flexibility for the power system to be adapted, they could violate the conditions necessary for an adequate and reliable power supply. The Council's analysis indicates that there are sufficient resources under development, available for purchase on West Coast electricity markets, or that could be developed with relatively short lead time to ensure the region an adequate power supply. Although the reliance on purchased power is a departure from traditional regional planning practices, the Council believes this is becoming common practice in the emerging competitive power market. The costs of those resources have to be considered in the context of the economics of the power system.
- To ensure the reliability of the power supply, power system operators need the ability to draft storage projects notwithstanding fish needs in emergency circumstances that threaten firm loads (e.g., major temperature drops like those experienced in 1989 and 1990; loss of a major resource like Washington Nuclear Project 2 or a large Grand Coulee unit; or loss of the Northern or Southern intertie). System operators need some discretion to begin drafting in anticipation of severe weather events, in order that the water can reach the lower river projects at the time it is needed. Bonneville also has the responsibility under the Pacific Northwest Coordination Agreement, the Northwest Power Pool and the Western Systems Coordinating Council to maintain reliability standards for voltage and transmission stability. Instability could result in local or regional blackouts. Accordingly, during the time of year that water is being stored for fish at the federal projects (Hungry Horse, Libby, Dworshak, Albeni Falls and Grand Coulee), such storage may be temporarily drafted to avoid: 1) threatened inability to meet firm loads due to emergency circumstances (see above); or 2) voltage and transmission instability. Such drafts should be temporary and should strike an equitable balance between impacts to resident fish and anadromous species. System operators are expected to make purchases to minimize the risk that there will be less water stored for anadromous and resident fish than would otherwise have been stored. The role of financial considerations in Bonneville's purchase decisions is discussed in Appendix C.
- Fish recovery measures may require actions that are not as efficient from the standpoint of the objective of power operations as actions that are devoted solely to that objective. However, the Northwest Power Act clearly expected that operations would be balanced among fish, power and other objectives. The changes in power operations efficiency will have impacts on the economics of the power system.
- From the standpoint of the region's economy and power system as a whole, it is unlikely that fish recovery measures would result in an uneconomical power supply. The total costs are small relative to regional income. Even if Bonneville's customers were to turn to other sources of supply, the resulting power supply would still be relatively economical in relation to the rates paid in other parts of the nation. The advantage the Northwest currently enjoys would, however, be expected to diminish as a result of increased costs in this region and decreased costs brought on by competition elsewhere.
- The picture may change for specific parts of the region or consumer groups: costs could prove to be burdensome to some,

and if so, ways to avoid unreasonable burdens on specific customer groups should be explored.

- With these qualifications, and apart from financial impacts to Bonneville itself, the Council can provide reasonable assurance that the region's power supply will be adequate, efficient, economical and reliable while implementing the fish and wildlife program.

### **Financial effects on Bonneville**

The Council also must determine whether the fish and wildlife program is consistent with other purposes of the Northwest Power Act.<sup>3</sup> One of the purposes of the Act is to ensure that Bonneville's customers and consumers pay the full cost of power, including repayment of the U. S. Treasury.<sup>4</sup> Care must be taken to ensure that Bonneville's financial obligations, including the cost of protecting fish and wildlife from the adverse effects of the hydropower system, do not make Bonneville uneconomic and unable to carry out the purposes of the Northwest Power Act. The Bonneville Power Administration is an integral part of the region's power supply, and the principal means for financing energy conservation and fish and wildlife initiatives under the Northwest Power Act. It is possible for fish recovery measures and other costs to cause Bonneville's power supply to be perceived as no longer economical in relation to competing supplies. If a significant number of utilities decided to seek other supplies of electricity, Bonneville might no longer be able to collect sufficient revenue to fund the fish and wildlife recovery and other purposes of the Act, including repayment of its debt to the federal Treasury.

The factors affecting Bonneville's financial position obviously are not limited to the costs of the fish and wildlife program. The federal hydropower

system must repay the substantial debt remaining from past regional investments in thermal generation, for example. In addition, federal legislation affords unique advantages to Bonneville's regional customers that may impair Bonneville's competitive position. The Council's analysis suggests that Bonneville probably can absorb some additional fish recovery costs and still be able to carry out the Act's purposes. However, this conclusion is quite uncertain, particularly in the short term, and the Council believes that additional means should be explored to pay these costs.

The Council has identified the actions that are necessary to protect, mitigate and enhance fish and wildlife affected by the development, operation, and management of hydropower facilities. To successfully implement these actions, assure an adequate, efficient, economical and reliable power supply and not subvert the other power purposes of the Act, the region will need to work with the federal government on the allocation of costs. There is a need to implement the fish recovery measures and maintain the Bonneville Power Administration's financial health.

Four means of spreading the costs of implementing the program suggest themselves: One is to seek federal appropriations or other sources of funding for fish recovery measures. A second is to share as much of the cost of fish and wildlife costs as are attributable to the non-power uses of the Columbia River system as allowed under Section 4(h)(10)(c) of the Act. A third recognizes the parallel between fish recovery measures and utility investment that is stranded by competitive pressures. Much of the policy debate surrounding the ongoing restructuring of the electricity industry nationwide is focused on the question of stranded investment. A charge for use of transmission and/or distribution systems is the mechanism that is most frequently mentioned. The potential for recovering part of the fish recovery costs through a transmission charge should be investigated. Fourth, a number of suggestions were made in the Bonneville Power Administration Congressional Task Force Report for reforms that could save money for Bonneville. These suggestions should be explored.

In addition, the Council believes that arrangements should be developed to ensure that in

<sup>3</sup>16 U.S.C. § 839b(h)(7)

<sup>4</sup>16 U.S.C. § 839(4).

years when Bonneville's revenues are healthier, Bonneville pays a greater portion of fish and wildlife costs than in years when revenues are strained. In healthier years, the region should have less need to call on the alternatives discussed above.

Finally, while the Council has done considerable analysis in connection with these findings, it is important to recognize that the adequacy, efficiency, affordability, and reliability of the region's power supply, and the impact of these measures on Bonneville's ability to carry out the purposes of the Act, can be more fully gauged as the Council revises its regional power plan. The fish and wildlife program is part of the power plan, and the mutual impacts of fish and power measures are intended to be examined together.<sup>5</sup> Some recommendations submitted in the fish and wildlife amendment process, for example, the Columbia River Inter-Tribal Fish Commission's proposal to establish ramping rates for flow fluctuations at mainstem dams, raise issues of adequacy and reliability that could not be addressed in the fish and wildlife process. The potential impacts of these and other fish and wildlife measures deserve further consideration in the context of a full revision of the power plan.

## 1.9 SUMMARY

Those participating in the development of this program included federal and state fish and wildlife agencies, Indian tribes, utilities, federal program implementors (Bonneville, the Corps of Engineers, the Bureau of Reclamation and the Federal Energy Regulatory Commission), state and local governments, federal and state land and water managers, environmental groups and other interested parties, including private citizens. Through this program, the citizens of Idaho, Montana, Oregon and Washington have an opportunity to share in the decision to protect the Columbia Basin's fish and wildlife resources and to counter the harm caused by decades of hydroelectric development and operations while

assuring the region an adequate, efficient, economical and reliable power supply.

If the language of this program is more subdued than the rhetoric of the 1980s' programs, it is at least more clear-eyed. The region knows a lot more. It understands more. It has better tools and, despite continuing controversy, broader cooperation. The enormous scope of the recovery effort is clearer. It will take a lot longer and a lot more effort to rebuild healthy and diverse populations of salmon, steelhead and other fish and wildlife throughout the Columbia Basin. In fact, it will take a persistent effort into the next century just to save some of the fish runs.

This is not a grim assessment. It is a realistic one. The program is not a panacea, but a valuable foundation for the effort that is yet to be completed. At the same time, the region cannot lose sight of the fact that multipurpose development of the Columbia River system has produced huge benefits. These benefits need not be lost if all beneficiaries of the basin's waterways approach this rebuilding effort with a willingness to contribute. Balance is a key word. The Council's overall intent is to have balance so that all uses of the river remain viable.

Table 1-1 lists shorthand terms that are used throughout this program for various government agencies, Indian tribes and other entities. See the Glossary for definitions of other terms used in the program.

---

<sup>5</sup> 16 U.S.C. § 839b(e)(3)(F).

**Table 1-1**  
**Terms Used in the Program**

<b>Abbreviations</b>	<b>Full Name</b>
Bonneville	Bonneville Power Administration, U.S. Department of Energy
Bureau of Reclamation	U.S. Department of the Interior, Bureau of Reclamation
Corps	U.S. Department of the Army, Corps of Engineers
Federal land managers	<ul style="list-style-type: none"> <li>• Bureau of Indian Affairs</li> <li>• Bureau of Land Management</li> <li>• National Park Service</li> <li>• U.S. Forest Service</li> </ul>
Federal project regulators	<ul style="list-style-type: none"> <li>• Bonneville</li> <li>• Bureau of Indian Affairs</li> <li>• Bureau of Reclamation</li> <li>• Corps of Engineers</li> <li>• Federal Energy Regulatory Commission</li> </ul>
FERC	Federal Energy Regulatory Commission, U.S. Department of Energy
Fish and wildlife management agencies	<ul style="list-style-type: none"> <li>• Fish and Wildlife Service, U.S. Department of the Interior</li> <li>• National Marine Fisheries Service, U.S. Department of Commerce</li> <li>• Oregon Department of Fish and Wildlife</li> <li>• Idaho Department of Fish and Game</li> <li>• Montana Department of Fish, Wildlife and Parks</li> <li>• Washington Department of Fish and Wildlife</li> </ul>

**Table 1-1 (cont.)  
Terms Used in the Program**

<b>Abbreviations</b>	<b>Full Name</b>
State land managers	<ul style="list-style-type: none"> <li>• Idaho Department of Lands</li> <li>• Oregon Division of State Lands</li> <li>• Montana Department of Natural Resources and Conservation</li> <li>• Montana Department of State Lands</li> <li>• Washington Department of Natural Resources</li> </ul>
State water managers	<ul style="list-style-type: none"> <li>• Idaho Department of Water Resources</li> <li>• Montana Department of Natural Resources and Conservation</li> <li>• Oregon Department of Water Resources</li> <li>• Washington Department of Ecology</li> </ul>
Columbia Basin Indian Tribes	<ul style="list-style-type: none"> <li>• Burns-Paiute Indian Colony</li> <li>• Coeur d'Alene Tribes</li> <li>• Confederated Tribes of the Colville Reservation</li> <li>• Confederated Salish-Kootenai Tribes of the Flathead Reservation</li> <li>• Confederated Tribes of the Umatilla Reservation of Oregon</li> <li>• Confederated Tribes of the Warm Springs Reservation of Oregon</li> <li>• Confederated Tribes and Bands of the Yakama Indian Nation</li> <li>• Kalispel Indian Community</li> <li>• Kootenai Tribe of Idaho</li> <li>• Nez Perce Tribe of Idaho</li> <li>• Northwestern Band of the Shoshone Nation</li> <li>• Shoshone-Paiute Tribes of the Duck Valley Reservation</li> <li>• Shoshone-Bannock Tribes of the Fort Hall Reservation</li> <li>• Spokane Tribe of Indians</li> </ul>

H:\01-1221A.DOC