S. HRG. 104–642

COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM—SALMON RECOVERY

HEARING

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE

ONE HUNDRED FOURTH CONGRESS

FIRST SESSION

SPECIAL HEARING

Office of Management and Budget
Bonneville Power Administration
Nondepartmental witnesses

Printed for the use of the Committee on Appropriations

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COLUMBIA RIVER BASIN FISH AND WILDLIFE PROGRAM—SALMON RECOVERY

WEDNESDAY, MARCH 15, 1995

U.S. SENATE,
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT,
COMMITTEE ON APPROPRIATIONS,
Washington, DC.

The subcommittee met at 2:05 p.m., in room SD–192, Dirksen Senate Office Building, Hon. Mark O. Hatfield (chairman) presiding.

Present: Senators Hatfield, Gorton, Bennett, Burns, Johnston, and Murray.

Also present: Senators Stevens, Baucus, Craig, Kempthorne, and Murkowski.

OFFICE OF MANAGEMENT AND BUDGET

STATEMENT OF ALICE RIVLIN, DIRECTOR

ACCOMPANIED BY T.J. GLAUTHIER, ASSOCIATE DIRECTOR FOR NATURAL RESOURCES, ENERGY, AND SCIENCE

STATEMENT OF HON. MARK O. HATFIELD

Senator HATFIELD. The meeting will come to order.

Today the Subcommittee on Energy and Water Development, the Appropriations Committee, will receive testimony from a variety of witnesses on issues relating to the Bonneville Power Administration and Columbia River basin.

The importance of these interrelated topics to the Pacific Northwest cannot be overstated, and, therefore, I have invited all my Senate colleagues from the region and Alaska to participate in today's proceedings.

The Columbia River is the stuff from which legends are made. The story of the Columbia is the story of the Pacific Northwest.

The river's reputation has reverberated through the American mind, first as a river of unimagined natural wealth, teeming with salmon, steelhead, and other species; as a river whose bounty sustained generations of native Americans over thousands of years; and later as a river whose resources and might were harnessed by man to help build the economic and social structures of the 20th century.

Perhaps it is inevitable that these two episodes of the history of the Columbia basin would someday collide in the American mind, and that the two symbols representing these eras, the salmon and

the Bonneville Power Administration, would ultimately meet in the Halls of Congress and begin yet another chapter in history.

The situation today is this: We face a double crises—the demise of both of these symbols of the Pacific Northwest. We all know that the salmon reached the crisis stage with the endangered species listings 2 years ago.

What is not as well understood, however, is that the Bonneville Power Administration also faces the greatest crisis in its history. We all share the desire to rebuild the salmon runs. Simply, it is the right thing to do.

Likewise, we all should share the desire to see that Bonneville survives. The collective benefits reaped from the generation of hydropower for the past 60 years are immeasurable. We should not be in a hurry to throw away that portion of the region's legacy.

Through a legislative twist of fate in 1980, salmon and Bonneville became entangled in a budgetary bureaucracy. Fish and wildlife mitigation in the Columbia basin became dependent on the revenue-generating capabilities of Bonneville Power.

The Northwest Power Act of 1980 established the Columbia basin Fish and Wildlife Program and directed that Bonneville revenues be used to fund it. Depending on your perspective, the arrangement is either a blessing or a curse.

It's a relationship not unlike that of a mail order bride and her newly acquainted husband, incompatible, yet dependent.

Today, we find ourselves at a crossroads. The region needs to save its salmon runs and ensure the long-term viability of the Bonneville Power Administration. On the one hand, the Federal hydro system has had a role in the decline of the salmon. On the other hand, it is a primary source of hard currency that will pay for recovery measures. It is in the region's best interest to see that both survive.

Until recently, many believed that Bonneville could absorb the cost of salmon recovery, meet all of its statutory and financial responsibilities, and remain a competitive supplier of electricity in the region.

That scenario now, however, is very much in doubt. For a variety of reasons, extending far beyond the cost of salmon recovery, Bonneville is losing its competitive edge. A series of unfortunate events, some self-inflicted, some not, have rearranged Bonneville's role in the Northwest electricity market.

The WPPSS nuclear plant debacle, 8 consecutive years of drought, widely fluctuating aluminum prices, the deregulation of the utility industry, access to low-cost natural gas, and other factors have created a very real competitive and financial crisis for Bonneville.

With each passing day it becomes more likely that legislation will be necessary to ensure Bonneville's viability over the long term. The question, though, is: What will the legislation look like?

There has been talk of cost caps and other approaches during the last few weeks. Whether a cost cap is a good idea remains to be seen. We will discuss that and other proposals today.

The purpose of today's hearing is to discuss these issues and look for possible solutions. We are hoping our witnesses will provide

new analyses and ideas over which we may ponder in the search for answers.

I am pleased by the administration's announcement yesterday that it will provide some short-term relief to Bonneville. We must bear in mind, however, that those measures are not the final answer.

They will ease the pressure on Bonneville this year and the next, but do little to address the more serious underlying problems. We will seek to work with the administration to identify further measures that may become necessary to ensure solid long-term stability for Bonneville.

HEARING PROCEDURE

Before I turn to the next step, I would like to just outline a couple of points of procedure. To increase our efficiency, most of our witnesses have been organized into panels.

Let me assure you that appearing on a particular panel does not require you to agree with the views of everyone else on your panel. All views and statements will be considered individually.

When your panel is called, please come to the witness table as quickly as possible. We will be pressed for time, and with the exception of Ms. Rivlin and Mr. Hardy, it will be necessary to limit oral testimony to 5 minutes each.

We will use the timer. The green light means start, the yellow light means you have 1 minute left, and the red light means your time is up.

With that in mind, let me ask my colleagues if they will accommodate the timeframe in which Ms. Rivlin is appearing. Let us hear from her, and if there are any questions to be propounded, then the members of the committee will propound those questions. Then following Ms. Rivlin, we will ask for opening statements from the members of the panel. Is that satisfactory with my colleagues?

With that in mind, the Director of the Office of Management and Budget will offer her testimony. I hope we will also keep our questions very brief and to the point, to be answered by Ms. Rivlin following her testimony.

We are very grateful for your appearance here today, Ms. Rivlin.

STATEMENT OF ALICE RIVLIN

Ms. RIVLIN. Thank you very much, Mr. Chairman. I am very pleased to be here. I think I can stay within your 5-minute limit, if you will allow me to place my full statement in the record.

Senator HATFIELD. It will be so included.

Ms. RIVLIN. I will summarize it very briefly. This is, as you have noted, a piece of a long and difficult problem in which many interests and values have to be balanced.

The salmon runs are not only an integral part of the culture and the life of the Pacific Northwest, they are also a very important part of the economy. The dramatic drops in the fish population in recent years are well known, and they have caused much concern.

Several power administrations and institutions in the Pacific Northwest have tried to find a way to restore the salmon population without unduly interfering with the rest of the economy, especially the economy that depends on power.

As you noted in your opening statement, Mr. Chairman, for a long time many have presumed that Bonneville could absorb the costs of restoring the salmon population.

But in 1994, the Government acted on an emergency basis to assume part of the cost of additional spills and flows. At the time, that action seemed necessary to protect the salmon, and a $19 million credit was extended to Bonneville based on section 4(h)(10)(c) of the Northwest Power Planning and Conservation Act.

With the recent release of the National Marine Fisheries Service's 1995 biological opinion, Bonneville is facing additional costs. We need to find another way to come back to this next chapter of the problem and look at how to share the costs.

The administration expects the amount of additional costs to Bonneville and the Treasury in fiscal year 1996 will be about $140 million. This figure includes $32 million of direct program expenses, $54 million of replacement power purchases, and $54 million of foregone revenues.

By fiscal year 2001, we expect the costs of complying with the recovery plan to rise to about $200 million.

Last month, the administration agreed to help defray the costs of the 1995 biological opinion. We have talked to all of the concerned agencies and worked back and forth on various options. Yesterday, we were pleased to announce that we had reached a conclusion which we believe will substantially assist the region in meeting these costs.

What is involved here? On average, our proposal will, over the next 2 years, provide a $60 million-per-year credit against Bonneville's Treasury payments.

Assuming average levels of water availability, our proposal will yield a total credit of more than $200 million over the next 5 years. Based on these actions, Bonneville believes the incremental costs of the 1995 biological opinion can be covered without a further increase in its recently announced 5-percent rate increase.

Bonneville will cover these incremental costs in a variety of ways. Roughly, $30 to $40 million a year will be derived through administrative and other cost savings which Bonneville believes it can achieve.

Beginning in the current fiscal year, permanent annual credits under section 4(h)(10)(c) of the Northwest Power Act, will be provided for Bonneville's direct fish and wildlife expenses. These credits will amount to $25 to $35 million a year.

In each of the fiscal years 1995 and 1996, section 4(h)(10)(c) credits for Bonneville's power purchase costs related to its fish and wildlife program will also be available. We believe this action is appropriate considering the immediacy of the program requirements and the time that it will take Bonneville to implement its cost savings and other programs. We expect this action to result in about $30 million for each of those 2 years.

Finally, Bonneville will, to the extent necessary, reduce its build-up of cash reserves. This action will increase the likelihood of Bonneville having to reschedule a portion of its annual treasury payment in future years. If such an event occurs, Bonneville will reschedule its debt consistent with existing Treasury policy.

The administration believes these actions will make a major contribution toward our shared goal of achieving healthy salmon stocks in the Columbia basin and maintaining a stable power system in the region.

PREPARED STATEMENT

Mr. Chairman, this concludes my remarks on the administration's efforts to develop a solution that reverses the declining salmon runs in the Snake and Columbia River systems. I would be pleased to answer any questions that you may have.

Senator HATFIELD. Thank you.

[The statement follows:]

PREPARED STATEMENT OF ALICE M. RIVLIN

Mr. Chairman, members of the Subcommittee, thank you for inviting me today to discuss the Administration's proposed salmon restoration effort that we all believe is so important to the Northwest.

As you know, the Administration has devoted significant time and resources to reach consensus on this proposal. The decision we are announcing today represents the best efforts of many people in the several Federal agencies involved in this issue in the Northwest.

BACKGROUND

Columbia and Snake River salmon are a significant part of the Northwest culture, a symbol of the spirit and beauty of the region. Salmon are critical economically to the Northwest. They are the basis for a large and once prosperous commercial and sport fishing industry. But, the decline of salmon in the Northwest has resulted in banning offshore coho fishing and in sharp restrictions on fishing for other species. In 1988, the regional salmon fishery supported 60,000 jobs and $1.2 billion in income. Today, reports suggest that 90 percent of these jobs and incomes have been lost.

We all have heard the stories about the plentiful runs of Chinook, Sockeye, and other salmon species that have provided food and livelihood for the region over the years—including, especially, Native Americans living there. Though these plentiful salmon runs still exist in other rivers along the Northwest coast, primarily in Canada and Alaska, they are now declining in the Columbia River basin. Most authorities believe the emergence of other land and water resource applications on the Columbia and Snake Rivers and its tributaries caused the decline in salmon runs. Before the region's development began over 150 years ago, upwards of 16 million adults returned to spawn in the Columbia basin each year. Today, fewer than 3 million return; most of these migrate to hatcheries.

Scientists cite many reasons for the decline of these fish. But, four factors play the major role: (1) The reduced acreage and quality of water habitat; (2) construction of many dams for hydroelectric production; (3) over-production of hatchery fish and a crowding out of wild fish, thereby producing weaker species; and (4) excessive coastal and ocean harvest.

Previous Administrations backed the goal of protecting and restoring salmon in the Columbia River basin. Since the Mitchell Act hatcheries were put in place in the 1930's and 1940's, all Federal agencies in the region have devoted significant resources to maintaining salmon runs. Millions of dollars have been spent on juvenile salmon dam bypass and collection facilities and on fish ladders for returning adults. In addition, operational changes have been made to increase flows and spills of water in the spring and summer. Several million acre-feet of water are used for this purpose each year.

We have pledged to address these issues through the National Marine Fisheries Service (NMFS), Bonneville Power Administration (BPA), and other Federal agencies in the region. Responding to a March 28, 1994 finding by a Federal District Court that the Federal government was not taking sufficient action to ensure the survival of salmon, the Administration determined that it would assume, on an emergency basis, some of the cost of additional spills and flows needed to assist Columbia and Snake River salmon migration. To do this, we used the provisions of section 4(h)(10)(c) of the Northwest Power Planning and Conservation Act. This provision permits BPA to allocate fish and wildlife program expenses incurred on be-

half of other project purposes (e.g., navigation and flood control) to the Treasury. BPA was allowed to take a $19 million credit against its payment to Treasury for fiscal 1994 Corps of Engineers and Bureau of Reclamation operations and maintenance costs.

Today, the Federal government pays over $100 million a year to study, maintain, and restore salmon in the Columbia and Snake Rivers. Through its customers, BPA is paying about $200 million a year—not counting purchase power and foregone revenues resulting from reduced water availability. When these latter costs are included, the total cost to BPA and its ratepayers is over $300 million. This represents about 11 percent of Bonneville's estimated 1996 operating outlays.

Additional costs are expected over the next several years. As many of you know, pursuant to the Endangered Species Act, the NMFS recently issued its 1995 Biological Opinion. The opinion outlines the effort required to avoid jeopardy to the three listed salmon stocks and prevent further harm to declining but unlisted stocks. The opinion requires even more changes in the way the river activities are conducted, including new flow levels, increased water spills, some reservoir drawdowns, changes to hydrogeneration, flood control and other activities. These changes all will be carried out to protect salmon survival, and they will have a cost on top of government program costs already being spent each year.

In the future, there will be other changes as well. NMFS is expected to issue a Recovery Plan later this month that will address the other factors affecting salmon, such as habitat, harvest, and hatcheries. The Plan is intended to improve the condition of listed and unlisted salmon resources.

ADMINISTRATION PROPOSED COST SHARING

Now, I want to address the 1995 Biological Opinion, which primarily affects hydrogeneration and the BPA, in more detail. We expect the amount of additional costs to BPA to be about $140 million in fiscal 1996. This figure includes $42 million of direct program expenses, $54 million of replacement power purchases, and $54 million of foregone revenues. We expect these costs to rise to $200 million by fiscal 2001.

Last month, the Administration agreed to help defray the costs of the 1995 Biological Opinion. We have completed our analysis of program costs and options that were being discussed by all the Federal agencies involved in developing the opinion. I am pleased to announce that we have reached a conclusion, which we believe will substantially assist the region in meeting these costs.

On average, our decisions will provide Federal credits to the region of about $60 million per year for each of the next two years. Assuming average levels of water availability, it will yield a total credit of more than $200 million over the next five years. Based on these actions, BPA believes the incremental costs of the 1995 Biological Opinion can be covered without a further increase in its recently-announced five per cent rate increase.

The specifics of how incremental salmon recovery costs will be covered are as follows:

—About $30–$40 million a year will be derived through administrative and other cost savings which BPA can achieve.

—Beginning in fiscal 1995, annual credits on a permanent basis under section 4(h)(10)(c) of the Northwest Power Act will be provided for BPA's direct fish and Wildlife expenses. These credits will amount to about $25–$35 million a year.

—In each of fiscal 1995 and 1996, section (4)(h)(10)(c) credits for BPA's power-purchase costs related to its fish and wildlife programs will also be available. We believe this is appropriate due to the immediacy of the program requirements and the time it will take BPA to implement its cost savings and other programs. We expect this action to result in about $30 million for each of these two years.

—Finally, to the extent necessary, BPA will reduce its build-up of cash reserves. This may make it more likely that BPA will have to reschedule a portion of its annual Treasury payment in future years. If such an event occurs, BPA will reschedule its debt consistent with existing Treasury policy.

The Administration believes these actions will make a major contribution toward our shared goal of achieving healthy salmon stocks in the Columbia basin and maintaining a stable power system in the region.

Mr. Chairman, this concludes my remarks on the Administration's efforts to develop a solution that reverses declining salmon runs in the Columbia and Snake River system. I would be pleased to answer any questions that you may have.

Senator HATFIELD. I will now call on our colleagues. For those of you who have just arrived, I have asked the colleagues to withhold

their opening statements until we can have the questions propounded to Ms. Rivlin and then let her depart for some other commitments she has.

So I will start with Senator Gorton.

Senator GORTON. As I understand your testimony, Ms. Rivlin, the funding offsets, $60 million, and then maybe $30 million a year, will all come through section 4(h)(10)(c) of the Northwest Power Act in the next 4 or 5 years.

Ms. RIVLIN. That is right, but there are two different pieces in it. There are——

Senator GORTON. But that is the——

Ms. RIVLIN. That is right.

Senator GORTON [continuing]. Source of it.

Ms. RIVLIN. Right.

Senator GORTON. So you are not going to recommend any appropriated funds.

Ms. RIVLIN. Right.

Senator GORTON. And the net results of this help will be simply that those amounts each year will be subtracted from what would otherwise be the debt payment that Bonneville will make to the Federal Treasury.

Ms. RIVLIN. That is right. It is a credit against their debt payment.

Senator GORTON. So the net impact of that is that instead of these costs being imposed simply on the customers of the Bonneville Power Administration, they will be spread out over all the people of the United States in the form of that much larger a national debt.

Ms. RIVLIN. That is right.

Senator GORTON. OK. Do you, in making your decisions, and I recognize you are from the Office of Management and Budget, but have you attempted to make any independent determination as to whether the total amount of money being spent here, together with the $300 million-plus that is already being spent by Bonneville on salmon restoration, is the most efficient way of utilizing money for salmon restoration in the Pacific Northwest. And will this get us the most salmon for the amount of money that we are spending, or have you just simply accepted a framework and you are figuring out how to pay for a framework, the validity of which you have not judged?

Ms. RIVLIN. No; we have not done any independent studies. Our analysis is based on the National Marine Fisheries Service's biological opinion, and it is their opinion that part of the recovery plan requires these changes in the operation of Bonneville.

Senator GORTON. You are accepting their proposition——

Ms. RIVLIN. That is right.

Senator GORTON [continuing]. And just trying to figure out a way to pay for it. One of the great difficulties that Bonneville is having at the present time is its own customers, that its costs are being forced to the point at which, for many customers, they are not necessarily competitive.

Every week I have some group or organization in my office that says, we are on the verge of leaving Bonneville, or we have already left Bonneville for independent power producers, and that any in-

crease in costs to Bonneville, whether it is reflected in this year's rate increase or not, causes them to have less confidence as far as the future is concerned, and perhaps to look elsewhere for their power.

A number of utilities have already signed contracts to have their power needs served from other sources, and obviously this has an adverse impact on BPA's financial condition.

Has the administration, have you, projected what kind of income the Federal Government is likely to get out of Bonneville in the future. Have you taken this competitiveness factor over the next several years into account and the policies that you are advocating for us here today?

Ms. RIVLIN. Yes; I think the estimates of Bonneville's situation take the likely revenue stream into account. But the problem we are addressing today is not of the Pacific Northwest economy or of the long-term viability and financial health of Bonneville.

The problem we are addressing today is that of additional costs for the fish management plan, and deciding what the Federal Government's obligations are to share these costs so they will not become an undue burden on Bonneville's customers.

Senator GORTON. So it would be fair to say that you do not have any independent opinion on whether or not Bonneville's future competitiveness is going to be harmed either by this addition or by its present burdens.

Ms. RIVLIN. What we are saying, and I believe that Bonneville agrees with this, is that we have a plan for sharing these costs, which will not lead to additional rate increases beyond what Bonneville has already announced. The plan does not, in our view, put Bonneville in a less competitive position than it was in before.

Senator GORTON. Thanks.

Thank you, Mr. Chairman.

Senator HATFIELD. Thank you. I have been notified that Senator Murkowski would like to make a brief statement, enter matters into the record, and depart. So in order to accommodate Senator Murkowski, I would ask him——

STATEMENT OF HON. FRANK MURKOWSKI

Senator MURKOWSKI. Senator Hatfield, I very much appreciate that, and I appreciate the opportunity here. I will be very brief.

First, I would like to note that I share the legal and fiscal concerns that have been expressed here, and as chairman of the Energy Committee, which you serve on, I want to assure you of my interest in working with you. As you know, we have set a meeting on Bonneville Power Administration refinancing for March 21.

Let me just mention one thing about the fisheries, from our point of view in Alaska.

The National Marine Fisheries Service is proposing to permanently reclassify, as you know, the Snake River fall chinook salmon from threatened to endangered. We believe the reclassification is driven by environmental politics, not science, and we believe scientific evidence simply does not support it.

Submitted with my formal statement is a complete explanation prepared by the Alaska Department of Fish and Game. We in Alaska think we know something about raising salmon. We have had

record runs for 10 of the last 14 years. Last year we harvested 197 million fish. And I can remember in territorial days, when the Federal Government was the manager, we had only 30 to 40 million fish, and we were closing our season to maintain the runs.

In southeastern Alaska, the Alaska experience continues to be very good. We have 2,500 anadromous streams. Twenty-two of those are in decline, and nine of those are in logged areas, and 13 are in wilderness areas. So we have a pretty good record of mixing fish production and other uses.

I want to emphasize, Mr. Chairman, that I am not arguing against efforts to help these Columbia and Snake River fish. I fully understand the importance of doing so. My point is the science. We are not using sound science for the Snake River fall chinook.

That fact affects Northwest rate payers as well as fisherman all the way to Alaska, and creates questions about the basis for actions taken on other stocks on the Columbia River.

My main reasons for the statement that sound science is not being used are as follows. First, in 1992, when stocks were listed as threatened rather than endangered, the National Marine Fisheries Service justified its decision by pointing to a considerable increase in the number of adult fish migrating past lower Granite Dam in 1991. Today the Agency wants to ignore both its previous position, and the fact that those numbers have continued their upward trend. The number dropped somewhat last year from the year before, but it is still the sixth highest in the last 15 years.

Furthermore, the average number of fish, that is, the average number returning yearly over a given period of time, is also increasing, and that is good news.

The second reason that I claim we are not using sound science, involves the function of the Endangered Species Act. The act is meant to protect species, sub species, and distinct populations, because they may have unique value either ecologically or as a source of genetic material.

For the Snake River fall chinook salmon, however, protection is given only to fish that spawn naturally, not bred from those fish collected by the Lyon's Ferry Hatchery Program. And that makes simply no sense at all.

The hatchery stock is the most genetically pure Snake River fall chinook. Natural spawners are known to be infiltrated by strays from other areas.

In fact, there are some who say the naturally spawning group may be so diluted that it should not even qualify for ESA protection either as a sub species or a distinct population. If any group should be counted toward the genetic preservation goal of the Act, it should be the more pure stock.

Finally, Mr. Chairman, by not counting former hatchery fish, that means the number used to determine Endangered Species Act status is artificially deflated. The result is even greater restrictions on fisherman and river users.

In our State of Alaska, fisherman last year saw the chinook harvest reduced by 23,000. Mr. Chairman, that was a loss worth millions of dollars, to allow a total of just 23 Snake River chinook salmon to pass by, and most or those 23 probably died anyway.

It is estimated that as few as three fish might actually have reached the spawning grounds the others were probably either caught or lost in the dams.

This year even greater restrictions are proposed for Alaska, and that will have even greater economic impact. So I say again, Mr. Chairman, this makes no sense to only count natural spawning stock, but not the genetically pure hatchery fish, when recognizing the hatchery fish would make a real difference in the debate.

PREPARED STATEMENT

Mr. Chairman, this brief review was necessarily incomplete. I would refer those interested to my full statement and supplemental material, which is about 50 pages, and which I submit to you for the examination of your professional staff. I appreciate the courtesy extended to me today.

Senator HATFIELD. Thank you, Senator Murkowski.

[The statement follows:]

PREPARED STATEMENT OF SENATOR FRANK H. MURKOWSKI

Mr Chairman: I appreciate the invitation to participate in this hearing. The use and productivity of the Columbia and Snake River systems are matters of enormous concern to me both as a Senator from Alaska and as Chairman of the Committee on Energy and Natural Resources.

For the purposes of this hearing I plan to focus on specific interests of the State of Alaska, but I do not want that emphasis to be interpreted as a lack of interest from the authorizing Committee in resolution of the issues on these systems.

The requirements under the Columbia River Treaty, the Pacific Northwest Electric Power Planning and Conservation Act, various treaties and other obligations to Indian Tribes in the Northwest and the effect of requirements under the Endangered Species Act, Clean Water Act, and other legislation on the operation of the Bonneville Power Administration and Bureau of Reclamation facilities are matters of great concern to the Energy and Natural Resource Committee. Activities under all these agreements and obligations also have a substantial impact on the Pacific Salmon Treaty we have with Canada, and that is also a matter of great importance—not only to the people of Alaska, but to those from Oregon, Washington, and elsewhere who depend on Alaska salmon fisheries for their livelihoods.

I intend to work closely with the Chairman of this Committee, who also sits on the Energy Committee, and with other Members of the Pacific Northwest delegations in examining these issues.

Senator Craig, the Chairman of the Subcommittee on Forest and Public Land Management has already begun a series of oversight hearings into the operation of our National Forests, particularly in the Northwest. I also expect that subcommittee will soon begin to look at the operation of Reclamation facilities.

Finally, as the Chairman knows, we have scheduled a hearing on S. 92, his legislation on Bonneville refinancing, before the Energy Production and Regulation subcommittee. Senator Nickles will chair the session starting at 10:00 a.m. on March 21.

Today, however, I want to focus my comments not on the hydroelectric system, but on a related issue with serious implications for power, transportation and agriculture in the Northwest, and for fisheries in Alaska.

One of the forces driving today's issue is the status of various salmon stocks listed under the Endangered Species Act. Of these listed stocks, one of the most important is the Snake River fall chinook. The National Marine Fisheries Service now proposes to change its status formally from "threatened" to "endangered," which will have serious consequences for Alaskan fishermen as well as for dam operations and other river uses.

I am here today to advise you, Mr. Chairman, and the other members of the committee, that I feel strongly that the proposed revision in listing is not justified by the scientific evidence. In fact, I believe the relisting proposal is driven NOT by legitimate environmental concern—but by the worst kind of environmental politics.

I intend to submit for the record a complete scientific explanation of why endangered status is not appropriate for the Snake River fall chinook. This document was

prepared by the Alaska Department of Fish and Game as a formal comment on the relisting proposal—and as anyone who looks at the record of that agency will understand, the Alaska Department of Fish and Game knows something about scientific management of salmon. Alaska's harvests of Pacific salmon have hit new highs during 10 out of the last 14 years, with last year's catch reaching an all-time record of 197 million fish. While these phenomenal returns owe something to favorable natural conditions, they are also indicative of well-planned, well-carried-out management.

I will summarize the Department's findings in a moment, but first let me inject a very important note of caution, lest my comments be taken out of context by members of the environmental community or the media. It should be clearly understood by all that I recognize the deeply depressed status of many Columbia and Snake River salmon stocks. I am not arguing against the Endangered Species Act, or against efforts to help the salmon of these rivers regain their historic abundance. In fact, as an Alaskan I understand very well the importance of these stocks, including the fact that healthier stocks in the Columbia and Snake rivers mean healthier fisheries in Alaska as well as the Northwest, healthier economy and fewer burdens on electricity rate-payers and other river users, and a healthier relationship with our Canadian partners in the Pacific Salmon Treaty. As an Alaskan, therefore, I WANT more fish in the Columbia and Snake rivers.

Sound science is the key. But I submit, Mr. Chairman, that sound science is NOT being used in the relisting of the Snake River fall chinook salmon, and that failure not only affects your Pacific Northwest ratepayers, but also calls into question the science used elsewhere in the Columbia and Snake system.

Now, Mr. Chairman, allow me to summarize the details:

The effort to list Snake River fall chinook began in 1990. In 1992, after careful scientific review and ample public comment, the National Marine Fisheries Service listed the stock as "threatened." In 1994, the agency took emergency steps to temporarily classic the stock as "endangered," and it is now proposing to make the latter action permanent.

These classifications hinge not on the numbers of individual creatures, as many think, but on the likelihood of a stock becoming extinct within a particular time frame. In this case, the number of wild fish returning to the river has increased substantially since 1990, and the likelihood of extinction within 100 years has fallen dramatically.

In 1992, the National Marine Fisheries Service strengthened its choice of "threatened" status by noting that the 1991 count of 318 adult fish passing Lower Granite dam was a "considerable increase" over the 78 fish level which existed when the listing discussion began in 1990. And today, we can look back and see that the number of returning adults continued to increase—549 in 1992 and 742 in 1993. The 1994 return was 441 fish, still the sixth highest return since 1980. Furthermore, the average number of fish returning is also increasing: from 377 during the period 1980–90, to 512 fish in 1990–94.

Mr. Chairman, these statistics are GOOD news, not bad. Yes, Snake River fall chinook are still in trouble. But things are not getting worse, they are getting better. What has changed for the worse is the agency's attitude. Where in 1992 it made a rational decision based on observed data, it is now relying on unfounded speculation that things will get worse despite the facts. That, Mr. Chairman, is NOT good science.

Finally, let me touch on one other area with respect to these fish. The Endangered Species Act is intended to preserve species, subspecies and distinct populations, on the theory that they may have some unique value either ecologically, or in the case of subspecies and distinct populations, as a source of genetic material which would otherwise be lost to the species as a whole. Stocks such as the Snake River fall chinook are treated as subspecies.

For the purposes of the Endangered Species Act, however, the agency separates Snake River fall chinook into two groups: fish which make it past Lower Granite dam to spawn naturally in the river, and fish associated with the Lyons Ferry hatchery, for which the most genetically "pure" fish were collected and removed from the spawning population well below Lower Granite dam. Only the fish spawning above Lower Granite are given Endangered Species Act protection.

First of all, if both groups were counted toward Endangered Species Act goals, it is evident that the numbers of "Snake River fall chinook" would be considerably higher than the agency now insists. However, we have already seen that the agency is no stranger to manipulating numbers.

More important questions are raised by the fact that the fish allowed to spawn naturally have also been most heavily infiltrated by strays from elsewhere in the river system.

First, if our purpose in providing the protection of the Endangered Species Act is to preserve the unique genetic make-up of the subspecies, then why are we applying the protection ONLY to the population segment with the weakest claim to that genetic makeup?

Given the considerable degree of straying known to have occurred—the mixing effect of which has been INCREASED by removing "pure" fish before they reach the spawning grounds—does the naturally spawning group even QUALIFY for the protection of the Act? Or is it a hybrid created in part by past National Marine Fisheries Service policy?

And if, after all, the hybrid is entitled to the Act's protection, then how can we in good conscience—and good science—fail to both protect and COUNT the genetically more authentic group that is associated with the hatchery?

Mr. Chairman, I am not going to get into the motives that may have led us to this point. That is a discussion for another day. But motives aside, the FACT is that the scientific process with regard to Snake River fall chinook is flawed—deeply flawed.

The FACT is that those flaws are having an extraordinary effect both on fishermen in Alaska, who have had their chinook salmon harvest reduced by 23,000 in order to allow 23 fish to pass by—most of which were subsequently killed by other factors which the Endangered Species Act has failed to control.

And the FACT is that the river-dependent ratepayers and users of the Pacific Northwest are also affected by the same flawed science.

In closing, let me stress once again: Columbia and Snake River salmon stocks are unquestionably in deep trouble, we should do everything we can to restore them, and there are any number of reasons why doing so is well-worth the cost. But in fairness to all those from the Pacific Northwest and Alaska who are being asked to shoulder the burden of those costs, we MUST ensure that our programs are based on sound science. Today, with respect to the Snake River fall chinook salmon, that is not the case.

Thank you again, Mr. Chairman, for your interest and your patience. I would like to submit this copy of the State of Alaska's February 22, 1995 comments on listing the Snake River fall chinook as an endangered species for the Committee's permanent record of these proceedings, and I stand ready to work with you and the other Members from the Northwest on resolving these issues.

LETTER FROM FRANK RUE, OFFICE OF THE COMMISSIONER, THE DEPARTMENT OF FISH AND GAME, JUNEAU, AK

February 22, 1995

Mr. William W. Stelle, Jr.
Northwest Regional Director
National Marine Fisheries Service
7600 Sand Point Way N.E.
Bin C15700 Building 1
Seattle, WA 98115

Dear Mr. Stelle:

This letter is written in response to your February 12 invitation to concerned parties to comment on *Federal Register* Notice, 59 FR 66784, December 28, 1994, announcing the National Marine Fishery Services's determination to reclassify listed Snake River chinook salmon from threatened to endangered. Alaska's primary interest in this action is with the Snake River fall chinook salmon stock. Actions taken by the National Marine Fishery Service (NMFS) relative to Snake River fall chinook salmon have the potential to greatly affect our Southeast Alaska salmon fishery where this stock is harvested at a very low rate. Past actions taken by the NMFS due to concern over this stock have had significant effects on the Southeast Alaska economy and life style, and we are concerned about future NMFS actions, as these actions may also affect future jobs and families in Alaska. Our interest is in ensuring that any decision regarding the reclassification of Snake River fall chinook follows sound biological principles and be rigorously justified using the best available scientific and commercial data.

Fishery scientists of the Alaska Department of Fish and Game have reviewed the information included in the notice, gathered additional information, and developed an analysis of the NMFS intended action. The report developed by these fishery scientists is attached to this letter.

Our analysis led to two conclusions. First, the best available scientific and commercial data indicates that the change of Snake River fall chinook from threatened status to endangered status is not appropriate because the status of the currently defined ESU has improved since listing and the likelihood of extinction has diminished considerably. And second, the Snake River fall chinook ESU itself needs redefinition to include Lyons Ferry hatchery fish.

Thank you for the opportunity to provide comments on this proposed federal action.

Sincerely,

Kevin Brooks

for Frank Rue
Commissioner

ANALYSIS OF SNAKE RIVER FALL CHINOOK SALMON

BACKGROUND

Chinook salmon *Oncorhynchus tshawytscha* are native to the Columbia River and its largest tributary, the Snake River. Three runs of chinook salmon are recognized in the Snake River based upon entry time of adults into fresh water (spring, summer, and fall).

Historically, the Snake River supported the largest run of fall chinook in the Columbia Basin. Fall chinook were widely distributed throughout the Snake River and many of its tributaries. Fall chinook spawned and reared from the confluence of the Snake and Columbia rivers upstream some 615 miles to Shoshone Falls, Idaho. The most important spawning

grounds (Evermann 1896) were from river mile 328 (near Huntington, Idaho) to river mile 607 (near Auger Falls, Idaho).

Fall chinook were prevented from migrating above river mile 456 in 1901 because of the construction of Swan Falls Dam (Parkhurst 1950). An average of about 72,000 fall chinook annually returned to the Snake River between 1928 and 1949 (Irving and Bjornn 1981). Annual abundance of Snake River fall chinook subsequently declined to an average of about 29,000 fish during the 1950s (Irving and Bjornn 1981), but none the less, the Snake River remained the most important production area for fall chinook in the Columbia River basin (Fulton 1968). The construction of Brownlee Dam at river mile 285 in 1958, Oxbow Dam at river mile 273 in 1961, and Hells Canyon Dam at river mile 247 in 1967 blocked upstream passage of Snake River fall chinook and thus prevented the stock from reaching what had before been the major spawning and rearing areas (Van Hyning 1968).

Snake River fall chinook spawning and rearing habitat was further reduced during the 1960s and 1970s by the construction of four dams in the lower portion of the river even though these dams provided upstream passage devices. The four dams were: (1) Ice Harbor Dam at river mile 10 in 1961; (2) Lower Monumental Dam at river mile 42 in 1969; (3) Little Goose Dam at river mile 70 in 1970; and, (4) Lower Granite Dam at river mile 108 in 1975. As a result of the extensive hydrodevelopment of the Snake River, the freshwater spawning and rearing habitat available to Snake River fall chinook has been reduced to a small fraction of what was available historically.

The remnant population of Snake River fall chinook remaining today is believed to spawn in the 100 miles of the Snake River between Hells Canyon Dam (river mile 247) and the pool above Lower Granite Dam (river mile 108; pool is 39 miles in length); although deep water spawning in the tailraces of the four lower river dams is believed to occur. Counts of fall chinook at Lower Granite Dam since 1975 (ODFW & WDF 1991 & 1992) when it was constructed have ranged from 780 in 1980 (450 adults and 330 jacks) to 2,585 in 1986 (784 adults and 1,801 jacks). Reproductive potential of the population as measured by adults passing Lower Granite Dam decreased from a level of 1,000 in 1975 to 335 adults in 1990.

On June 7, 1990, NMFS received an Endangered Species Act petition to add Snake River fall chinook salmon to the list of threatened and endangered species from Oregon Trout, with co-petitioners Oregon Natural Resources Council, the Northwest Environmental Defense Center, American Rivers, and the Idaho and Oregon Chapters of the American Fisheries Society. NMFS published a notice on September 11, 1990, announcing that the petition presented substantial scientific information indicating that the listing may be warranted and a status review of fall chinook was initiated. In June 1991, NMFS published a status review for Snake River fall chinook salmon (Waples et al. 1991) and a proposed rule to add Snake River fall chinook to the endangered species list with the status being listed as threatened (June 27, 1991; 56 FR 29547). The following spring, NMFS announced its final decision to list Snake River fall chinook as threatened on the endangered species list (Vol. 57, No. 78, April 22, 1992). On August 18, 1994, NMFS took emergency action to reclassify Snake River fall chinook from threatened to endangered status. This emergency rule expires on April 15, 1995. On December 28, 1994, NMFS announced intent to permanently reclassify Snake River fall chinook as endangered (59 FR 66784) and requested comments. This document was prepared to provide NMFS with comments from the State of Alaska on the permanent reclassification of Snake River fall chinook from threatened to endangered status.

WHAT IS MEANT BY *THREATENED* AND *ENDANGERED*?

The Endangered Species Act defines the terms endangered species and threatened species as follows.

> *The term "endangered species" means any species which is in danger of extinction throughout all or a significant portion of its range other than a species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the*

> *provisions of this Act would present an overwhelming and overriding risk to man.*
>
> *The term "threatened species" means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.*

NMFS made an attempt to better define these terms relative to listing decisions concerning salmon through a paper by Thompson (1991). Under the recommendations section, Thompson (1991) states:

> *Likewise, the various analytic approaches can provide useful information with a minimum of time and data. As an example of how such approaches can be used, the density-independent diffusion model and estimation procedures described by Dennis et al. (in press) will be considered below in some detail.*

In discussing the Dennis model, Thompson goes on to say:

> *Finally, implementation of this or any other model requires choosing p* and t* values. Actually two sets of threshold values are required in the context of ESA, since the Act defines two levels of jeopardy (endangered and threatened). As noted in the Introduction, it is unfortunate that the ESA does not define endangerment with much precision. In the absence of further guidance, perhaps the best decision for "endangered" p* and t* values is to accept the conventional wisdom that sets p* = 0.95 and t* = 100. In other words, at the "endangered" level, MVP is the population size that gives a 95% chance of extinction over the next 100 years.*
>
> *While the ESA is decidedly vague regarding the definition of endangerment, it does give some indication of how "threatened" p* and t* values should relate to their "endangered" counterparts. Since a threatened species is defined as one which is "likely to become endangered within the foreseeable future," one need only interpret the terms "likely" and "foreseeable future" to relate "threatened" MVP to the "endangered" MVP. A reasonable interpretation of a "likely" event would be one which has at least a 50% chance of occurring. Quantifying "foreseeable future" is not so straightforward, but perhaps something like 10 years would be satisfactory. In other words, the "threatened" MVP is the population size that gives a 50% chance of reaching the "endangered" MVP within 10 years.*

This provided a frame of reference for the NMFS initial decisions concerning the status of various salmon stocks including Snake River fall chinook at the time this stock was added as a threatened species to the endangered species list.

THREATENED VERSUS ENDANGERED STATUS

The basic question is whether status of Snake River fall chinook has changed since Waples et al. (1991) evaluated stock status and NMFS provisionally decided in 1991 to list this stock as a threatened species, a decision that NMFS subsequently reaffirmed with a final listing decision in 1992.

Waples et al. (1991) evaluated a number of factors in considering the level of risk faced by Snake River fall chinook salmon in 1991 and concluded that:

> *the current population occupies a fraction of its former range, the remaining (and historically, the most productive) habitat having been inundated by reservoirs or blocked by dams.*

Waples et al. (1991) concluded that adult returns of Snake River fall chinook declined by three to four orders of magnitude from pristine levels. Waples et al. (1991) specifically recognized that the estimated number of wild spawners in 1987, 1989, and 1990 were the second, fourth,

and first lowest on record, respectively; and that in 1990 just 78 wild fish were estimated to have passed Lower Granite Dam, only 31% of the number in the next lowest year (1987).

Waples et al. (1991) evaluated the use of two time series of data for applying the Dennis model to Snake River fall chinook in an effort to determine extinction likelihood, and concluded that a statistically significant change in growth rate parameters of the population occurred for runs that returned following construction and operation of the four lower river dams (about 1980; the first year for which almost all returning adults had to outmigrate through Lower Granite Dam as juveniles). Because a time series used to estimate extinction probabilities that spans a fundamental change in parameters affecting the population can give misleading results, Waples et al. (1991) leaned heavily on the 1980-1990 estimates of "natural" fall chinook crossing Lower Granite Dam and concluded based upon application of the Dennis model to this data set that the probability of extinction within 100 years was 10.8%. This probability of extinction (based upon recent population trends) was less than the 95% probability of extinction level suggested by Thompson (1991) as a minimum viable population threshold for endangered status. However, other considerations and the higher probability of extinction associated with using a longer time trend in a second Dennis model led NMFS staff to conclude that a threatened listing decision was in order. Waples et al. (1991) concluded their stock status report with the following statement:

> *In light of the above factors, and further considering that a) drought conditions have likely adversely affected juvenile survival in several recent years, reducing the prospects for recovery in the near future as these year classes return as adults and b) there is clear evidence that stray hatchery fish of non-Snake River origin pose a serious threat to the genetic integrity of the wild population, the BRT concluded that Snake River fall chinook salmon face a substantial risk of extinction if present conditions continue.*

Following the Waples et al. (1991) paper and a proposed rule by NMFS to add Snake River fall chinook to the endangered species list with the status being defined as threatened (June 27, 1991; 56 FR 29547), various reviewers to the proposed rule stated that fall chinook should be listed as endangered rather than threatened. On April 22, 1992, NMFS responded to this very pointed criticism in the final rule and specifically stated:

> *The threatened species designation in the proposed rule was based on an assessment of the best available scientific and commercial information, taking account of efforts to protect the species. In making its final determination, NMFS considered the 1991 estimated escapement of 318 wild adult fall chinook salmon above Lower Granite Dam. This represents a considerable increase over the 1990 estimated escapement of 78 adults. Further, starting in 1991, all hatchery-produced fall chinook from the Snake and Umatilla Rivers were tagged in order to separate adult hatchery and wild fish at Snake River dams. Tagged hatchery fish will be prevented from ascending further upstream, while wild fish will be allowed to proceed. This measure will be significant in reducing any introgression of the Snake River gene pool with Columbia and Snake River hatchery-produced fall chinook salmon. Furthermore, at Lyons Ferry Fish Hatchery, the practice of taking wild fish for brood stock has been stopped. Despite the need for caution in using the most recent years figure in determining a trend, this increase approaching previous escapement levels typical of the 1980s may be attributable, at least in part, to the protective measures already undertaken. Consequently, NMFS is issuing a final determination to list the Snake River fall chinook salmon as threatened under the ESA.*

A very notable change in the NMFS approach to Snake River fall chinook and the listing status determination question is apparent in the two 1994 Federal Registers (emergency status change rule dated August 18, 1994, and the proposed permanent reclassification dated December 28, 1994). Rather than relying upon a reasoned, objective analysis of

available scientific and commercial data as in the previous administrative record, NMFS changed its approach and is now relying predominantly upon: (1) preseason projections of the 1994 return of fall chinook to the mouth of the Columbia River; (2) guesses relative to the 1995 return; and (3) a new characterization of wild escapements that have accrued since listing as being "low." Specifically, the December 28, 1994, Federal Register states:

> *After the listing of Snake River fall chinook salmon as a threatened species in 1992, adult counts at Lower Granite Dam during 1992 and 1993 remained at low levels. In-season estimates for the 1994 return indicate that the situation has not substantially improved. This lack of overall improvement during recent years, exacerbated by the low returns of 1994 and expected low returns in the next few years, indicates that the Snake River fall chinook salmon faces an imminent threat of extinction throughout all or a significant portion of its range. The projected adult return of listed Snake River fall chinook salmon to the Columbia River during 1994 is 803 fish, the second lowest on record (Columbia River Technical Staffs (CRTS) 1994). As discussed in CRTS (1994) and summarized in NMFS (1994), the number of listed Snake River fall chinook returning in 1994 is expected to be below replacement level (i.e., fewer progeny than parents); spawners have not replaced themselves in 7 or 8 of the last 9 years.*
>
> *Although final count data from the 1994 return will not be available until February 1995, a tentative forecast of the 1995 run size suggests that the return will be about 60% of that expected in 1994 (NMFS and USFWS 1994). While it is impossible to make specific projections for returns of fall chinook over the next 3 to 5 years, it is possible to comment generally on the prospects for decreasing run sizes. The number of offspring from the 1991 brood is apparently quite small based on the record low return of jacks in 1993. Therefore, the 5 year-old component of the 1996 return is likely to be low. There was sufficient escapement in 1992 and 1993 to allow for increased returns after 1995, but success of these runs will depend largely on improvements in migration passage and ocean survival conditions.*
>
> *Although risks associated with small population sizes are also applicable to Snake River fall chinook salmon, currently there is no evidence of multiple, naturally spawning subpopulations of this species. Still, the primary risk to Snake River fall chinook salmon remains the continued low numbers of spawning adults, and genetic and demographic risks will increase if the population remains at depressed levels for a number of consecutive years.*

Thus while in 1992, NMFS describes the count of 318 wild fall chinook over Lower Granite Dam as representing "*a considerable increase over the 1990 estimated escapement of 78 adults,*" in 1994, NMFS describes counts of 549 and 742 wild fall chinook over Lower Granite Dam in 1992 and 1993, respectively as escapements that "*remained at low levels.*"

The estimated wild escapement past Lower Granite Dam in 1990 was 78 fish, the lowest on record since 1980 when as Waples et al. (1991) documented, a statistically significant change in growth rate parameters of the population occurred. Since 1990, wild escapement past Lower Granite Dam has been estimated at 318, 549, 742, and 441 fish which represent the twelfth highest, third highest, first highest, and sixth highest escapements, respectively, of wild Snake River fall chinook during this 15 year period. The average escapement of fall chinook salmon past Lower Granite Dam from 1980 through 1990 was 377 fish; while the average for 1991 through 1994 was 512 fish, a 36% increase. The facts are that the estimated number of wild fall chinook passing above Lower Granite Dam has increased by a factor of about one third over the levels that escaped prior to listing and since the change in growth rate parameters to this population occurred as a direct result of loss of habitat and increase in migration difficulty due to dam construction. Additionally, the escapement of wild fall chinook above Lower Granite Dam in 1994 was not the second lowest on record as the preseason 1994 forecast indicated (and as the December 28, 1994 Federal Register uses

as best available scientific data), but was instead ranked number 11 of 20 since 1975 (when Lower Granite Dam was installed), and ranked number 6 of 15 since 1980 (the first year for which the majority of the adults had to circumvent all four lower river dams during their juvenile downstream migration). Given the currently restricted spawning and rearing habitat, the 1994 escapement of wild fall chinook was within the range of escapements expected it hardly approached a record low level as stated in the December 28, 1994 Federal Register.

Further, the record low count in 1993 of 39 jacks which was used as a rational in the December 28, 1994, Federal Register to predict a low run of adults in 1994 and a continued low run of adults in 1995, hardly resulted in a dismal return of adults in 1994. In fact the second lowest count of jacks passing Lower Granite Dam (102 jacks) occurred in 1992 and was followed one year later with an adult return of 742 fish (the highest count since 1980; rank 1 of 15) and an adult return two years later of 441 fish (the sixth highest count since 1980; rank 6 of 15).

Thus, the basic question as to whether status of Snake River fall chinook has changed since 1990 and whether or not this change justifies a change in the listing status has not been adequately substantiated by the information presented in the December 28, 1994, Federal Register. NMFS in announcing its decision to reclassify Snake River fall chinook from threatened to endangered failed to use the best available scientific and commercial data. Further, NMFS has substantially changed their characterization of the value of escapement increases since 1990 in an arbitrary and capricious manner. To properly address the change in listing status question, an objective analysis is required.

INFORMATION NEEDED TO DETERMINE THE NEED FOR A CHANGE IN THE LISTING OF SNAKE RIVER FALL CHINOOK

Several analyses necessary to make a biologically sound determination concerning the need to reclassify the Snake River fall chinook from threatened to endangered were absent from the December 28, 1994 Federal Register announcement. The following factors should be analyzed prior to any change in the listing of the Snake River fall chinook.

Escapement

An objective analysis should include the basic data concerning escapements of fall chinook through 1994. The basic data presented should include estimates of both "natural" fish and strays in the escapements. And to the extent possible, hatchery production should be separated from "natural" production so that trends in the "natural" population can be more fully evaluated. Because of the way the evolutionarily significant unit (ESU) is currently defined, the key question is whether or not "natural" escapements have increased over levels prior to listing. A change in status to the more conservative endangered level of ESA listing would be in order if natural escapements decreased relative to pre-listing levels.

Likelihood of Extinction

An objective analysis should compare the status and risk of extinction for fall chinook through 1990 to the status and risk of extinction for extinction based upon time series ending in 1990 versus time series ending in 1994 will indicate whether the likelihood of extinction has:

- decreased, indicating a change in status is not warranted;
- stayed the same, indicating a change in status is probably not warranted; or,
- increased, indicating a change in status is warranted.

Probability of Persistence with Respect to Survival

An objective analysis of the current status of Snake River fall chinook should also consider the new information recently developed in conjunction with the *IDFG v NMFS* litigation settlement negotiations relative to the probability of persistence with respect to survival under recent and various alternative hydro system management configurations. The key question here is whether changes in the management of the hydro system are placing the stock of fall chinook in more jeopardy (indicating a change in status may be warranted) or are placing the stock in less jeopardy (indicating a change in status is not warranted).

Spawner-Recruit Relationship

An objective analysis should include investigation of the effects of spawner density on recruitment of Snake River fall chinook. A spawner-recruit relationship developed for escapements past Lower Granite Dam is needed to assist in quantifying the level of escapement appropriate for this stock under present conditions. Prior analyses have concluded that escapements should increase above recent levels, but an objective analysis is generally lacking relative to how much increase is appropriate given the diminished availability of habitat for Snake River fall chinook since 1975.

This spawner-recruit relationship should be limited to escapements enumerated since 1975 since the progeny of these escapements had to negotiate all four of the lower river dams and these spawners and their recruits had to reside in the reduced freshwater spawning and rearing habitats available following construction of all major Snake River dams. This relationship (a Ricker function) has the potential to be far more informative than the spawner to spawner relationship developed by Dygert (1994) and Roler (1994) because it will help to determine if production of fall chinook is dependent upon spawner density as is typically the case for anadromous salmon populations. Further residuals in the modeled spawner-recruit relationship can be used in conjunction with other variables to better understand the factors currently limiting production of Snake River fall chinook spawning and rearing in the wild.

Forecasts of Adult Returns

An objective analysis should include evaluation of the accuracy of forecasts to predict future years returns of Snake River fall chinook before these forecasts are used to make listing status changes and before too much faith is placed in these forecasts for other ESA related management actions.

Hatchery Strays and Genetic Integrity

An objective analysis of the current status of this ESA protected stock should also address the "species" question. In determining if Snake River fall chinook qualify as a species under the ESA, Waples et al. (1991) concluded with the following statement

> *Although the NMFS Northwest Region Biological Review Team (BRT) concluded that, historically, Snake River fall chinook salmon were an ESU, it is not so clear whether this is still the case. One viewpoint is that introgression from Columbia River hatchery strays has caused the Snake River population to lose the qualities that made it "distinct" for ESA purposes. Evidence in support of this viewpoint includes genetic and tagging data documenting effects of straying on Lyons Ferry Hatchery brood stock, estimates that in 1990 a high proportion of fish passing Lower Granite Dam and found on nearby spawning grounds were hatchery strays, and the lack of any positive information documenting the continued existence of "pure" wild fish. However, given that 1) an ESU was present until at least the early 1980s, 2) substantial straying of upper Columbia River hatchery fish has occurred only within the last generation, and 3) no direct evidence exists for genetic*

change to wild fall chinook salmon in the Snake River, the BRT felt it would be premature to conclude that the ESU no longer exists.

Since 1990, four years of additional data are available concerning straye past Lower Granite Dam and the question of whether or not this stock of salmon still meets the NMFS standard of a "species" from an ESA standpoint should be addressed in the status review. Further, the historic stock of Snake River fall chinook is currently represented by two groups of fish:

(a) fish associated with Lyons Ferry Hatchery, fish not presently protected under the ESA because they are not classified as being in the Snake River fall chinook salmon ESU by NMFS; and

(b) progeny of fish spawning in the wild in the Snake River, fish which are protected under the ESA because they are the fish defined by NMFS to be in the Snake River fall chinook salmon ESU.

Fish readily cross between the ESA protected portion of the population and the ESA unprotected portion of the population across generations due to brood stock collections and straying. Up-to-date genetic information concerning introgression of Columbia River strays on the "natural" population should be summarized, analyzed, and presented. Models should be developed of the likely "genetic pool" of fish defined as "naturals" based upon various assumptions concerning the fitness of Snake River strays and Columbia River strays as they enter the spawning grounds used by the "naturals". Key questions and points that need to be addressed by a change in status review of the Snake River fall chinook salmon ESU include:

- Is it logical to have both a protected and an unprotected portion of the remnant endemic stock of Snake River fall chinook?
- Is it logical to have put into place a system of ESA mandated protection where members of the population move into and out of the ESU across generations and hence move in and out of the protected class?
- Is it logical to apply ESA mandated protection to the portion of the stock that likely least resembles the historic endemic stock?
- Should the ESU be modified and redefined to include Lyons Ferry Hatchery fish? And if so, is this modified ESU threatened or endangered?
- Does the protected portion of the stock (or as an alternative, both portions of the stock) still meet the species standard or has introgression resulted in a hybrid stock that no longer meets the ESU criteria for ESA protection?
- Should the appropriate ESU be Snake River-Upper Columbia River fall chinook? And, if so, is this potential ESU threatened or endangered?

DISCUSSION

Escapement

The longest continuous set of complete data concerning abundance of Snake River fall chinook are the counts of these fish as they passed over Ice Harbor Dam; counts are available from 1965 through 1994 (Table 1; Figure 1). Counts of adult fall chinook over Ice Harbor Dam decreased ten-fold from levels of about 10,300 per year from 1965-1974 to levels of about 1,300 per year from 1975-1979. These reductions reflect the stock reduction associated with construction of the full set of lower river dams. Counts for the period 1980 through 1990 (pre-

listing and post dam construction effects) averaged about 2,800, about double the counts during the 1975-1979 period. During this period (1980-1990), an egg bank program for Snake River fall chinook eventually led to the release of fall chinook at Lyons Ferry Hatchery, and resulted in the counts at Ice Harbor Dam reflecting not only the escapement of naturally spawning fish upstream of this dam but the returns to the upstream hatchery as well. Counts of Snake River fall chinook passing Ice Harbor Dam during the period 1991 through 1994 averaged about 3,500; about three-fold the average counts during the period 1975-1979 and about 25% above the levels counted during the 1980-1990 period. Counts of fall chinook passing Ice Harbor Dam during the period 1991-1994 also represent a combined assessment of both natural spawners and returns to the Lyons Ferry Hatchery.

Part of the brood stock development program for the Snake River egg bank and the continued development of brood stock for Lyons Ferry Hatchery involved taking fish ("mining") immediately upstream of the counting station at Ice Harbor Dam (Table 2; Figure 2). Between 1976 and 1990, from 162 to 1,613 of the Snake River adult returns were "mined" for brood stock. This resulted in the abundance of natural spawners being depressed by annual levels that ranged from 7% to 53% as the run progressed upstream (Table 1; Figures 3, 4, and 5). "Mining" was confined to known hatchery fish from 1991-1993; in 1994, no fish were "mined" at this downstream location.

Counts of fall chinook passing Lower Granite Dam have been made since 1975 (Table 3). Total counts of fall chinook passing Lower Granite Dam since 1975 have ranged from 575 fish in 1990 (385 adults and 190 jacks) to 2,585 fish in 1986 (784 adults and 1,801 jacks). Abundance of adults during the 1975-1979 period averaged about 640 fish; abundance of adults from 1980-1990 averaged about 620 fish; and, abundance of adults from 1991-1994 averaged about 860 fish or almost 40% higher than the earlier periods before Snake River fall chinook were added to the endangered species list as a threatened species.

Coded wire tag technology provided a tool during the early 1980s to identify individual stocks of salmonids. Use of this tool since 1983 in the Snake River has provided estimates of the number of chinook counted past Lower Granite Dam that were hatchery strays (Tables 3 and 4). Subtraction of the number of strays from the total count of fall chinook at Lower Granite Dam has allowed estimation of the numbers and proportions of the escapements that were the progeny of "natural" spawning (non-hatchery spawned fish). Abundance of non-hatchery spawned adult chinook passing upstream of Lower Granite Dam during the eight-year period 1983-1990 is estimated to average about 330 fish; whereas, abundance of these fish since ESA listing (1991-1994) is estimated to average about 510 fish or about 55% higher than the pre-listing average.

The effect of downstream brood stock "mining" on the estimates of "natural" spawners passing Lower Granite Dam can be made based upon simple proportions (Table 1). "Natural" escapements, adjusted for downstream brood stock "mining" since 1983, essentially removes the effects of the egg bank program and the Lyons Ferry Hatchery from the Lower Granite Dam count. Abundance of non-hatchery spawned adult chinook passing upstream of Lower Granite Dam during the eight-year period 1983-1990 after adjustment for brood stock "mining" is estimated to average 456 fish; whereas, abundance of these fish since ESA listing (1991-1994) is estimated to average 512 fish, an increase of about 12% over the pre-listing average. This 12% increase reflects the change in abundance of "natural" spawners before and after ESA listing without the confusing effects of the egg bank and hatchery program. Thus, the escapement data, both with and without adjustment for the confusing affects of the egg bank and hatchery program, do not support changing the status of Snake River fall chinook from threatened to endangered.

A summary of the total Snake River fall chinook population whether they were spawned in the wild or spawned in a hatchery is provided in Tables 5 and 6 and in Figure 6.

Likelihood of Extinction

The probability that Snake River fall chinook salmon would become extinct was estimated to be 10.8% by Waples et al. (1991) using an exponential diffusion model (Dennis et al. 1991). This estimate was made using natural escapements from 1980 to 1990 above Lower Granite Dam and employed a five-year averaging routine. Since that report, no one has been able to duplicate those results (see Cramer and Neeley 1993); and, many of the assumptions behind the analysis and the analytical technique itself may be suspect. In addition, there are four additional years of recent escapements which should help better assess the trend in escapements and project future stock abundances.

We developed a more robust method of evaluating trends in escapements and estimating the probability of extinction of Snake River fall chinook within 100 years (by 2089). This method (termed the bootstrap method) employs a bootstrapping technique which randomly selects a ratio of observed escapement by age that has resulted from a given escapement 3, 4, and 5 years before. This method makes no assumption on underlying statistical models, incorporates the age structure of the population into the analysis, and uses a nonparametric error structure. Four time series of data were compared using the bootstrap method:

(1) escapements from 1980-1990;

(2) escapements from 1975-1990;

(3) escapements from 1980-1994; and,

(4) escapements from 1975-1994.

The two time series ending in 1990 represent the information available at the time Snake River fall chinook were first listed. The two time series ending in 1994 represent the information available today and differences in the likelihood of extinction between these ending dates reflect the changes in extinction probability or the change in risk that the listed stock faces. The two time series starting in 1980 reflect the time period when the stock was affected by all Snake River dams during their life cycle; whereas, the time series starting in 1975 reflect a changing period in terms of affects of dams on the listed stock.

A fifth evaluation was conducted using the bootstrap method. The fifth comparison weighted the ratios from parent escapements to 1991-1994 age specific escapements so that these ratios were twice as likely to be randomly chosen as other earlier ratios. This took into account that changes initiated to protect Snake River fall chinook salmon after 1990 would continue and thus ratios calculated using escapements in these years would be more likely to occur than ratios in previous years.

For each simulation in the bootstrap method, the age composition of 1975-1982 and 1994 escapements were randomly selected from the estimated age compositions of the 1983-1993 escapements. The ratios of: (1) escapement in year *i* to the age 3 escapement in year *i+3* for the years 1975-1991; (2) escapement in year *i* to the age 4 escapement in year *i+4* for the years 1975-1990; and, (3) escapement in year *i* to the age 5 escapement in year *i+5* for the years 1975-1989 were calculated to provide the set of ratios to randomly choose from to produce age specific escapements from the parent escapements. Thus production, by age, from a give escapement was randomly selected from historical production ratios.

The escapements used in the bootstrap method are presented in Table 7 and are taken from Dygert (1994) and Matylewich (personal communication) The age compositions of the escapements were taken from Roler (1994). The bootstrap method used 1,000 simulations. Probabilities of achieving specific escapements were estimated as the proportion of times that the 1,000 simulations reached these escapements in the year 2089.

The bootstrap selection process can best be described by illustrating the process with an example (Tables 8 and 9). Table 8 demonstrates how

the age compositions are randomly assigned to years that have no age composition data and how production ratios are calculated. The escapement in 1975 is the parent escapement of age 3 fish returning in 1978, age 4 fish in 1979, and age 5 fish in 1980. Since no age composition data is available for 1978, a year with age composition data is randomly chosen (1985) and that age composition is assigned to 1978. Thus 5.4% of the escapement in 1978 (640 fish) is calculated to be comprised of age 3 fish, or 34.6 fish. This results in an estimate of 1,000 fish escapement in 1975 producing 34.6 age 3 fish in 1978, or a parent escapement to age specific return escapement of 0.0346. In a similar manner, the ratio of the 1975 parent escapement to 1979 age 4 return escapement is 0.3610 and the ratio of the 1975 parent escapement to the 1980 age 5 return escapement is 0.1170. This process is continued for parent escapements through 1989 for age 5 returns, 1990 for age 4 returns, and 1991 for age 3 returns. The random selection of age composition for years with unknown age composition is repeated for each of the 1,000 simulations.

Table 9 demonstrates the forecast procedure for one simulation. A parent escapement in 1992 will produce age 3 fish in 1995. Randomly, one of the age 3 parent to age specific return escapement ratios (0.0679) is chosen, which when multiplied by the 1992 escapement, yields an age 3 escapement of 37.3 fish. Likewise, the parent escapement in 1991 of 318 fish, after randomly choosing an age 4 parent to age specific return escapement ratio of 0.8510, will produce 270.6 for the age 4 escapement, and the parent escapement in 1990 of 78 fish, after randomly choosing an age 5 parent to age specific return escapement ratio of 0.1420, will produce 11.1 in the age 5 escapement. This results in a total escapement of 319 fish in 1995. This process is continued through the year 2089 to produce a simulated escapement of 899 fish. If the escapement had decreased to the specified level of extinction (either 1 or 30 fish) the simulation is terminated and the population is considered extinct.

We also applied the exponential diffusion model (Dennis et al. 1991) to the same four time series to estimate extinction likelihoods because that is the method Waples et al. (1991) used when Snake River fall chinook were first listed.

Waples et al. (1991) used running averages with the exponential diffusion model; we used the actual escapements. Running the exponential diffusion model provides a comparison to the results of the bootstrap method and creates a link to earlier evaluations of the extinction risk that Snake River fall chinook salmon face.

The outlook for the Snake River fall chinook salmon population using escapement data truncated in 1990 is very pessimistic using either the bootstrap method (Table 10 and Figures 7-11) or the exponential diffusion model approach (Table 11). The results from the bootstrap analysis estimates that the probability of extinction is 97.0% or 98.3% (depending if the 1975-1990 or 1980-1990 data set is used, respectively) if extinction is defined as 1 fish. If extinction is defined as 30 fish (see Crammer and Neeley; 1993 for an explanation of the rational of this value) then all simulations using the data through 1990 resulted in the abundance falling below the extinction criteria. Using the exponential diffusion model with data only through 1990, the probability of the population abundance falling below extinction levels of 1 or 30 always exceeded a probability of 99%.

However, if the 1991 through 1994 escapement data is included in the analysis, the outlook for the Snake River fall chinook salmon population is substantially more optimistic. In the bootstrap analysis, none of the simulations resulted in population abundances approaching 1 fish at the end of 96 years. In fact, the probability of reducing the population to 30 fish or less was 0.3%, 5.0%, and 4.4% for the 1980-1994 data series, the 1975-1994 data series, and the weighted analysis using the 1975-1994 data series; respectively. None of these probabilities meet the criteria for an endangered species as specified by Thompson (1991). In fact, there is less than an 8% chance of the population being fewer than 300 fish in 2089, less than a 22% chance of the population being fewer than 1,000 fish in 2089, and over one-half of the

simulations resulted in populations being greater than 5,000 fish in 2089. The exponential diffusion model also demonstrated markedly better forecasts using data through 1994. The probability of the escapement reaching 1 fish by 2089 decreased from over 99% to 35% using data from 1980-1994, and to 53% using data from 1975-1994. The same reduction in probability of extinction, when extinction is defined as 30 fish, was estimated to be 68% and 82%; respectively.

The addition of the 1991-1994 escapements considerably improves the assessment of the status of the Snake River fall chinook salmon stock. The 1993 escapement of 742 chinook salmon was the largest since 1975 and the 1991-1994 4-year average escapement of 512 fish was the largest 4-year average since 1977-1980. These recent large escapements, compared to the previous 10 years, are evidence that the trends in stock abundance are not nearly as bleak as previously thought. <u>These data do not support changing the status of Snake River fall chinook from threatened status to endangered.</u>

Probability of Persistence with Respect to Survival

The Biological Requirements Work Group (BRWG) formed as a result of the *IDFG v NMFS* litigation settlement negotiations has been modeling Snake River fall chinook under various alternative hydro management scenarios. The State and Tribal Fishery Agencies Analytic Team (STFA), a component of the BRWG, submitted a report entitled *Preliminary Summary of Fall Chinook Model Results for 1995 Biological Opinion* to NMFS on February 10, 1995, which provides modeling results obtained as of that date (STFA 1995). These results include estimates of the probability of persistence of Snake River fall chinook with respect to survival. The BRWG defined 300 spawners as a critical minimum escapement level for Snake River fall chinook. The STFA identified 70% as a 24 year or short-term probability level and 90% as a 100 year or long-term probability level that is equivalent to the historic probabilities used in the spring/summer chinook assessment; these values provide useful benchmarks in understanding STFA fall chinook modeling results.

The STFA estimated that the proportion of yearly escapements at or above 300 for a 24 year period was 0.38 and 0.39 with depensation and without depensation; respectively, based upon recent runs and recent hydro management conditions (BY 80-88). The STFA estimated that the proportion of yearly escapements at or above 300 for a 100 year period was 0.09 with or without depensation based on recent runs and recent hydro management conditions (BY 80-88). In other words, the proportions of Snake River fall chinook escapements exceeding the threshold value of 300 is projected to be under 40% in the short-term and under 10% in long-term if hydro management conditions remained as they were during the 1980s. These short-term and long-term probabilities are substantially less than the 70% and 90% STFA suggested benchmark levels, indicating that the stock was in jeopardy in the 1980s and would remain in jeopardy under these 1980 type hydro management conditions.

The STFA conducted similar modeling for Snake River fall chinook for a variety of other hydro system management scenarios under discussion in the *IDFG v NMFS* litigation settlement negotiations because management of the hydro system is currently being altered to benefit listed salmon species and clearly, the hydro system will not be allowed to continue to operate under the 1980-1988 base level conditions. The hydro system management scenario, as outlined in the 1994-1998 biological opinion, was used as one of the hydro system management scenarios. Depending upon depensation and a variety of assumptions concerning transport benefits and predator control effectiveness, the STFA estimated that the proportion of yearly escapements at or above 300 for a 24 year period ranged from 0.44 to 0.95 based on the 1994-1998 hydro biological opinion with 4 of the 8 (50%) model cases exceeding the short term benchmark level of 70%. Comparative probabilities for these 8 model runs over a 100 year period resulted in probabilities ranging from 0.11 to 0.96 with 2 of the 8 (25%) model cases exceeding the long term benchmark of 90%.

This indicates that the probabilities of the Snake River fall chinook run having escapements in excess of 300 fish is considerably higher than was the case based on recent years; and, the level of jeopardy is reduced over the recent year model runs.

Assuming that reasonable and prudent alternatives are implemented to benefit listed salmon under the final biological opinion for the hydrosystem, which will be issued as a result of the IDFG v. NMFS judgement, the probabilities of Snake River fall chinook escapements exceeding 300 fish will increase over the levels modeled with the original 1994-1998 biological opinion.

Indeed, when the STFA used hydro management options as defined under the Detailed Fishery Operating Plan (DFOP 1993) with 16 options under a variety of assumptions concerning depensation, transport benefits, and predator control effectiveness, the STFA estimated that the proportion of yearly escapements at or above 300 for a 24 year period was always 1.00 (always exceeded the benchmark level of 70%) and the proportion of yearly escapements at or above 300 for a 100 year period was also always 1.00 (always exceeded the benchmark level of 90%).

It is uncertain exactly how the hydro system will be managed in coming years, but it is likely that alternatives will be implemented that will increase the probability that escapements will exceed 300 fish. Hence, Snake River fall chinook are in less jeopardy now than was the case at the time of listing (the model results associated with recent BY 80-88). The STFA model results do not support changing the status of Snake River fall chinook from threatened to endangered. The status of Snake River fall chinook is projected to improve over conditions in place at the time of listing because of altered and improved hydro system management.

Spawner-Recruit Relationship

Two spawner-recruit relationships were developed for the Snake River fall chinook salmon stock. The first relationship was developed using only natural adult escapements estimated to pass over Lower Granite Dam and the second relationship was developed using all adults counted over Lower Granite Dam. Escapement data used is provided in Table 3 (column 1 for naturals and column 6 for the total escapements). Estimates used to apportion escapements by age were taken from Roler (1994) for the 1975-1993 escapements and the 1983-93 average was used for the 1994 escapement.

Total returns (recruits) were calculated in adult equivalents (AEQ) for both catches and escapements. Returns in the escapement were calculated back to the river mouth by dam conversion rates included from the CTC chinook model IDL file which agree favorably with those conversion rates documented in NMFS (1994). Catches were calculated by exploitation rate analysis (ER) provided in the Pacific Salmon Commission chinook model (CTC 1994) for ocean and terminal catches. The Pacific Salmon Commission chinook (PSC-C) model does not include in-river test fish catches or some subsistence and ceremonial catches. Consequently, 30% was added to in-river catches provided in the PSC-C model to account for these catches. The PSC-C model exploitation rates are based upon coded wire tag analysis, out-putting total ER, ocean ER, and terminal ER. Total AEQ return is calculated from ESC/1-ER. Consequently, total returns were calculated as escapement to the river mouth plus terminal catches plus ocean catches, with both terminal and ocean catches adjusted to AEQs. Simple Ricker spawner-recruit relationships were fitted to the paired sets of spawners and total returns.

The estimated average AEQ return for the 1975-1989 brood years was 2,949 fish, composed of an escapement to the river mouth of 1,573 fish, an ocean AEQ catch mortality of 849 fish, and an in-river AEQ catch mortality of 527 fish (Table 12). Parent year escapements averaged 485 natural spawners. Ocean mortality averaged 29% and in-river mortality (from fishing and dams) averaged 56% of the total AEQ return and averaged 78% of the return to the river mouth. Return per spawner averaged 6.7, which is high for a population with high out-migrant mortality (i.e., even with 91% to 96% downstream mortality, an average

of almost seven fish survived to die from fisheries or dams; or, escaped to spawn). This implies that some of the non-natural spawners were at least partially successful in producing progeny. The return per spawner for the 1975-1989 broods, when all spawners over Lower Granite Dam are included, was estimated to average 5.0 (Table 13).

The estimated returns plotted against natural spawners shows a wide fan-shaped pattern (Figure 12). There is little evidence of density dependence as the largest escapement (1,000 spawners) produced an estimated three recruits per spawner. The estimated returns plotted against all Lower Granite Dam spawners is similarly shaped. In both spawner-recruit relationships, the estimated curve is very flat and similar levels of returns are predicted to result from various spawning levels. Morishima (1994) indicates this is typical (from simulation studies) of extreme downstream mortality. It is possible that it is a product of errors in age composition and catches. There are no data points below the replacement line in either of the two spawner-recruit relationships. If recent escapements were on the right hand side of the spawner recruit relationship where density dependence was operating, data points below replacement would be expected, particularly given the level of downstream mortality that occurs.

If the data are accurate, the estimated number of parents needed to produce a maximum sustained yield return is 440 natural adults or 472 total spawners counted over Lower Granite Dam. Another way to determine an appropriate escapement goal (other than an MSY escapement) would be to choose an escapement level that maximizes returns. The number of spawners predicted to produce maximum returns are 516 naturals or 570 total spawners over Lower Granite Dam. Recent year escapements are on the order of these estimates. The shape of the spawner-recruit curves indicates that at spawner densities observed, there does not appear to be a strong density dependent spawning or rearing limitation for Snake River fall chinook salmon. Further, recruitment is not below replacement even with the high levels of migration corridor mortality. Based on these analysis it seems likely that escapements on the order of double the indicated MSY levels (around 1,000 adults counted over Lower Granite Dam) would produce strong returns.

In an attempt to determine if the estimated returns were correlated with marine survival and river flows, a multiple regression with three independent variables (escapement, marine survival, and river flow) was run against the returns using both the natural escapements and the total adult escapement past Lower Granite Dam. The marine survival index was taken from CTC (1994) and was for the Salmon River chinook salmon stock, a north Oregon coast stock that has a similar ocean distribution pattern to Upper Columbia River brites and Lyons Ferry Hatchery fish. River flows were for the Snake and Columbia rivers during July and August. The multiple regressions improved the modeled fit of the spawner-recruit relationships somewhat, indicating that even with confounding errors, marine survival (surrogate = Salmon River chinook marine survivals) and river flows were affecting recruitment.

Residuals for the second spawner-recruit relationship (all adults counted over Lower Granite Dam) were plotted (Figure 13). The residuals are ordered and correlate somewhat with the marine survival estimates for Salmon River chinook (R^2 = 0.25). The residuals are positive at the beginning of the time series and negative at the end of the time series (positive meaning the returns were higher than predicted from the spawner-recruit curve).

Because of time limits due to the deadline for responding to the December 28, 1995, Federal Register, we could not expend the level of research this topic deserves; particularly with regard to residuals analysis and comparing other variables to these residuals. We recommend that the topic be further investigated as it likely will bear fruit useful to ESA management related activities for the Snake River fall chinook population.

Forecasts of Adult Returns

The primary justification NMFS uses in the Federal Register dated December 28, 1994, for changing status of Snake River fall chinook salmon from threatened to endangered status are forecasts of abundance in 1994 and 1995. Consequently it is prudent to evaluate how well prior forecasts of Snake River fall chinook have performed. The following provides such an evaluation:

Year	Projection of Natural Escapement Over Lower Granite Dam	Actual Escapement Over Lower Granite Dam	Differences Number	Differences Percent
1993	457	742	+285	162%
1994	299	441	+142	147%

The forecast track record for Snake River fall chinook is short in terms of duration. Both projections significantly underestimated the actual escapements past Lower Granite Dam. Use of projections that have so significantly underestimated actual escapements as the basis for changing the listing status of Snake River fall chinook is not consistent with the Endangered Species Act requirement to use the best available scientific and commercial data when making listing decisions.

Hatchery Strays and Genetic Integrity

Coded wire tag technology was developed during the late 1970s. This technology has provided fishery scientists with a tool to identify origins of returning anadromous salmonids. Releases of hatchery spawned chinook at various Columbia Basin facilities were first coded wire tagged during the late 1970s and returns of these fish during the early 1980s provided the first estimates of straying rates of these hatchery spawned fish.

Adult Snake River strays in the escapement past Lower Granite Dam were first documented in 1983 and straying of Snake River hatchery fish past this dam have occurred each year since then (Tables 3 and 4 and Figures 4 and 5). Snake River hatchery strays were estimated to represent more than 10% of the total escapement past Lower Granite Dam during 10 of the 11 years between 1983 and 1993 (Table 4) and these fish were estimated to represent more than half of the total escapement during the years 1987 (67%) and 1990 (52%).

Adult Columbia River strays in the escapement past Lower Granite Dam were first documented in 1984 and straying of Columbia River hatchery fish past this dam have occurred each year since then (Tables 3 and 4 and Figures 4 and 5). Most of the Columbia River strays were from juvenile fall chinook salmon stocked in the Umatilla River, although hatchery fish from other Columbia River system hatcheries have also strayed past Lower Granite Dam and entered the Snake River spawning grounds. Columbia River hatchery strays were estimated to represent more than 10% of the total escapement past Lower Granite Dam during 4 of the 10 years between 1984 and 1993 (Table 4) and these fish were estimated to represent more than 20% of the total escapement during the years 1989 and 1990.

The potential affect of such high hatchery stray rates on the Snake River spawning grounds, both from Snake River hatcheries and from Columbia River hatcheries was an issue of concern when Snake River fall chinook were first listed under the Endangered Species Act as a threatened species. Additionally, contamination by Columbia River hatchery fish of the brood stock used at Lyons Ferry Hatchery was a concern at the time Snake River fall chinook were listed. Waples et al. (1991) cited the proportion of Columbia River hatchery strays entering the brood stock at Lyons Ferry Hatchery as 4%, 18%, 39%, and 25% in 1987, 1988, 1989, and 1990; respectively.

In 1990, a genetic control program was implemented. "Mining" for Lyons Ferry Hatchery brood stock at Ice Harbor Dam and at Lower Granite Dam was confined to fish with coded wire tags (hatchery spawned fish). Before gametes of these fish were mixed with other gametes, their tags

were read and only those fish with Lyons Ferry Hatchery codes were allowed to enter the Lyons ferry brood stock from 1990 on. Eggs and sperm taken from non-Lyons Ferry tagged fish were transferred to a downstream "mongrel" hatchery. Further, the mixed ancestry fish from the Lyons Ferry Hatchery brood stock spawned in 1989 were all marked with coded wire tags and returns from this tagged lot of fish have not been allowed into future generations of the brood stock. Also, the fish released from Lyons Ferry Hatchery and the fish released in the Umatilla River (the predominant population of Columbia River strays) since that time were all marked with coded wire tags to better enable an assessment of future straying.

An effort has been made to trap as many fish as possible at Lower Granite Dam and remove those fish with coded wire tags in an attempt to control straying of hatchery fish on the spawning grounds. This program has only been partially successful because the Lower Granite trap is not 100% efficient; and further, strays from other Columbia River hatcheries are not 100% coded wire tagged. As a result, the straying rate for Snake River hatchery fish past Lower Granite Dam reached its lowest level in 1993 (4%) while the straying rate of Columbia River hatchery fish has only been partially abated (see Mundy 1994 for a detailed description of the results of this effort). In 1993, more Columbia River hatchery strays (167 fish; 18% of the total escapement) migrated past Lower Granite Dam than did Snake River hatchery strays (43 fish; 4% of the total escapement). Further, because of the success of this program in stemming the Snake River hatchery strays, the potential effect of Columbia River hatchery strays altering the gene pool has increased (i.e. the relative contribution of Columbia River strays on the population of fall chinook spawning in the wild has increased).

Although the escapement numbers used to represent "natural" spawners in the ESU have been adjusted to account for both Columbia River and Snake River hatchery strays, the potential effect of this straying on the "gene pool" has not been adequately evaluated. Use of the escapement estimates of "natural" fish only in evaluations of escapement trends past Lower Granite Dam only partially addresses the potential problem. These estimates of the "natural" escapement are only realistic if hatchery strays are entirely unsuccessful in reproducing themselves (i.e., their fitness is zero). If fitness is anything other than zero, the effect of straying is cumulative. In other words, the proportion of "stray" genes in the population at any one time is a function of both fitness and the additive level of straying that continues to occur each year.

A simple dilution model was developed to better evaluate the effect of straying on the "natural" escapement gene pool. The starting assumption was that no straying of Snake River hatchery fish occurred prior to 1983 and no straying of Columbia River hatchery fish occurred prior to 1984. Although these are the first years when straying was documented, it must be remembered that prior to this time, coded wire tag technology was not available to detect strays. It seems likely that strays, both from the Snake River hatchery program (Hagerman Hatchery) and from the Columbia River hatchery program (various hatcheries) likely entered the Snake River spawning grounds prior to 1983. Thus the dilution model will likely underestimate true effects. A second assumption used in the dilution model was that random mating occurred among all fish in the escapement. Annual stray rates as documented in Table 4 were used along with an assumed age composition for returns of 30% age 3, 56% age 4, and 14% age 5. Fitness values of 0.0, 0.5, and 1.0 for all hatchery strays and for just Columbia River hatchery strays were used through this time series dilution model to predict the composition of the current gene pool.

The additive effects of continued straying on the gene pool if fitness of strays is other than zero is readily apparent from this simple dilution model (Table 14 and Figure 14). If both Snake River and Columbia River hatchery strays are a concern, fitness values of 0.5 and 1.0 result in the 1994 gene pool being composed of only 24% and 10% "natural" genes; respectively. If only Columbia River hatchery strays are a concern, fitness values of 0.5 and 1.0 result in the 1993 gene pool being composed of only 78% and 62% "natural" genes; respectively. It seems unlikely that fitness of strays is zero and it seems unlikely

that straying of hatchery fish above Lower Granite Dam was merely coincidental with the advent of coded wire tag technology. Consequently, it seems likely that at least some level of introgression of the gene pool called "naturals" has occurred due to straying of hatchery fish. Thus the gene pool of progeny of fish that spawn in the wild today is likely different than it was a few years ago.

A similar dilution model was developed for the Lyons Ferry Hatchery brood stock (Figure 15). Results indicate that the current brood stock is likely more similar to the prior "natural" stock than is the current population of fall chinook spawning in the wild and this is because of the efforts at the hatchery to protect the genetic integrity of the brood stock.

Although there is a clear potential for introgression of the Snake River fall chinook gene pool by Columbia River hatchery strays, the question of fitness of these strays remains somewhat open. Waples et al. (1991) provided genetic data showing the relationship of Snake River fall chinook to other Columbia River chinook populations as well as showing how allelic frequencies of Snake River fall chinook were potentially converging with Upper Columbia River fall chinook populations.

Since the initial listing decision, fall chinook salmon spawning in the Snake River have been genetically sampled along with outmigrating juveniles and Lyons Ferry hatchery fish. Although results from much of this research have not been published and made generally available, the researchers involved with these studies have verbally told Alaska Department of Fish and Game staff that:

- Samples of fall chinook adults returning to the Snake River, including strays, have an increased genetic affinity to the Columbia River cluster of populations.

- Samples of juveniles collected from the Snake River cluster with the historic Snake River fall chinook group rather than with any other group.

- The genetic distances, albeit small, between Snake River and Columbia River fall chinook, observed by NMFS in the 1970s, generally persist through 1994.

- Rare genotypes endemic to the Snake River fall chinook population persist in the 1994 juvenile collection.

- Stray chinook from the Columbia River apparently have not shifted the frequencies of the Snake River outmigrants, nor have they swamped rare endemic genotypes.

- Snake River fall chinook rare genotypes have not been lost due to bottlenecking.

- The available genetic data indicates that the Columbia River strays have not contributed substantially, at least yet, to the Snake River gene pool.

- Although the Snake River fall chinook ESU is facing challenges from straying and bottlenecking, the ESU remains basically intact through 1994.

- Lyons Ferry Hatchery is the reserve for genotypes for the ESU and Lyons Ferry Hatchery fish should be included in the ESU.

The dilution modeling results and comments from geneticists studying potential introgression of the Snake River fall chinook salmon ESU indicate that it would be prudent to add the Lyons Ferry Hatchery brood stock into the Snake River fall chinook salmon ESU. The following factors also support the inclusion of the Lyons Ferry Hatchery brood stock.

- The Lyons Ferry Hatchery brood stock offers the potential of restocking what remains of the Snake River fall chinook's natural habitat while maintaining genetic integrity. Presumably, the exclusion of the Lyons Ferry Hatchery brood stock stems from the view that the protections of the ESA should extend only to listed species in the wild, not species that have been removed from natural ecosystems. However, the habitat of the Snake River fall chinook has been drastically altered and the remaining freshwater spawning and rearing habitat is but a fraction of what was available historically. The progeny of "naturally" spawning fish are currently protected under the ESA, even though they are routinely removed from the wild and transported through the river migration corridor by truck or barge. There is no sound biological reason to exclude fish with the same genetic lineage from the protections of the Act, merely because they spawned and reared in the "unnatural" habitat of the Lyons Ferry Hatchery.

- The exclusion of the Lyons Ferry Hatchery brood stock leads to an illogical result, by splitting a distinct population into a protected and an unprotected class.

- The exclusion of the Lyons Ferry Hatchery brood stock leads to an illogical result, by creating a situation where members of a distinct population segment move into and out of the ESU across generations. Consequently, progeny of the distinct population segment may or may not be afforded protection under the ESA, depending upon where they reproduce.

- The exclusion of the Lyons Ferry Hatchery brood stock means that the segment of the population that is most similar to the historic population segment is not protected under the ESA, while a population that may be less similar to the historic population segment is protected.

The level of genetic distinctness (genetic distance, see Waples et al. 1991) between Snake River fall chinook and Columbia River fall chinook is small, but apparently this difference is persisting in the face of substantial straying. Further, the Snake River historically provided unique chinook habitat. For these reasons, although it may be prudent to retain a distinct population segment of Snake River fall chinook salmon, the focus and intent should be that fall chinook retain an important role in the ecology of the Snake River ecosystem. The protected population should include Snake River hatchery fish and fish that spawn naturally in the Snake River.

Because the Snake River habitat has been so altered by the construction of dams, adaptive evolution of the chinook population inhabiting this area will likely take place. In that vein, the past and continued straying of Columbia River fall chinook and the mixing of these fish with the endemic Snake River fall chinook population may in the end be beneficial as the population evolves and adapts to this severely altered ecosystem.

Although the question of changing the status of Snake River fall chinook from threatened to endangered was addressed in this document from the standpoint of the currently defined ESU, best available scientific and commercial data indicates that the ESU itself needs redefinition. Subsequent to redefinition of the ESU, the question of whether or not the revised ESU should be included on the endangered species list; and, if so, at what level, threatened or endangered, needs to be evaluated and answered based upon best available scientific and commercial data.

CONCLUSIONS

The best available scientific and commercial data indicates that the change in status of the currently defined Snake River fall chinook salmon ESU from threatened to endangered is not appropriate. Status of the currently defined ESU has improved since listing and the likelihood of extinction has diminished.

We have identified six factors we believe need to be analyzed and considered prior to any reclassification of Snake River fall chinook. Highlights of our analyses are as follows:

1. Escapement

The recent year average of non-hatchery spawned adult chinook passing upstream of Lower Granite Dam (1991 to 1994) is 510 fish. This is 55% higher than the 1983 to 1990 average of 330 fish. After the effect of "mining" has been accounted for, the 1991-94 average of 512 fish is 12% greater than the 1983 to 1990 average of 456 fish. By either analysis, the population has increased since first being listed as threatened.

2. Likelihood of Extinction

We analyzed the probability of extinction using both the original Dennis extinction model and a bootstrap model, and compared performance between pre-listing and post-listing time periods. The outlook using data through 1990 is very pessimistic for either model, with the probability of extinction being greater than 97%. The addition of data through 1994 considerably improves the assessment of the stock. Over 50% of the simulations using the bootstrap method resulted in populations greater than 5,000 fish in 100 years. The Dennis model responded similarly with the probability of extinction (extinction $\leq$ 30 fish) dropping to 68%.

3. Probability of Persistence with Respect to Survival

The STFA analyzed the probability of persistence for the draft 1994-98 hydro biological opinion. Depending upon the assumptions in it, they concluded that the proportion of yearly escapements at or above 300 for a 24-year period ranged from .44 to .95. Further, the DFOP plan assembled by the States and Tribes estimated that the proportion of yearly escapements at or above 300 for a 24-year period is always 1.00. Although it is uncertain how the hydro system will be operated, it seems certain that the hydro system management, once defined, will increase the probability that escapement will exceed 300 fish.

4. Spawner-Recruit Relationship

A Ricker spawner-recruit relationship was derived from the data. If the data are accurate, a total of 440 "natural" adults or 472 total spawners are needed to produce maximum sustained yield under the present conditions of reduced habitat availability and quality. The number of spawners that would produce the maximum return are 516 "naturals" or 570 total spawners over Lower Granite Dam. However, given that 1) there are measurement errors and confounding environmental influences in the database; 2) there is little evidence of density-dependent mortality shown; and, 3) the estimated return per spawner was 3:1 for the 1975 observed escapement of 1000 spawners, we conclude that escapements on the order of double the MSY (1,000 fish) would produce strong returns. Recent year escapements are on the order of these estimates.

5. Forecasts of Adult Returns

In proposing a change in status, NMFS has used the 1995 forecast as evidence for changing the listing. Past forecasts for Lower Granite Dam escapement are only available for 1993 and 1994. The forecasts were substantial underestimates (62% in 1993 and 47% in 1994). The continued use of forecasts by the agency when they have been shown to be so significantly in error in the past, is not consistent with the ESA rquirement to use the best available scientific and commercial data.

6. Hatchery Strays and Genetic Integrity

Hatchery strays from both the Columbia and Snake Rivers have been documented since 1983. We evaluated the effect of straying on the natural escapement gene pool. If both Snake and Columbia River hatchery strays are a concern and fitness values of .5 and 1.0 are used, the 1994 gene pool is composed of 24% and 10% "natural" genes. A similar analysis on the Lyons Ferry hatchery brood stock indicates that the

current brood stock is likely more similar to the pre-dam "natural" stock than is the current population spawning in the wild.

We also conclude that because the habitat has been so altered by hydro development, adaptive evolution of the chinook population inhabiting this area will likely take place. Further, we believe that the status of the currently defined ESU has improved since listing and the likelihood of extinction has diminished and that it is the ESU itself that needs to be redefined.

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Table 1. Proportion of chinook passing Little Goose and Ice Harbor Dams used for Lyons Ferry brood stock and adjustments to natural escapements over Lower Granite Dam (located upstream) due to the brood stock "mining", 1965-1994.

	Adult Fall Chinook Counted Over Ice Harbor Dam and Removed for Brood Stock			% Passage Allowed Past lower	Brood Stock Adjust.	Adult Fall Chinook Natural Escapements Past Lower Granite Dam	
Year	Counted	Removed	% Removed	Dams	Factor	Unadjusted	Adjusted
1965	8,200	0	0	100%	1.00	NA	NA
1966	12,800	0	0	100%	1.00	NA	NA
1967	14,000	0	0	100%	1.00	NA	NA
1968	19,500	0	0	100%	1.00	NA	NA
1969	13,600	0	0	100%	1.00	NA	NA
1970	9,000	0	0	100%	1.00	NA	NA
1971	9,300	0	0	100%	1.00	NA	NA
1972	7,500	0	0	100%	1.00	NA	NA
1973	6,700	0	0	100%	1.00	NA	NA
1974	2,400	0	0	100%	1.00	NA	NA
1975	1,900	0	0	100%	1.00	1,000	1,000
1976	1,100	0	38%[1]	62%	1.61	470	757
1977	1,200	395	33%	67%	1.49	600	894
1978	1,100	368	33%	67%	1.49	640	954
1979	1,200	439	37%	63%	1.59	500	795
1980	1,200	394	33%	67%	1.49	450	671
1981	770	407	53%	47%	2.13	340	724
1982	1,600	473	30%	70%	1.43	720	1,030
1983	1,800	619	34%	66%	1.52	428	651
1984	1,700	663	39%	61%	1.64	324	531
1985	2,046	589	29%	71%	1.41	438	618
1986	3,104	212	7%	93%	1.08	449	485
1987	6,788	1,613	24%	76%	1.36	253	344
1988	3,847	1,076	28%	72%	1.39	368	512
1989	4,634	1,179	25%	75%	1.33	295	392
1990	3,470	1,092	31%	69%	1.45	78	113
1991	4,500	361[2]	0	100%	1.00	318	318

Year	Adult Fall Chinook Counted Over Ice Harbor Dam and Removed for Brood Stock: Counted	Removed	% Removed	% Passage Allowed Past lower Dams	Brood Stock Adjust. Factor	Adult Fall Chinook Natural Escapements Past Lower Granite Dam: Unadjusted	Adjusted
1992	4,636	256[2]	0	100%	1.00	549	549
1993	2,805	129[2]	0	100%	1.00	742	742
1994	2,087	0	0	100%	1.00	441	441

[1] Brood stock removal in 1976 took place at Little Goose Dam rather than Ice Harbor Dam; 430 adults counted, 162 removed (38%).

[2] Removal of fall chinook for Lyons Ferry brood stock from 1991 through 1994 has been selective; only fish with missing adipose fins (coded wire tagged) have been removed; and hence, there has been no effect on upstream passage rate of "natural" fish spawning above Lower Granite Dam.

Table 2. Number of fall chinook associated with the Snake River egg bank program from 1975-1983 and with the Lyons Ferry Hatchery from 1984-1994.[1]

Year	Lyons Ferry Hatchery Volunteers: Adults	Jacks	Kalama Falls Hatchery: Adults	Jacks	Collected at Ice Harbor Dam: Adults	Jacks	Collected at Lower Granite Dam: Adults	Jacks	Total Brood Stock: Adults	Jacks
1975	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	162[2]	?	0	0	162	?
1977	0	0	0	0	395	?	0	0	395	?
1978	0	0	0	0	368	?	0	0	368	?
1979	0	0	0	0	439	?	0	0	439	?
1980	0	0	208	?	394	?	0	0	602	?
1981	0	0	561	?	407	?	0	0	968	?
1982	0	0	98	?	473	?	0	0	571	?
1983	0	0	86	?	619	?	0	0	705	?
1984	0	0	220	10	663	97	0	0	883	107
1985	6	4,070	952	0	589	90	0	0	1,547	4,160
1986	245	1,125	576	0	212	23	0	0	1,033	1,147
1987	1,654	543	0	0	1,613	47	0	0	3,267	590
1988	327	1,053	0	0	1,076	6	0	0	1,403	1,059
1989	704	670	0	0	1,179	0	0	0	1,883	670
1990	521	602	0	0	1,092	0	49	0	1,662	602
1991	863	675	0	0	361	71	37	0	1,261	746
1992	898	176	0	0	256	71	178	26	1,332	273
1993	714	157	0	0	129	0	118	4	961	161
1994[3]	475	507	0	0	0	0	187	141	662	648

NOTE: Since 1990, brood stock used at Lyons Ferry Hatchery have been screened (CWTs examined) and those found not to be of Snake River origin have been shipped to the Klickitat Hatchery in an effort to protect the genetic integrity of the Lyons Ferry brood stock. The estimated portion of Columbia River strays entering the Lyons Ferry brood stock was 4%, 18%, 39%, and 25% in 1987, 1988, 1989, and 1990, respectively (Waples et al 1991). All juvenile progeny from adults spawned in 1989 were marked prior to release and returns from this year class are being prevented from entering the brood stock in future years. Thus the entry of Columbia River strays into the Lyons Ferry brood stock have been effectively prevented from the 1989 brood year forward.

[1] Source: Waples et al (1991) and Mundy (1994).

[2] Collected at Little Goose Dam (Waples et al 1991).

[3] Source for 1994 data: Larrie LaVoy (personal communication).

Table 3. Estimated number of fall chinook passing Lower Granite Dam, 1975-1994.

Year	Natural[1] Escapement	Lyons Ferry[1] Strays	Hagerman[1] Strays	Columbia River[2] Strays	Total Adult Escapement	Lower Granite Dam Counts Adult[3] Count	Jack[3] Count	Total Count
1975	1,000[4]	0	0	0	1,000	1,000	1,200	2,200
1976	470[4]	0	0	0	470	470	830	1,300
1977	600[4]	0	0	0	600	600	1,300	1,900
1978	640[4]	0	0	0	640	640	850	1,490
1979	500[4]	0	0	0	500	500	940	1,440
1980	450[4]	0	0	0	450	450	330	780
1981	340[4]	0	0	0	340	340	1,400	1,740
1982	720[4]	0	0	0	720	720	1,500	2,220
1983	428	0	112	0	540	540	980	1,520
1984	324	0	310	6	640	640	730	1,370
1985	438	0	241	12	691	691	1,500	2,191
1986	449	64	261	10	784	784	1,801	2,585
1987	253	575	69	54	951	951	385	1,336
1988	368	192	9	58	627	627	329	956
1989	295	206	0	205	706	706	276	982
1990	78	174	0	83	335	385	190	575
1991	318	202	0	70	590	630	397	1,027
1992	549	100	0	19	668	855	102	957
1993	742	43	0	167	952	1,170	39	1,209
1994[5]	441	?[6]	0	162[6]	603	785	249	1,034

[1] Source: Dygert (1994); note: these estimates assume no straying of non-hatchery fish and are not adjusted for hatchery straying prior to 1983. All juveniles released from Lyons Ferry Hatchery have been marked with CWTs during the past few years and all returns in 1994 have CWTs.

[2] Source: Waples et al (1991) and Dygert (1994); strays from Umatilla, Priest Rapids, and Yakima (and perhaps other hatcheries) are included in this category. The majority of the Columbia River strays have been from Umatilla releases; all juveniles released into the Umatilla have been marked with CWTs during the past few years and all returns of this stock in 1994 have CWTs. The Umatilla releases have occurred since 1983; poor acclimation of juveniles prior to release and lack of sufficient water for spawning contribute to increased straying of these hatchery fish. The brood source for Umatilla releases are fall chinook migrating over Bonneville Dam after August, the same time frame that Snake River fall chinook migrate past this structure.

[3] Source: ODFW & WDF (1991 & 1994).

[4] Hatchery strays may have passed Lower Granite Dam prior to 1983, but there is no basis for estimating numbers due to lack of hatchery fish being coded wire tagged prior to this time; source: Waples et al (1991).

[5] Source for all 1994 data: Mike Matylewich (personal communication).

[6] Total hatchery strays over Lower Granite Dam in 1994 estimated to be 162 fish; the number of Lyons Ferry versus Columbia River strays unknown at this time.

Table 4. Proportion of fall chinook passing upstream of Lower Granite Dam that have been documented to have been Snake River and Columbia River strays and that are presumed to have entered the spawning population, 1983-1994.[1]

Year	Adult Natural Escapement Number	Percent	Adult Snake River Strays Number	Percent	Adult Columbia River Strays Number	Percent	Total Escapement Number	Percent
1983	428	79%	112	21%	0	0%	540	100%
1984	324	51%	310	48%	6	1%	640	100%
1985	438	63%	241	35%	12	2%	691	100%

1986	449	57%	325	42%	10	1%	784	100%
1987	253	27%	644	67%	54	6%	951	100%
1988	368	59%	201	32%	58	9%	627	100%
1989	295	42%	206	29%	205	29%	706	100%
1990	78	23%	174	52%	83	25%	335	100%
1991	318	54%	202	34%	70	12%	590	100%
1992	549	82%	100	15%	19	3%	668	100%
1993	742	78%	43	4%	167	18%	952	100%
1994	441	73%	162[2]	27% (max)	162[2]	27% (max)	603	100%

NOTE: Interpretation of this information is complex and the effect of straying is cumulative and dependent upon fitness of strays. If fitness of strays is equal to fitness of natural spawners, then the proportion of the gene pool composed of natural spawning fish in the first year of the series (62%) is further decreased by each of the following years by the added proportion of additional strays into the spawning population in subsequent years. Thus, unless fitness of strays is an extremely low value (close to zero), the composition of the gene pool of the fish called "natural spawners" at the current time is primarily composed of progeny of strays, not progeny of "natural spawners".

[1] Hatchery fish likely strayed above Lower Granite Dam prior to 1983; however, no estimates of this potential straying are available because coded wire tag technology used to document this phenomena was not available nor used on potentially straying hatchery populations of fall chinook prior to this time.

[2] The 1994 estimate of strays entering the escapement past Lower Granite Dam has not yet been split into the Snake and Columbia River components.

Table 5. Estimated number of fall chinook passing Lower Granite Dam and used for Lyons Ferry Hatchery brood stock, 1975-1994.

	Fall Chinook Allowed Past Lower Granite Dam			Egg Bank Program/ Brood Stock Used at Lyons Ferry Hatchery			Totals		
Year	Adults	Jacks	Total	Adults	Jacks	Total	Adults	Jacks	Total
1975	1,000	1,200	2,200	0	0	0	1,000	1,200	2,200
1976	470	830	1,300	162	?	?	632		
1977	600	1,300	1,900	395	?	?	995		
1978	640	850	1,490	368	?	?	1,008		
1979	500	940	1,440	439	?	?	939		
1980	450	330	780	602	?	?	1,052		
1981	340	1,400	1,740	968	?	?	1,308		
1982	720	1,500	2,220	571	?	?	1,291		
1983	540	980	1,520	705	?	?	1,245		
1984	640	730	1,370	863	107	970	1,503	837	2,340
1985	691	1,500	2,191	1,547	4,160	5,707	2,238	5,660	7,898
1986	784	1,801	2,585	1,033	1,147	2,180	1,817	2,948	4,765
1987	951	385	1,336	3,267	590	3,857	4,218	975	5,193
1988	627	329	956	1,403	1,059	2,462	2,030	1,388	3,418
1989	706	276	982	1,883	670	2,553	2,589	946	3,535
1990	335	190	525	1,662	602	2,264	1,997	792	2,789
1991	590	?	?	1,261	746	2,007	1,851	?	?
1992	668	?	?	1,332	273	1,605	2,000	?	?
1993	952	?	?	961	161	1,122	1,913	?	?
1994	603	?	?	662	648	1,310	1,265	?	?

Table 6. Numbers of fall chinook that were progeny of fish spawning in the wild that passed above Lower Granite Dam in their attempt to return to the upstream spawning grounds adjusted to account for the Lyons Ferry brood stock "mining" program at downstream dams added to the number of fish that were progeny of fish spawned at hatcheries which were prevented from migrating past Lower Granite Dam and returning to the upstream spawning grounds added to the number of fish that were progeny of fish spawned at hatcheries which were allowed to migrate past Lower Granite Dam in their attempt to return the upstream spawning grounds.[1]

	Progeny of Fish Spawned in the Wild and Allowed Past Lower Granite Dam			Progeny of Hatchery Spawned Fish Allowed Past Lower Granite Dam				
Year	Natural Escapement	Adjustment	Adjusted Estimate	Lower Granite Dam Trap Removals	Snake River Strays	Columbia River Strays	Total	Grand Total
1975	1,000	0	1,000	0	0	0	0	1,000
1976	470	+287[2]	757	0	0	0	0	757
1977	600	+294	894	0	0	0	0	894
1978	640	+314	954	0	0	0	0	954
1979	500	+295	795	0	0	0	0	795
1980	450	+221	671	0	0	0	0	671
1981	340	+384	724	0	0	0	0	724
1982	720	+310	1,030	0	0	0	0	1,030
1983	428	+223	651	0	112	0	112	763
1984	324	+207	531	0	310	6	316	847
1985	438	+180	618	0	241	12	253	871
1986	449	+36	485	0	325	10	335	820
1987	253	+91	344	0	644	54	698	1,042
1988	368	+144	512	0	201	58	259	771
1989	295	+97	392	0	206	205	411	803
1990	78	+35	113	50	174	83	307	420
1991	318	0	318	40	202	70	312	630
1992	549	0	549	187	100	19	306	855
1993	742	0	742	218	43	167	428	1,070
1994	441	0	441	182	162 max	162 max	344	785

[1] All data included in this table refers to adult fish.

[2] The brood stock "mining" in 1976 took place at Little Goose Dam rather than Ice Harbor Dam.

Table 7. Escapement and age composition data used to estimate extinction probabilities for Snake River fall chinook salmon.

Year	Natural Escapement	Age Composition of Escapement		
		Three Year Olds	Four Year Olds	Five Year Olds
1975	1,000			
1976	470			
1977	600			
1978	640	1975 - 1982 age composition estimates not available		
1979	500			
1980	450			
1981	340			
1982	720			
1983	428	11.4%	84.6%	4.0%
1984	324	8.6%	91.0%	0.3
1985	438	9.1%	86.3%	4.6
1986	449	55.9%	36.1%	8.0
1987	253	8.7%	89.7%	1.6
1988	368	5.4%	67.9%	22.6
1989	295	7.8%	80.7%	11.5
1990	78	12.8%	75.6%	11.5
1991	318	29.9%	56.0%	14.2
1992	549	16.8%	71.6%	11.7
1993	742	6.7%	85.1%	8.2
1994	441	1994 age composition estimates not available		

Data sources: Dygert (1994) for escapements through 1993, Mike Matylewich (personal communication) for escapement in 1994, Roler (1994) for age composition estimates.

Table 8. Example of base period (1975 - 1994) data used to forecast abundances to 2089 and simulation of abundances from 1995 - 2089.

		Returns of 3 Yr. Old Escapement					Returns of 4 Yr. Old Escapement									
Year	Esc.	Year of Return	Percent Age 3	Total Esc.	Age 3 Esc.	Age 3:Parent Esc. Ratio	Year of Return	Percent Age 4	Total Esc.	Age 4 Esc.	Age 4:Parent Esc. Ratio	Year of Return	Percent Age 5	Total Esc.	Age 5 Esc.	Age 5:Parent Esc. Ratio	Notes
1975	1,000	1978	5.4%	640	34.6	0.0346	1979	36.1%	500	180.5	0.3610	1980	11.7%	450	52.7	0.1170	/1
1976	470	1979	55.9%	500	279.5	0.5947	1980	71.6%	450	322.2	0.7160	1981	1.6%	340	5.4	0.0160	/1
1977	600	1980	16.8%	450	75.6	0.1260	1981	89.7%	340	305.0	0.8970	1982	11.5%	720	82.8	0.1150	/1
1978	640	1981	8.7%	340	29.6	0.0462	1982	80.7%	720	581.0	0.8070	1983	4.0%	428	17.1	0.0400	/2
1979	500	1982	7.8%	720	56.2	0.1123	1983	84.6%	428	362.1	0.8460	1984	0.3%	324	1.0	0.0030	/1
1980	450	1983	11.4%	428	48.8	0.1084	1984	91.0%	324	294.8	0.9100	1985	4.6%	438	20.1	0.0460	
1981	340	1984	8.6%	324	27.9	0.0820	1985	86.3%	438	378.0	0.8630	1986	8.0%	449	35.9	0.0800	
1982	720	1985	9.1%	438	39.9	0.0554	1986	36.1%	449	162.1	0.3610	1987	1.6%	253	4.0	0.0160	
1983	428	1986	55.9%	449	251.0	0.5864	1987	89.7%	253	226.9	0.8970	1988	22.6%	368	83.2	0.2260	
1984	324	1987	8.7%	253	22.0	0.0679	1988	67.9%	368	249.9	0.6790	1989	11.5%	295	33.9	0.1150	
1985	438	1988	5.4%	368	19.9	0.0454	1989	80.7%	295	238.1	0.8070	1990	11.5%	78	9.0	0.1150	
1986	449	1989	7.8%	295	23.0	0.0512	1990	75.6%	78	59.0	0.7560	1991	14.2%	318	45.2	0.1420	
1987	253	1990	12.8%	78	10.0	0.0395	1991	56.0%	318	178.1	0.5600	1992	11.7%	549	64.2	0.1170	/4
1988	368	1991	29.9%	318	95.1	0.2584	1992	71.6%	549	393.1	0.7160	1993	8.2%	742	60.8	0.0820	/5
1989	295	1992	16.8%	549	92.2	0.3127	1993	85.1%	742	631.4	0.8510	1994	11.7%	441	51.6	0.1170	/1
1990	78	1993	6.7%	742	49.7	0.6374	1994	71.6%	441	315.8	0.7160						
1991	318	1994	16.8%	441	74.1	0.2330											
1992	549																
1993	742																
1994	441																

/1 Age 3 - 5 Composition Randomly selected from the estimated 1983 - 1993 age composition
/2 Age 3 - 4 Composition Randomly selected from the estimated 1983 - 1993 age composition
/3 Age 3 Composition Randomly selected from the estimated 1983 - 1993 age composition
/4 Age 5 Composition Randomly selected from the estimated 1983 - 1993 age composition
/5 Age 4 Composition Randomly selected from the estimated 1983 - 1993 age composition

Table 9. Example of random selection (bootstrapping) to forecast future escapements.

Esc. Year	Returns of 3 Yr. Old Escapement Parent Esc. (Year)	Ratio 3 Yr. Old Esc.	3 Yr. Old	Returns of 4 Yr. Old Escapement Parent Esc. (Year)	Ratio 4 Yr. Old Esc.	4 Yr. Old	Returns of 5 Yr. Old Escapement Parent Esc. (Year)	Ratio 5 Yr. Old Esc.	5 Yr. Old	Total Escapement
1995	549 (1992)	0.0679	37.3	318 (1991)	0.8510	270.6	78 (1990)	0.1420	11.1	319
1996	742 (1993)	0.5947	441.3	549 (1992)	0.8630	473.8	318 (1991)	0.0400	12.7	928
1997	441 (1994)	0.1123	49.5	742 (1993)	0.7160	531.3	549 (1992)	0.1420	78.0	659
1998	319 (1995)	0.0395	12.6	441 (1994)	0.7560	333.4	742 (1993)	0.0460	34.1	380
1999	928 (1996)	0.6374	591.3	319 (1995)	0.8460	269.9	441 (1994)	0.1170	51.6	913
...										
2089	1,235 (2086)	0.1260	155.6	659 (2085)	0.8510	560.6	1,563 (2084)	0.1170	182.9	899

Table 10. Probabilities of extinction based on the bootstrap model.

Years Used in Analysis	Probability of Extinction and Extinction Criteria 1 Fish	30 fish	Probability That in 2089 the Escapement Will Be Less Than 300 fish	1,000 fish	5,000 fish
Truncated Data:					
1980-1990	98.3%	100.0%	100.0%	100.0%	100.0%
1975-1990	97.0%	100.0%	100.0%	100.0%	100.0%
Data:					
1980-1994	0.0%	0.3%	0.1%	1.1%	5.6%
1975-1994	0.0%	5.0%	7.3%	18.9%	44.8%
Weighted Recent 1975-1994 (W)	0.0%	4.4%	7.5%	21.8%	48.8%

Table 11. Probabilities of extinction based on the diffusion model.

Years Used in Analysis	Mean	Variance	Probability of Extinction and Extinction Criteria 1 Fish	30 fish
Truncated Data				
1980-1990	-0.15932	0.30644	99.34%	99.97%
1975-1990	-0.15944	0.24285	99.65%	99.65%
Recent Data:				
1980-1994	-0.00135	0.42883	35.05%	68.17%
1975-1994	-0.04094	0.35128	53.16%	82.37%

Table 12. Natural spawner-recruit relationship statistics.

Year	Natural Escapement	In-river AEQ Catch	Ocean AEQ Catch	Escapement to River Mouth	Total AEQ Return	Return per Spawner
1975	1,000	530	1,158	1,307	2,995	3.0
1976	470	382	1,402	2,092	3,876	8.2
1977	600	315	1,202	3,075	4,592	7.7
1978	640	261	529	3,130	3,921	6.1
1979	500	232	746	2,080	3,058	6.1
1980	450	203	593	778	1,574	3.5
1981	340	705	776	1,223	2,705	8.0
1982	720	465	458	691	1,614	2.2
1983	428	1,332	1,766	2,273	5,371	12.5
1984	324	987	1,069	1,494	3,550	11.0
1985	438	825	801	1,090	2,716	6.2
1986	449	407	640	561	1,608	3.6
1987	253	715	396	1,032	2,143	8.5
1988	368	250	485	1,399	2,133	5.8
1989	295	290	715	1,370	2,375	8.1
1990	78	313	403	872	1,588	20.4
Averages	485	527	849	1,573	2,949	6.7

Table 13. Total spawner-recruit relationship statistics.

Year	Natural Escapement	In-river AEQ Catch	Ocean AEQ Catch	Escapement to River Mouth	Total AEQ Return	Return per Spawner
1975	1,000	530	1,158	1,307	2,995	3.0
1976	470	382	1,402	2,092	3,876	8.2
1977	600	315	1,202	3,075	4,592	7.7
1978	640	261	529	3,130	3,921	6.1
1979	500	232	746	2,080	3,058	6.1
1980	450	203	593	778	1,574	3.5
1981	340	705	776	1,223	2,705	8.0
1982	720	465	458	691	1,614	2.2
1983	540	1,332	1,766	2,273	5,371	9.9
1984	640	987	1,069	1,494	3,550	5.5
1985	691	825	801	1,090	2,716	3.9
1986	784	407	640	561	1,608	2.1
1987	951	715	396	1,032	2,143	2.3
1988	627	250	485	1,399	2,133	3.4
1989	706	290	715	1,370	2,375	3.4
1990	335	313	403	872	1,588	4.7
Averages	644	527	849	1,573	2,949	5.0

Table 14. Dilution effects on the gene pool of Snake River fall chinook salmon labeled as "natural spawners" prior to 1983 due to estimated numbers of strays entering into the escapements since 1983 under various assumptions concerning the "fitness" of the two types of strays.[1]

	Estimated Proportion of the *Gene Pool* Composed of "Natural Spawners"[1] (heading abbreviations: (N) = "naturals; (S) = strays; F = "fitness"				
	Snake River and Columbia River Strays Included in the Stray Category			Only Columbia R. Strays Included as "Strays"	
Year	F(N) = 1.0 F(S) = 0.0	F(N) = 1.0 F(S) = 0.5	F(N) = 1.0 F(S) = 1.0	F(N) = 1.0 F(S) = 0.5	F(N) = 1.0 F(S) = 1.0
1975	100%	100%	100%	100%	100%
1976	100%	100%	100%	100%	100%
1977	100%	100%	100%	100%	100%
1978	100%	100%	100%	100%	100%
1979	100%	100%	100%	100%	100%
1980	100%	100%	100%	100%	100%
1981	100%	100%	100%	100%	100%
1982	100%	100%	100%	100%	100%
1983	100%	88%	79%	100%	100%
1984	100%	67%	51%	100%	99%
1985	100%	78%	63%	99%	98%
1986	100%	70%	54%	99%	99%
1987	100%	35%	20%	97%	94%
1988	100%	54%	34%	95%	90%
1989	100%	44%	25%	83%	70%
1990	100%	23%	10%	85%	75%
1991	100%	32%	16%	92%	85%
1992	100%	44%	24%	91%	85%
1993	100%	34%	17%	78%	62%
1994	100%	24%	10%	-	-

[1] The simple dilution model used to derive these estimates assumed the gene pool was 100% "natural spawners" prior to 1983 when coded wire tag data technology first provided estimates of hatchery strays passing Lower Granite Dam. The model assumes random mating; stray rates as defined in Table 4 were used; age composition of escapements were assumed as follows: 30% age 3, 56% age 4, and 14% age 5. A fitness value of 1.0 assumes that strays reproduce as successfully as "naturals". A fitness value of 0.5 assumes that strays are only half as successful at spawning as are "naturals" and a fitness value of 0 assumes that strays are unable to successfully reproduce.

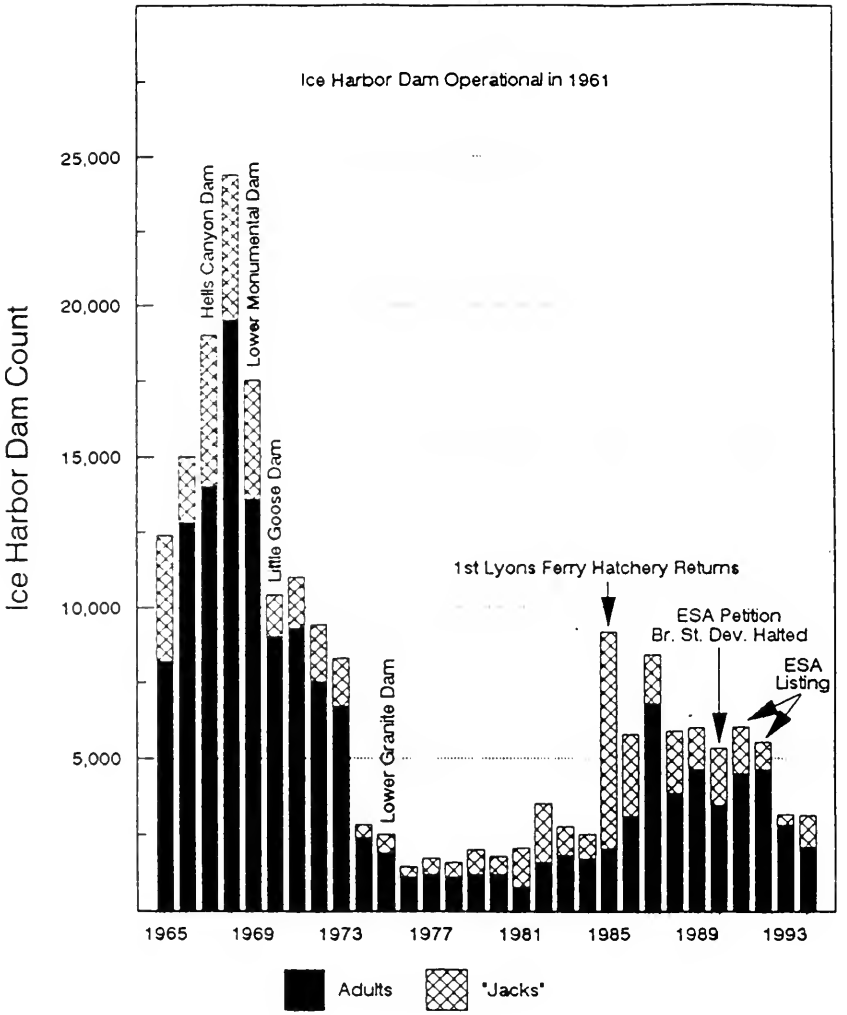


Figure 1. Number of fall chinook counted past Ice Harbor Dam since 1965, the year in which the major Snake River dams became operational, and years associated with ESA and hatchery events.

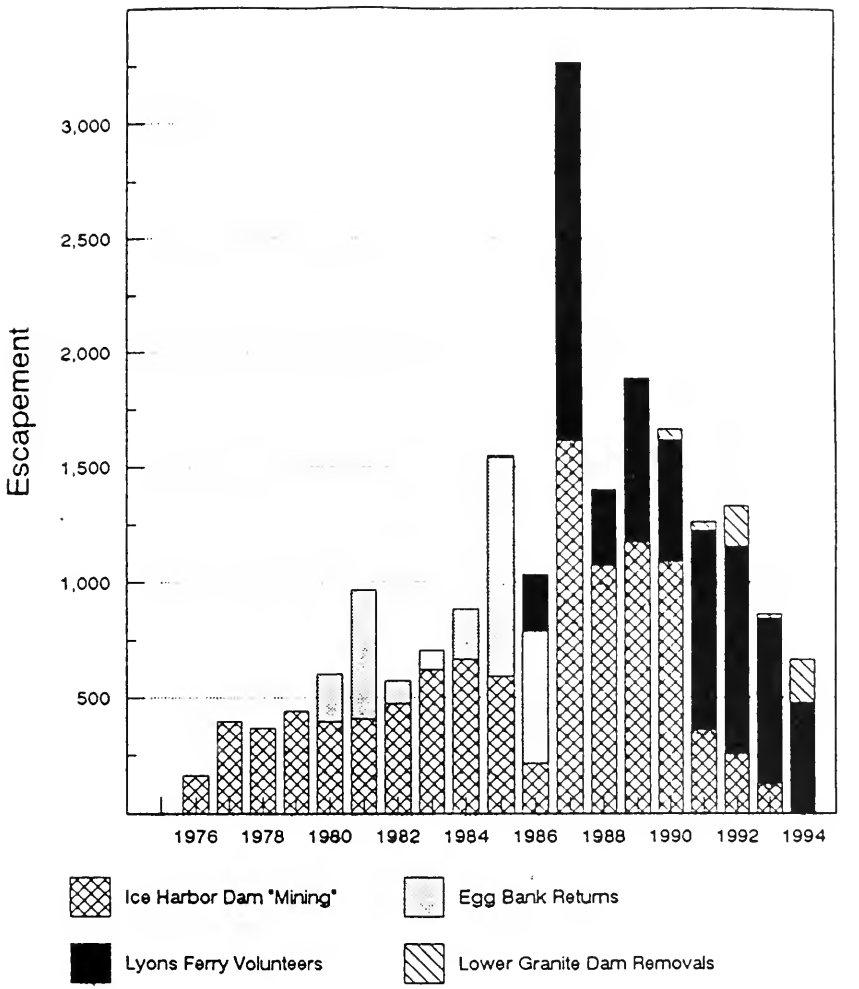


Figure 2. Number of adult Snake River fall chinook associated with the egg bank program from 1975-1983 and with the Lyons Ferry hatchery from 1984-1994.

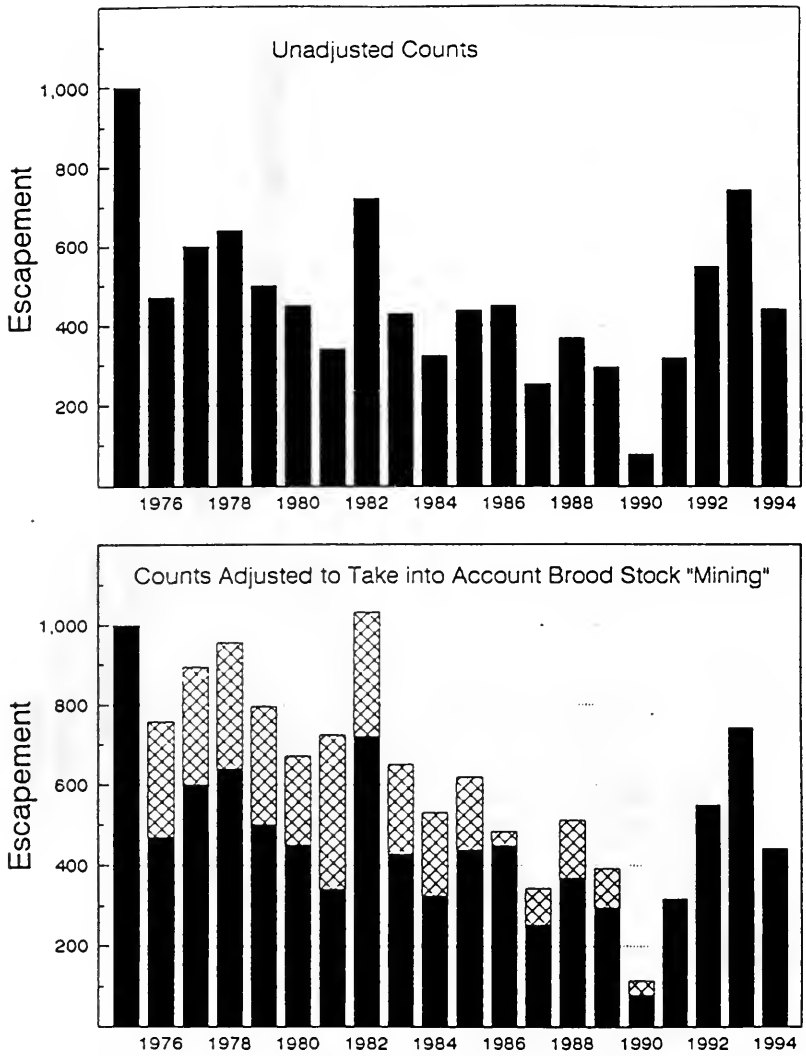


Figure 3. Estimated number of "natural" fall chinook passing Lower Granite Dam based on unadjusted (upper) and adjusted counts (lower).

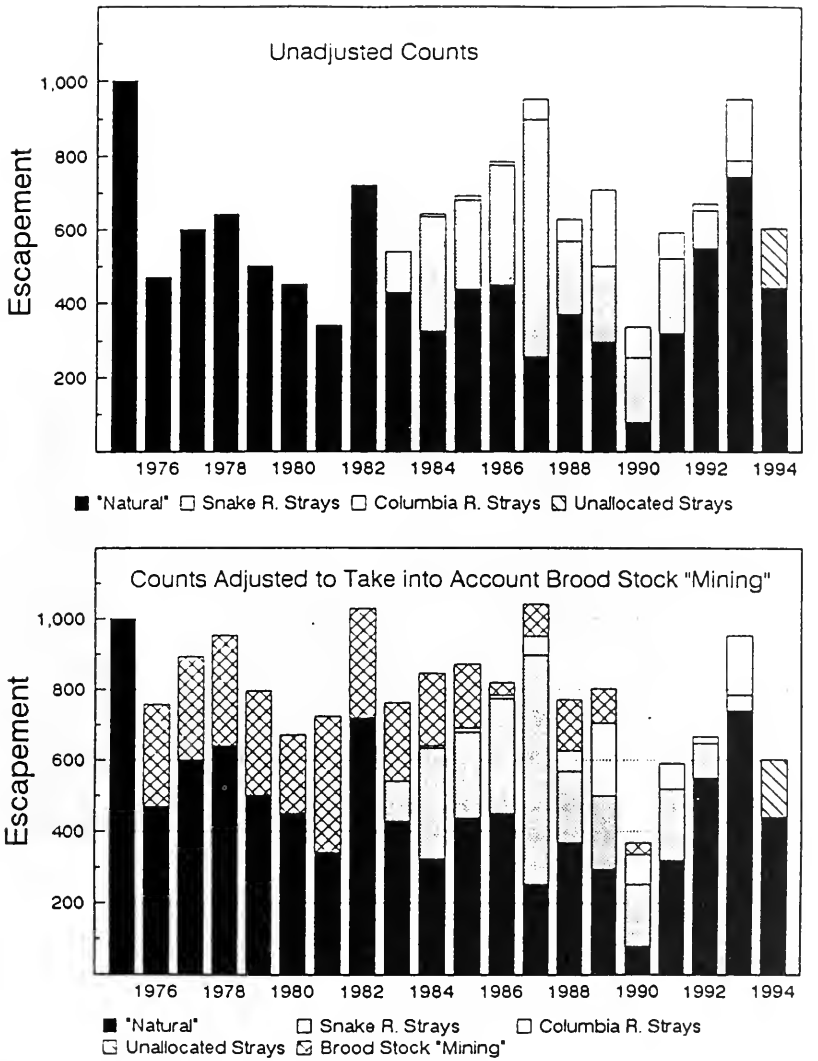


Figure 4. Estimated number of "natural" and stray fall chinook passing Lower Granite Dam; unadjusted (upper) and adjusted (lower).

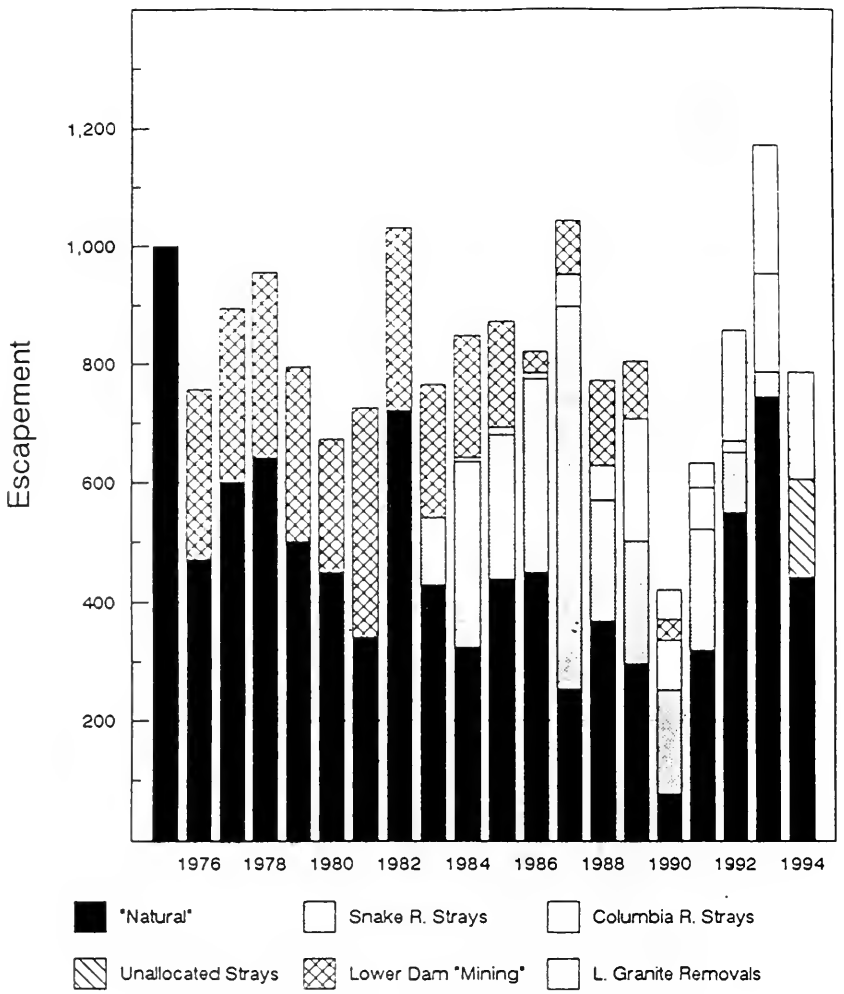


Figure 5. Estimated number of "natural" and stray fall chinook passing Lower Granite Dam adjusted for brood stock "mining" and Lower Granite Dam "removals".

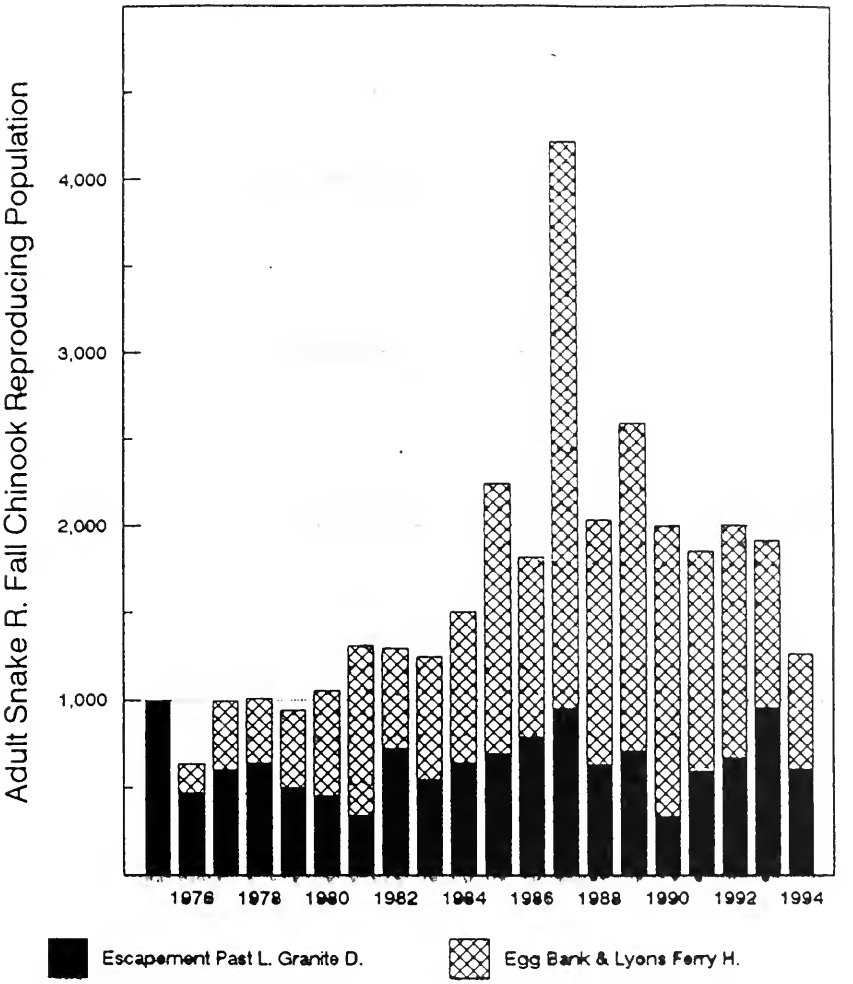


Figure 6. Number of adult fall chinook counted past Lower Granite Dam and the number of adult fall chinook associated with the egg bank program plus Lyons Ferry Hatchery (adult reproducing population).

Figure 8. Cumulative Probability of Achieving a Given Extinction Level Using 1975 - 1990 Data

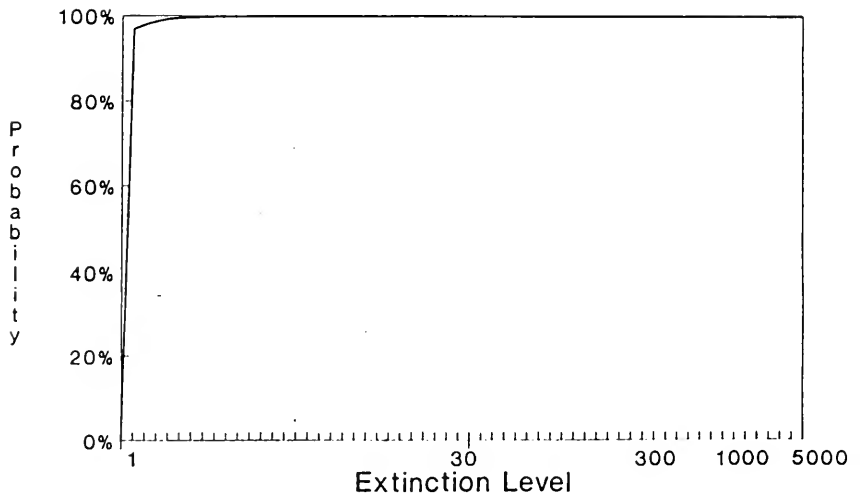


Figure 9. Cumulative Probability of Achieving a Given Extinction Level Using 1980 - 1994 Data

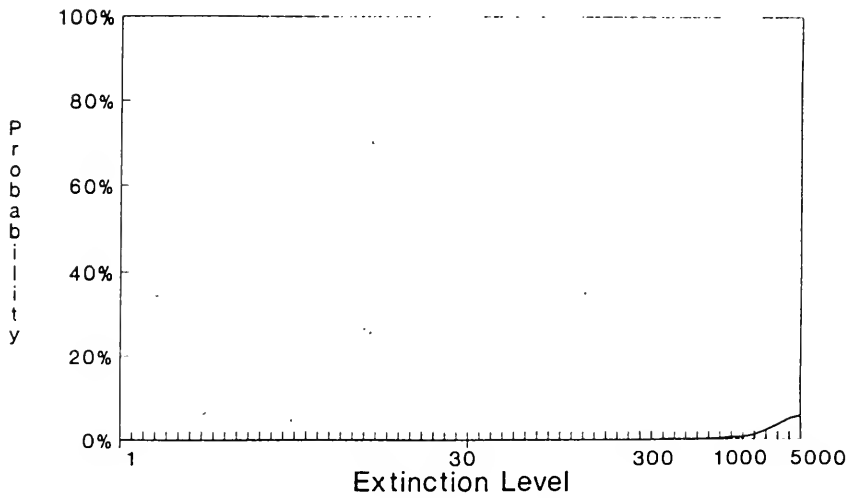


Figure 10. Cumulative Probability of Achieving a Given Extinction Level Using 1975 - 1994 Data

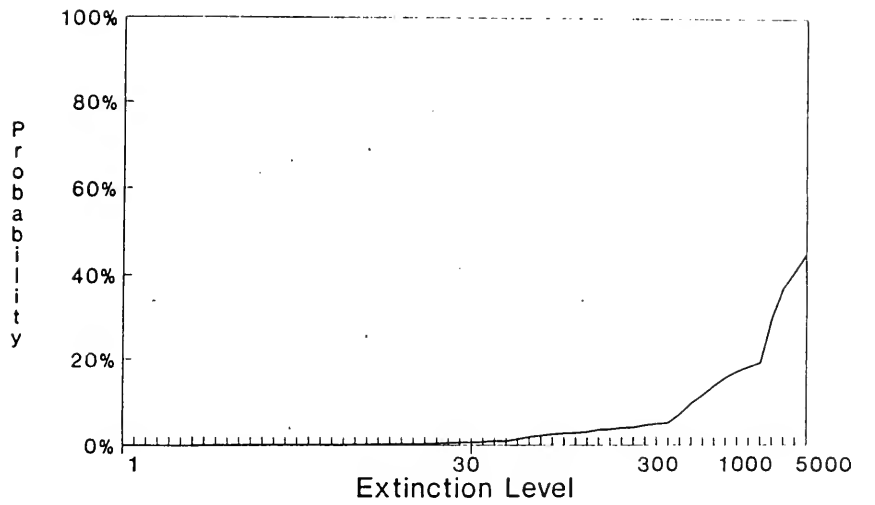


Figure 11. Cumulative Probability of Achieving a Given Extinction Level Using Weighted 1975 - 1994 Data

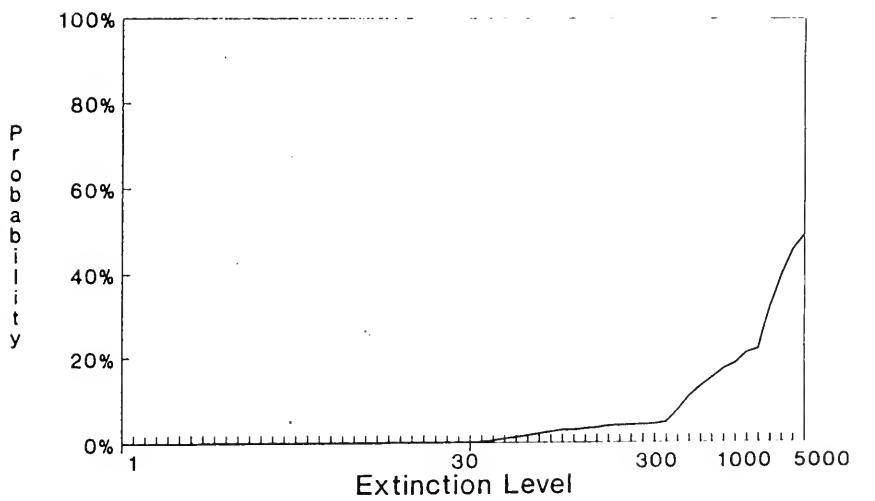
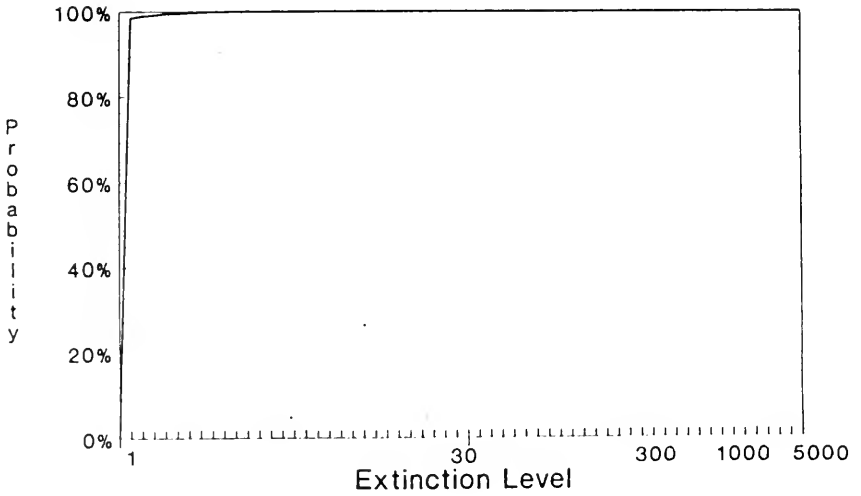
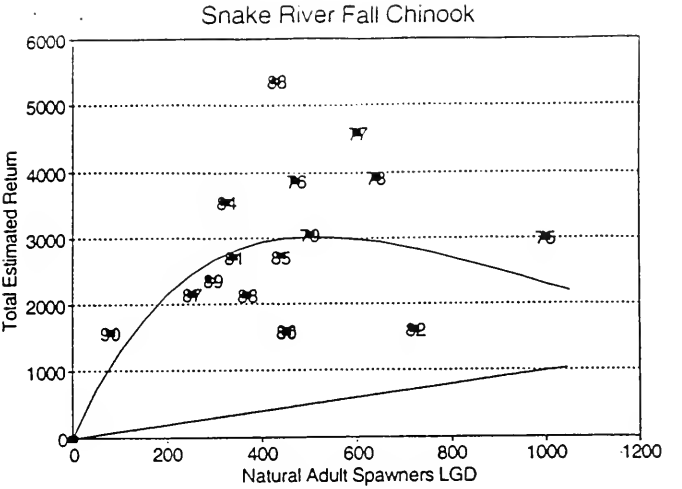


Figure 7. Cumulative Probability of Achieving a Given Extinction Level Using 1980 - 1990 Data





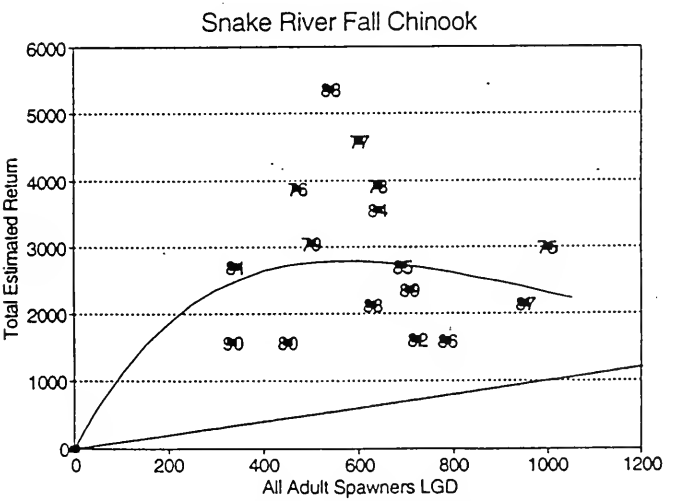


Figure 12. Estimated total returns in adult equivalents versus parent year spawners for escapement of natural (A) and all (B) adult chinook salmon spawners past Lower Granite Dam.

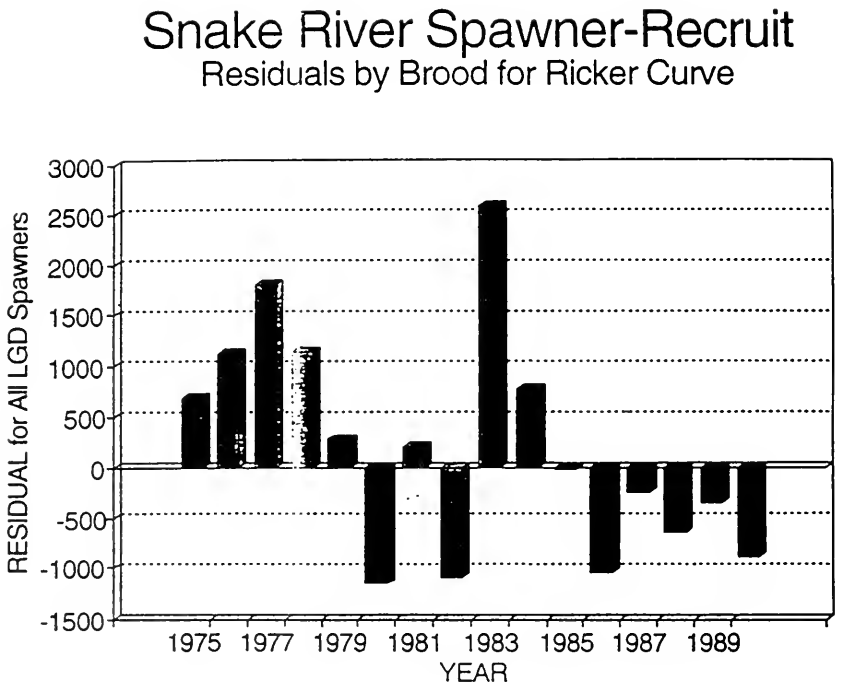


Figure 13. Residuals of predicted returns for estimated returns versus escapement of all spawners past Lower Granite Dam, 1975-90 brood years.

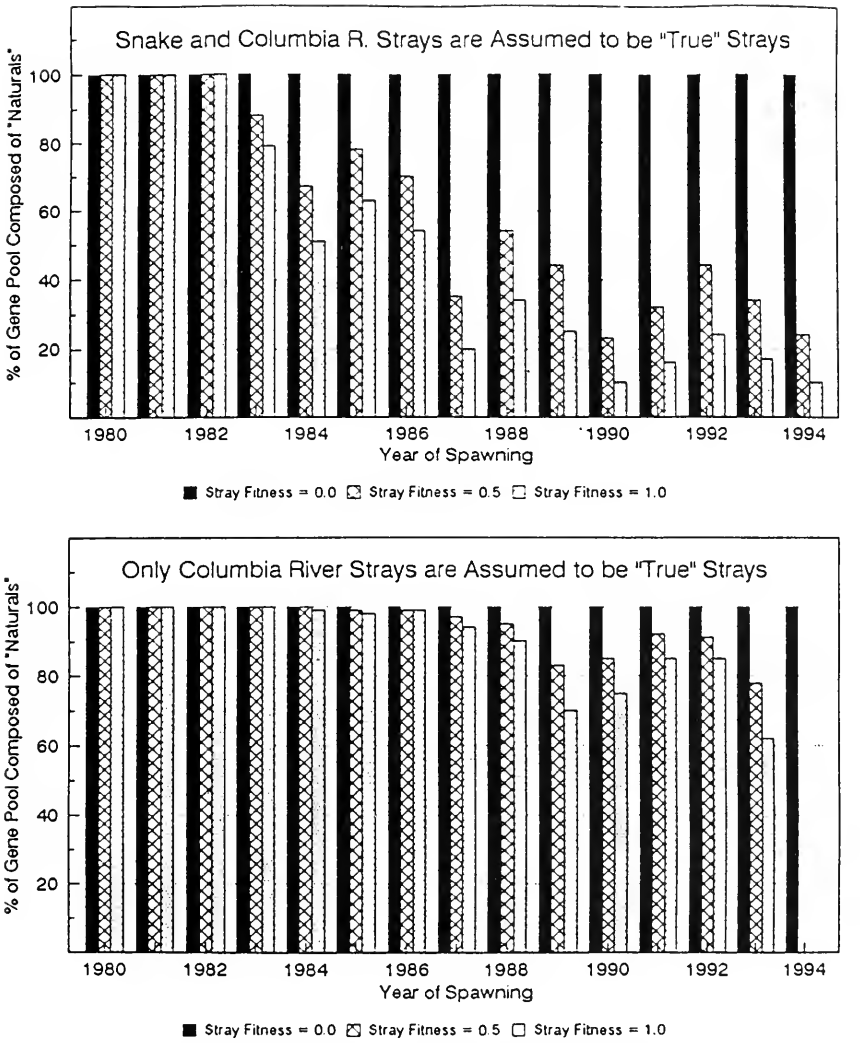


Figure 14. Composition of the gene pool of the fall chinook escapement past Lower Granite Dam based on a simple dilution model with various assumptions concerning fitness of strays.

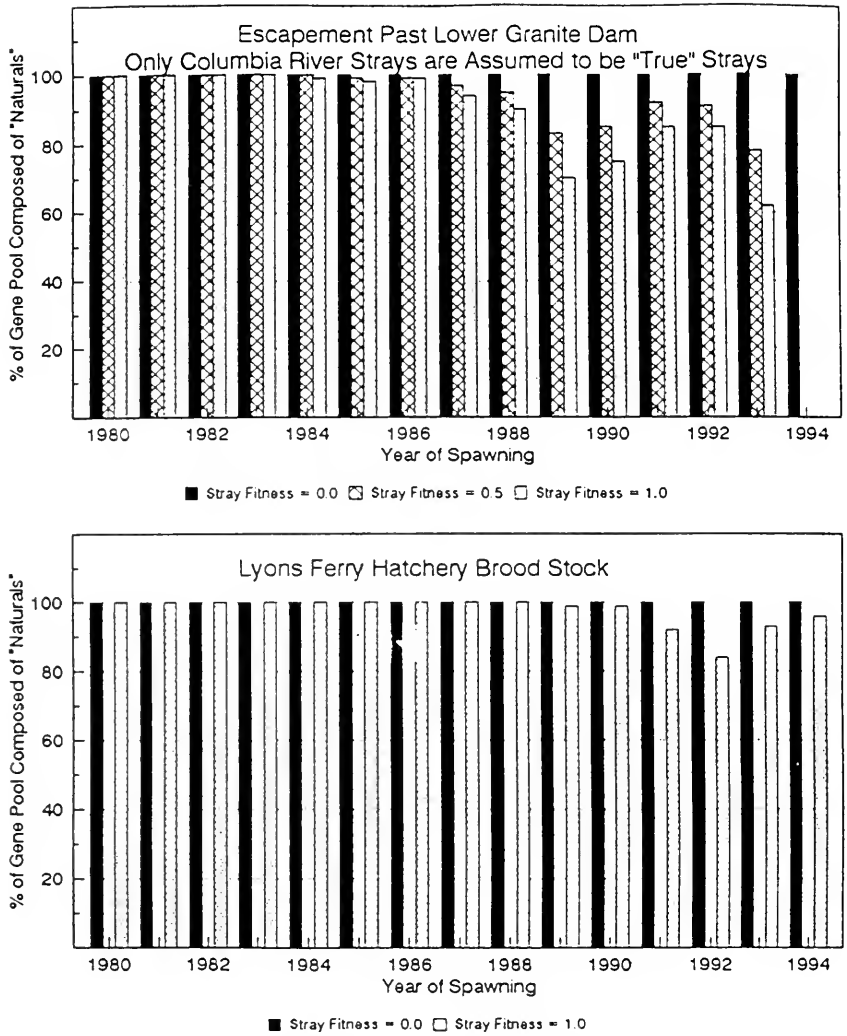


Figure 15. Composition of the gene pool of the fall chinook escapement past Lower Granite Dam and the Lyons Ferry Hatchery based on a simple dilution model with various assumptions concerning fitness of strays.

Senator HATFIELD. Now we will return to the format of questions for Ms. Rivlin.

Senator Stevens.

Senator STEVENS. Mr. Chairman, my question really comes from the same basis as my colleagues. I note with interest that you have adopted an administration program that will, I gather, lead to about a $200 million credit to Bonneville Power. That will save, I am told, the average user about $36 a year.

The result of the action of the National Marine Fisheries Service that Senator Murkowski has just talked about will result in the reduction in the income of the southeast Alaska fisherman 100 times that, $3,600, almost $4,000 per permit holder will be the loss, based on the actions of the National Marine Fisheries Service that mandates the reduction of fishing in our area, even though, as Senator Murkowski mentioned, the net result of that action is that only two or three fish are estimated to get to the spawning grounds.

Now, I came to ask you the question: Is it possible that the administration will look to the impact of the action that is being taken now in order to restore the Snake River salmon on the Alaska fisherman, too? I mean as a practical matter, we would be better off—the problem is the power, not the fishermen.

The dams are what harm the fish runs, not the fishermen in Alaska, and yet the fishermen in Alaska are now under an order from your administration not to harvest fish in southeast Alaska, although the total amount that goes through in the time when they are forbidden from taking salmon is about—the total I am told will be 12 fish.

Now, it is just preposterous, but it is true. Our people are going to lose 100 times in terms of income what you are saving the ratepayers in the Pacific Northwest by your announced action of the credit.

Are you going to look into the impact on everybody or just in terms of the ratepayers to Bonneville Power?

Ms. RIVLIN. The subject of today's hearing is the impact on Bonneville Power ratepayers. But there are a lot of costs here, and certainly the costs to fishermen are very important. I assure you we are cognizant of that.

Senator STEVENS. I do not want my colleague and I to be misinterpreted as being opposed to what you are doing to help the people of the Pacific Northwest, but we do not think that it is a fair proposition.

Over one-half of the permit holders for those salmon fishermen are people who are Bonneville power users. They live in the wintertime in the Pacific Northwest. I think that somehow or other there ought to be some equity in terms of the administration's approach, particularly with these orders that have no real impact on saving the fish runs.

I do not want to prolong it, Mr. Chairman.

But I do hope that, Ms. Rivlin, you will examine the material that was sent us by the department of fish and game. We think that there is no plan to reduce the impact on the southeast Alaska fishermen.

There is a plan to reduce the impact of the cost of compliance on Bonneville Power. We just do not think it is fair. Thank you.

Ms. RIVLIN. We will——

Senator HATFIELD. Thank you, Senator.

Ms. RIVLIN. We will note that and certainly think about it.

Senator HATFIELD. Senator Murray.

Senator MURRAY. Thank you, Mr. Chairman.

First, I want to thank you, Director Rivlin, and the Chief of Staff of the President for recognizing the seriousness of the situation with BPA in committing to help our region solve these very difficult problems. I do have an opening statement.

I will save it, Mr. Chairman——

Senator HATFIELD. Yes.

Senator MURRAY [continuing]. For your time constraints.

I just have one question, basically, for you. I want to clarify the terms of the agreement that we reached yesterday. Specifically, I am interested in section 4(h)(10)(c) of the Power Act.

You have offered to approve BPA's use of 4(h)(10) for direct fish costs in perpetuity. Under your interpretation, that amounts to over $30 million annually, and you also agreed to permit use of the provision for lost power revenues and power purchases for 2 years.

At the end of those 2 years, we are going to have to revisit this issue, which means there is the possibility that—does this mean to you that there is a possibility that that 2-year period will be extended if the circumstances warrant?

Ms. RIVLIN. It would be hard to say at this time, Senator. We thought the current situation was urgent, and that it warranted taking action for 2 years.

Our proposal to allow BPA to use section 4(h)(10)(c) to cover lost power revenues and power purchases is not permanent. It was designed to meet the immediate cost situation and allow Bonneville to adjust and put in place the cost savings, which they believe are very real, to help pay for these costs. It is possible that this issue would have to be revisited at the end of 2 years.

Senator MURRAY. OK. I appreciate that. And, again, thank you for working with us on this very difficult problem.

Ms. RIVLIN. Thank you.

Senator HATFIELD. Thank you, Senator.

Senator Burns.

Senator BURNS. Mr. Chairman, I would just put my statement in the record, and I have no questions for the Director. We can just move right along.

Senator HATFIELD. Thank you.

Senator Craig.

Senator CRAIG. Mr. Chairman, thank you very much.

And, Ms. Rivlin, thank you for being with us this afternoon. One brief question: I, too, want to reflect my appreciation for the administration's responsiveness to this very imminent problem we face in the Pacific Northwest.

In doing that, I do not want my comment and/or question to you to leave you thinking that I am treating lightly your action, because I am not.

But what I am suggesting to you is that it does not help a lot in the overall context of Bonneville's viability long term. Bonneville

has to look at 5-year contracts if it is going to compete in the energy marketplace.

This is a 2-year proposal, and we are looking at the biological opinion of National Marine Fisheries Service, and they are suggesting a substantial increase annually, $160 million, and up to $280 million by the year 2000, and this is not the end of it yet. This is just this particular proposal.

Based on a case that we think can and has to be made in the preservation of Bonneville, is this administration going to be responsive in assisting us in trying to accommodate a much longer-term approach toward resolution of this problem, and does not just include Bonneville, but includes others in the region, which includes other power producers in the region, who do not have the luxury of being bailed out of their problems by the Federal Government being driven by a law that has brought us to the table today.

Ms. RIVLIN. I do not think this is the end of this story, nor is it the complete story. We certainly want to be responsive to the broader cause and longer-run implications.

Let me just say, however, that while part of this agreement is a 2-year agreement, part of it is also permanent—the direct cost portion. Thus, we believe we have contributed to the solution of the long-run problem of Bonneville.

Senator CRAIG. Ms. Rivlin, we have created an environment not just with the Endangered Species Act, but with some deregulatory efforts that we have all been a part of on the Energy Committee over the last several years to create a much more competitive marketplace out there, that Bonneville is going to have to be as responsive as any other producer of power as it can.

Are you willing to look at other alternatives or other approaches that we may come up with to create greater competitiveness in the marketplace, so that Bonneville can be a competitor?

Ms. RIVLIN. Senator, we are willing to look at anything. We very much want to be part of the conversation.

Senator CRAIG. Thank you, Mr. Chairman.

Senator HATFIELD. Senator Baucus.

Senator BAUCUS. Thank you, Mr. Chairman.

Senator HATFIELD. Do you have questions for Ms. Rivlin?

Senator BAUCUS. Yes; thank you very much. Mr. Chairman, I want to thank you, and do thank you very much for holding this hearing.

Director Rivlin, I thank you for the effort that you have undertaken to try to solve, at least on a short-term basis, the problems of potential rate increases in the Bonneville system.

You worked hard, you and Mr. Hardy, of Bonneville, and I personally thank you very, very much. I think you have come up with a good solution, that is one that will assure all ratepayers in the Pacific Northwest, at least in the lower 48, I cannot speak to Senators Stevens and Murkowski, that there will be no rate increase over the next 2 years above the earlier increase that was announced by Bonneville several weeks ago, due to reasons other than salmon recovery, and I thank you very much for that.

I would like to followup a little bit with a point raised by Senator Murray, namely, what is next. I would like you to tell us now some ideas you have as to what we could do to be sure that this contin-

ues, that is, it does not just last 2 years and we are kind of back in the soup again.

What are some of your thoughts or some of the points that come to mind, or some of the areas that you are working on to help assure us that there will be a little more certainty, because one thing we do not want is on-again-off-again ratepayers.

The users need to know with some certainty what their projected power bills are going to be, and if it looks like this is just 2 years, and whoops, we are back up again, it is not going to give people very much comfort.

So what are some of the things you are thinking of that give us some comfort that this is going to be longer than 2 years?

Ms. RIVLIN. We want to work with you over that 2-year period to see what the experience is. Certainty that cannot be guaranteed in this business. As you know, even the costs under the agreement we have laid out today are somewhat uncertain.

These costs depend on rainfall, water flows, and all kinds of things. But we clearly want to work with you to see what the experiences of the first 2 years show us. We also want to work with you to see the extent to which Bonneville is able to achieve the cost savings that they are projecting here, and to see what the power cost projections look like 2 years from now.

Senator BAUCUS. Well, it is clear that salmon recovery is going to be a major issue with us——

Ms. RIVLIN. Yes.

Senator BAUCUS [continuing]. Over the long term.

Ms. RIVLIN. For a long time.

Senator BAUCUS. What if Judge Marsh, for example, reaches a decision that the NMFS' biological opinion is insufficient, that it must be greater salmon recovery efforts, which presumably will cause additional costs?

Can you assure us that you will work to find a solution that still maintains the status quo over the next 2 years, at least?

Ms. RIVLIN. I can absolutely assure you we will work with you. We will work with you on whatever the situation is. But that is a very speculative question. We do not know what the judge might do or what the implications might be.

But the administration is very eager to work with the whole Pacific Northwest delegation, and the citizens of the Pacific Northwest, to balance the values and interests and come to the right solution.

Senator BAUCUS. Well, I appreciate that, and I, again, compliment you and the rest of the administration for a good solution. Thank you.

Ms. RIVLIN. Thank you.

Senator BAUCUS. Thank you, Mr. Chairman.

Senator HATFIELD. Thank you, Senator Baucus.

Senator Johnston.

STATEMENT OF HON. J. BENNETT JOHNSTON

Senator JOHNSTON. Thank you, Mr. Chairman. Mr. Chairman, I have an interest in this, mainly because I think it shows the unworkability of the Endangered Species Act. We are spending, I think, total resources, in the neighborhood of about $500 million a

year, including the Corps of Engineers and all those involved in the salmon recovery, and that, to me, is absurd.

Hundreds of millions have already been spent, and I do not know precisely what the solution is, but I am working with Senator Gorton to see if we cannot solve this, and, generally speaking, I will be following your lead on this as I do on most everything, Mr. Chairman. I mean I just think this thing has gone all out of rhyme and reason.

Mr. Chairman, if I may, I just want to ask one question that very much deals with this jurisdiction. It does not deal with this issue, but since Ms. Rivlin is here, I want to talk about nuclear waste for just a moment.

As you know, the budget calls for $631 million this year, but only $200 million in new budget authority appropriations is provided. That is, there is a shortfall of $431 million in the energy and water appropriation budget, because it depends on legislation of the other $431 million which would never be passed.

Now, I want to make the administration fully aware that we are headed for a train wreck of very major proportions. I want the word to go out. I hear that there is a letter coming down from the administration against the legislation I introduced, and you are under funding this program by $431 million.

If that happens, mark my words well, it will be my recommendation that we repeal the nuclear waste tax, give it to the utilities to build 80-something sites around the country, 34 States, I think, which you can imagine will be highly popular with 34 States.

Now, it seems that everybody has treated this nuclear waste problem as Bennett's problem, my problem, and it is not the administration's problem, or it is the utilities problem. I can tell you it is the administration's problem, and it is a big train wreck.

I mean if the administration thinks that they can just say, well, we are not for your legislation, that we are going to underfund this thing $431 million, we are going to walk away, and Nevada is going to be happy, and everything is going to be OK, it is not going to happen. It is going to be an awful Vesuvius eruption all around this country.

Mark my words well, I say, certainly as your friend, and admirer, and supporter, and certainly a friend of this administration, on this issue there will be no quarter given. Incompetence will be called incompetence, if that is the way it comes out, and it will be—as I say, there will be 34 States that will be very unhappy, because there is no solution offered. All we have is some legislation coming down.

Do you think we can find $431 million in this budget? This budget having been cut, it cannot be done. You can respond if you would like.

I really just put that out as a word to the wise, and you are very wise, and Mr. T.J. Glauthier is very wise as well, and good friends all, but I really want you to carry the message back, or act on the message.

Ms. RIVLIN. I will carry it, Senator. I hear you.

Senator JOHNSTON. My legislation provides for a budget treatment which solves the problem, as did legislation in the last Congress. You all did not like that. We could have solved the problem easily, as part of reconciliation.

It was done. It was through the committee. It would have been fixed, Q.E.D. We chose not to do that. And the proposal you have now is no proposal at all. It simply will not work, and everybody is just acting as though it will, and it will not. A word to the wise.

Ms. RIVLIN. Thank you.

Senator HATFIELD. Thank you, Senator Johnston.

Senator MURRAY. Mr. Chairman, could I just respond, in case Senator Johnston is leaving I will respond on the nuclear waste issue at another time. But I did want to respond to one comment that he made that this is a result of only ESA.

I just want to remind you and all the members of the committee that the laws we live under in the Pacific Northwest in regard to salmon include the ESA, but also the Northwest Power Act, the Magnuson Act, tribal treaties, Clean Water Act. It is a number of pieces of legislation that impact us.

Senator HATFIELD. Thank you.

Senator Kempthorne, we have accommodated Ms. Rivlin by holding our opening statements until she leaves, and using this opportunity to propound questions to her, if you have questions.

Senator KEMPTHORNE. That was not Senator Johnston's opening statement?

Senator JOHNSTON. Opening and closing. [Laughter.]

Senator HATFIELD. We make certain accommodations.

Senator KEMPTHORNE. Mr. Chairman, I will hold then on the opening comments.

Senator HATFIELD. All right.

Senator KEMPTHORNE. I have no questions of Ms. Rivlin.

Senator HATFIELD. Ms. Rivlin, I have perhaps three questions. I expressed in my opening statement that it was a good signal from the administration when it announced yesterday its desire to help offset some of these increasing costs.

Ms. Rivlin, in the President's budget request for 1996, he has urged that the Mitchell Act funds be transferred from the National Marine Fisheries Services budget and that the Bonneville Power Administration be required to provide the money previously supplied by the Mitchell Act funds.

Now, correct me if I am wrong. This suggests that you support providing additional funds in 1995–96 and 1996–97, on the one hand. And on the other hand, you propose to take away a major portion of that funding. You also suggest that $40 million of the $60 million in funding offsets proposed by the administration's budget is to come from future reductions in Bonneville's operational costs.

Sometimes in our budget process we call that funny money, since these cost savings from operations are only a projected—not a guaranteed—source of funding.

Second, the last administration that proposed Mitchell Act funding was the Bush administration during its final budget year. I believe that funding was set at $10 million that year. President Clinton, in his 1st year, followed suit and proposed $10 million.

So correct me if I am wrong. If you breakdown that $60 million, one-half of that money is to come from continued cost reductions by Bonneville. You are adding another $10 million, if you use the same figure as the Mitchell Act. Then there is a range of $10 to

$18 million you are going to pick up from Bonneville's appropriations as well. I'm not really sure how much you are making as a contribution.

Ms. RIVLIN. Your arithmetic is correct, Mr. Chairman. The action with respect to the Mitchell Act is part of a broader view of transferring responsibilities to power authorities, hatcheries, and other people.

Senator HATFIELD. Thank you, I think. [Laughter.]

Ms. Rivlin, there is a second question.

Ms. RIVLIN. That was already there. We are talking about the incremental costs of the new biological opinion. So I think if we are talking about that——

Senator HATFIELD. Yes.

Ms. RIVLIN [continuing]. It is a question of how to share that.

Senator HATFIELD. Well, let me put that into context, too. Since 1980, Bonneville ratepayers have ponced up under rate schedules $1.5 billion for fish mitigation.

In 1996, the administration has cranked into their budget request $300 million. Now, the biological opinion and NMFS is saying add another $130 million to $170 million. So let's bear in mind that ratepayers are still picking up $100 million of that incremental increase, as well as now being burdened with funding the Mitchell Act.

Do not forget, the Mitchell Act came with the generic legislation creating Bonneville. It was a Federal Government contract to help mitigate fish in that whole project.

Let me ask you a question. Let us turn to some language of the Northwest Power Act, section 4(h)(10)(c).

It says, in effect, that to the extent that Bonneville's annual Treasury payments have covered costs actually attributable to other beneficiaries of the Federal hydro system, that Bonneville is entitled to be reimbursed by the Treasury for these costs.

Now, that was adopted in 1980. How often has Bonneville been reimbused since 1980? The answer is never.

So I will propound the question for the record and give you the answer. I would not expect you to know that answer, because you are the budget director and I know you know a great deal of detail, but there are some details that would not be expected.

Are you now considering, from the standpoint of the long term, not for the next 2 years, although I think there would be reason to do so, beginning to credit Bonneville prospectively for these costs under section 4(h)(10)(c)?

Ms. RIVLIN. Well, it certainly is a fair question and one that should be addressed as we reexamine this whole question. Part of the costs are now being shared by the public at large, including the people in the region.

Senator HATFIELD. Would you also agree that the section 4(h)(10)(c) credit does permit reimbursement to Bonneville now from previous years' payment?

Ms. RIVLIN. I am not an expert on this section of the law. We can certainly look into it.

Senator HATFIELD. Do you have someone who would like to affirm that?

Mr. GLAUTHIER. We are not prepared to make a statement about previous years, but I would like to expand on Dr. Rivlin's statement. The other users include the Federal Government.

The Federal Government is the owner, of course, of the Corps dams and the Bureau of Reclamation dams, so the allocation that Dr. Rivlin announced earlier is an allocation to these other uses and users.

That is the permanent portion of the announcement that Dr. Rivlin made. For the next 2 years, that additional allocation also sees to the same additional uses and users.

Senator HATFIELD. But should not Bonneville already be receiving contributions from these other beneficiaries?

Mr. GLAUTHIER. In the past, the allocation was not made. Last year, we made the allocation for the emergency spill program and as Dr. Rivlin has just announced, we are accepting that as an appropriate action from this year forward.

Senator HATFIELD. Which, in effect, are really credits already owed to the ratepayers.

Mr. GLAUTHIER. We are accepting that from this point on. We are with you there.

Senator HATFIELD. Thank you very much.

Are there any further questions? If not, thank you, Ms. Rivlin, for your time here today.

We are looking forward to continuing our working relationship, and I would hope that you would look at all possibilities for the long term and not just these Band-Aids that we are now engaged in, and especially when there are other sources for assistance.

Ms. RIVLIN. Thank you, Mr. Chairman. This is a hard problem, and we——

Senator HATFIELD. Yes; I know that.

Ms. RIVLIN [continuing]. Look forward to working with you on it.

Senator HATFIELD. Thank you very much.

Now, I will return to Senator Gorton for any opening statement.

STATEMENT OF HON. SLADE GORTON

Senator GORTON. Mr. Chairman, this is a vitally important hearing on an issue of a central weight and to the health of the Pacific Northwest regional economy. The issue is the recovery of endangered runs of salmon and the impact that recovery has on the competitiveness of the Bonneville Power Administration.

As it has over the past several years, the issue will continue to take up much of the time and energy of the region, its people, and decisionmakers.

On the announcement of the final biological opinion a few weeks ago, Will Stelle, the Regional Director of the National Marine Fisheries Service, said, and I quote, "If there are baby salmon in the Snake River, today is a good day for you."

He is right, but we need to consider the impact of this biological opinion on more than just baby salmon. We must consider the impact on local economies built up along our river system using the water in that river, on Bonneville competitiveness, irrigated agriculture, river users, recreational activities, fisherman, and many other people.

Like people throughout the Pacific Northwest, I want more salmon in our river system. This is a goal we all share. Differences emerge, however, as we decide how to reach the goal.

The administration determined in its final biological opinion that Bonneville will pay upward of $500 million, that's half a billion dollars a year, in fish-related costs. Roughly 1 week from today, the administration will put forward its draft recovery plan for the endangered runs of Snake River salmon, a plan I suspect would impose even more costs on our regional economy.

Mr. Chairman, although I am not a biologist, I do believe that there has to be a less expensive way for us to achieve our mutual goal of more fish in the entire river system. This is where our differences begin.

I cannot, however, entirely fault the administration for its costly biological opinion or its soon to be released draft recovery plan for salmon, because the administration's actions are driven by the Endangered Species Act. I believe that in order to fundamentally change the situation we face today, we must change the Endangered Species Act itself.

As each of us in our Northwest congressional delegation fights to find ways to keep Bonneville competitive, saddled under these heavy fish costs, it is crystal clear that each of us now is struggling with the fundamental flaw in the act and in related acts, the consideration of the economic and social impacts of species protection on people, their families, local and regional economies.

I will be working this year to correct this fundamental flaw in the Endangered Species Act, and hope to work with my Northwest colleagues in this effort.

The critical question before us today is whether or not Bonneville can remain competitive in the region, while paying upward of $500 million a year in fish costs. Other questions include: Will customers, as many have expressed to me over the past year, continue to look for other power sources, leaving Bonneville even more vulnerable?

Working together, how do we craft a short-term solution to cap Bonneville's fish-related costs without passing these costs off to other users of the system?

Bonneville, obviously, is not the only producer of power on the Columbia River system. Does the administration intend to make additional requests of the appropriations committee to fund costs associated with this opinion?

Mr. Chairman, we are going to find some of the answers to these questions from the witnesses who are before us today, and working together, I hope we can come up with an equitable and effective solution.

Senator HATFIELD. Thank you, Senator Gorton.

Senator Murray.

STATEMENT OF HON. PATTY MURRAY

Senator MURRAY. Well, thank you, Chairman Hatfield.

Thank you for calling this hearing today and working us through this process. Perhaps the ides of March is a most appropriate day to be focusing on this issue.

The issues we are considering today are critical to the quality of life and economic vitality that we enjoy in the Pacific Northwest. Questions of salmon recovery, energy policy, and economic growth are tied together in the question of Bonneville Power's long-term future.

I want to touch on three issues, first, the role of Bonneville in the past, present, and future. As an agent of Government, BPA is an agent of public policy. It exists to work toward certain policy goals that serve the interests of the Pacific Northwest and Northwesterners.

It has been this way always. The BPA is, today, a child of the new deal. Whether we are developing renewable resources, promoting energy conservation, helping fish and wildlife, or bringing electricity and irrigation to the rural west, BPA has always been a vehicle to achieve the public policy goals of our constituents and of our Nation.

I believe this role, the role of the Federal agency, is appropriate and should continue. I do not want to see BPA disadvantaged in the markets.

I do not want to see it sold in part or in whole, and I do not want to see its flexibility to serve the region's multiple interests undermined. I want to see a Bonneville that is healthy for the long term, and able to respond when our region needs help, which brings me to salmon recovery.

I know, Mr. Chairman, that we are here to discuss BPA finances, so I will not get into any specific recovery issues; however, I think it is important to point out that the hydrosystem issues are but one part of the overall picture.

I and other leaders from the region have been calling for a comprehensive recovery plan that addresses all aspects of the salmon life cycle. That means addressing habitat, hatcheries, and harvest, in addition to the hydro issues.

The hydro issue tends to get most of the attention, and as we move forward I hope everyone keeps in mind that we must not waste action taken to address one phase of recovery by ignoring others.

Finally, a word about the administration's work to help bring the Federal Government into the cost equation. We have worked very hard with the White House to point out the complexity of this issue in our region, and I think yesterday we made some real progress in addressing the need to give BPA the flexibility it needs to respond to the public's demands.

However, I also wish to say that I recognize it is only an interim solution. The interim use of section 4(h)(10)(c) buys us some time to make a comprehensive look into BPA finances and figure out how to keep it competitive for the long run, and hopefully, we have always bought some time for the fish in the region as well.

Mr. Chairman, I thank you very much for calling this hearing, and I look forward to working with you and coming to some solutions with this very important regional issue. Thank you.

Senator HATFIELD. Thank you, Senator Murray.

Senator Burns.

STATEMENT OF HON. CONRAD BURNS

Senator BURNS. Thank you very much, Mr. Chairman. I want to thank you for holding this hearing.

I think we are most fortunate at this juncture of dealing with this problem of having you as chairman, because you bring to the table much institutional knowledge, you were here from the very start of even the formation of the ESA, and your knowledge of the Columbia River, and, of course, the upper reaches of that Columbia River.

And why I am very interested in this, because much of the water that comes down the Columbia River starts in the State of Montana, especially, it feeds the river called the Snake.

We are very, very mindful of Bonneville and its power, because we have industries in western Montana that are solely dependent on the electricity rate from this power source.

And I ask that my formal statement can be put in the record. I want to just sum up here the problem that we see coming from the State of Montana.

The fires of 1988 and 1994 dealt us another problem inasmuch as we cannot hold our snow pack as long into the summer as we once could. Last year, Hungry Horse was just a puddle. Then came the request that they wanted 1 foot of water off of the Flathead Lake.

Now, some folks couch that in a request as saying it had to do with the erosion on the north end of Flathead Lake, and I know different, because the water was needed to flush downstream.

We have a real problem, as that water is just as important held in the State of Montana as it is if it goes on downstream, and especially when used in the recovery of an endangered species that you can buy in any can in any grocery store in America.

That is not to say that we are not concerned about the reestablishment of the salmon in the Columbia River. We are very concerned about that.

But we also have another species that may be in conflict with that, and it is called the Montana bull trout, which right now is susceptible for listing. And that deals us more trouble in the State of Montana.

PREPARED STATEMENT

So with that, I am anxious to hear from Mr. Hardy, the time, the hour is here, but that is our concern. But we are also mindful, and want to cooperate, and want to be part of the solution to this problem that we have on the Columbia River, because it is vital to the State of Montana, also.

Mr. Chairman, we thank you very much.

Senator HATFIELD. Thank you, Senator Burns.

[The statement follows:]

PREPARED STATEMENT OF SENATOR CONRAD BURNS

Thank you Mr. Chairman for calling this very important hearing on the recovery efforts of the salmon in the Snake and Columbia Rivers. Although neither of these rivers flow through my state, this is an extremely important issue to the land and people of Montana. For much of the water which is being proposed to aid in the recovery of the salmon, comes from the streams and lakes in Montana.

In Montana this is not so much of a salmon problem, as one of economics and a threat to another species, the bull trout. You see Mr. Chairman some of the water that feeds the Snake and ultimately the Columbia River comes from the mountain streams of western Montana. We don't see one cent of economic value from the salmon, but we do feel the economic pinch of the removal of our water. Water, which in years like the one we are now experiencing in the northern rockies, we cannot afford to lose.

For the past several summers the rivers in Montana have been running extremely low due to the effects of a lack of winter moisture. Later in the year, the streams run low as a result of excessive draws of water from downstream users. Last year the water level in several of our lakes was at its lowest level in history. This example was very much the cause of flushing salmon down river, in a program that has had very little measurable effect on the recovery of this species.

Mr. Chairman, the movement of water down river is extremely important for the western portion of Montana. The benefits that can be derived from the water resources are immense. All one needs to do is look at a map of the state and see that this is a recreational haven for many, both in and out of the state. Yet the federal government continues to intervene and draw from this economy the very basis of its' existence. When the lakes and reservoirs of the area are drawn down the population in the area has no summer opportunity for economic development. This steady draw on the resources of the area has cost the local economy and the federal treasury millions of dollars, much in the way of excessive prices for higher electric rates. This is money which in this time of economic belt tightening that we could have and should have saved.

Another economic issue is the cost that this proposed action will have on the transportation system on the river. In Montana the base for our economy is the agriculture industry. Reports show that the producers in Montana ship upwards of 80 percent of their crops out to the Pacific rim countries through ports located on the Columbia River. If by flushing water down the river the water levels are drastically reduced, the operators transporting these commodities will increase their rates and thus the cost to the producer. Again placing an economic hardship on the federal budget. These are people who are struggling to afford the cost of doing the business of feeding and clothing this nation.

Unfortunately this is not the end of the hardships that the National Marine Fisheries plan has placed on the state of Montana. I am sure that they are aware of the strains that this will place on a native fish species on our state, the bull trout. The more water which is flushed down the river will increase the stress on this species. Reducing the chances the state is undertaking to recover this valuable population, and adding to the high cost of the project.

Mr. Chairman the costs associated with this action, which is being proposed by the National Marine Fisheries Service is too high, for what the scientific data has detailed as a return. The proposal for the action has placed misguided confidence in the unsupported conclusions of the benefits of massive flow increase, spill and reservoir drawdowns on the recovery of the Northwest salmon. It is my belief, and that of a number of authorities that more science needs to go into this recovery effort before a final plan can be detailed. So many times the public accuses Congress of jumping without looking, and we have an opportunity here to do just the opposite. Let's take the time to appraise and assess the impacts as well as the benefits before we allow this plan of action to begin.

Mr. Chairman, I would again like to thank you for taking the lead on this issue and providing the committee with an opportunity to get to the bottom of the costs associated with this plan for salmon recovery. As my state is the least effected by the recovery yet the most effected by the cost of the program as is it proposed I will stand strong against any and all efforts to draw additional water from our streams. I look forward to the testimony of the panels here today to provide the reasoning behind this costly and questionable proposal.

STATEMENT OF HON. LARRY CRAIG

Senator HATFIELD. Senator Craig.

Senator CRAIG. Mr. Chairman, I, too, join with the members of this committee in thanking you for bringing this issue to the attention of the Congress.

I think you have brought it at a time when clearly we must focus, as we have not in the past, in attempting to drive a solution to a problem that is very perplexing in the Pacific Northwest.

I remember several years ago when you convened the original salmon summit, and I applauded you at that time, but it was obvious, following that effort, that this was an issue that politics, and not science, would allow to lie down.

Since that time, we have seen the rest of the story. And the rest of the story is that we are now at a point where the cash cow of salmon recovery in the Pacific Northwest is about to be drained dry. And that cash cow is the Bonneville Power Administration.

You and I and everyone else here understand the Regional Power Act and what it caused to happen, and what it allowed, or insisted, or required Bonneville to do.

While I think all of us were respective and supportive of that position, we watched as rates went up and as costs went up in relation to salmon recovery, and all of us said, gee, I do not know if we can afford another one of those.

And yet with the announcement of the biological opinion by the National Marine Fisheries Service several weeks ago, all of a sudden added to that $350 million a year annualized cost driven by the Power Act is now a potential $160 million more a year, maybe $280 million additional by the year 2000. That's better than one-half a billion dollars a year, and frankly, it is too darn much.

We now put in jeopardy the Bonneville Power Administration's ability to be a producer and a competitor in the Pacific Northwest, and it is a tragedy if we allow that to happen, and I know you won't, nor either will I.

But I would hope that we use this time and place, Mr. Chairman, to focus in a micro way, and something that we can never get our hands around in another way, and that is the issue of the Endangered Species Act and its impacts.

Because we can measure very clearly its impact on Bonneville, we can say, "Oh, look at the dramatic impact it is having here and the potential crippling of this major power producer in the Northwest."

We are measuring that today, and we will measure that in the future. That is part of the intent of your hearing to scope that and ultimately to try to drive potentially a solution.

But let me suggest that it is only one measurement. We are not going to measure the impact on the investor of utilities, but we should. Now, this hearing is not for that.

We are not going to measure the impact on irrigation, agriculture, transportation, but it is phenomenal and it is going to get greater unless you and I and the rest of these Senators sitting around this dias from the Pacific Northwest drive a solution to this problem.

I think we are now attempting to, at least, understand it in a way that may cause us to come together for a solution, because I do believe we are at a time in which it can be legitimately asked how much are we willing to pay for the salmon. That has been heresy, political heresy, up until this time.

We have all wanted to save the salmon, and that has been a sincere statement on the part of all of us who serve in the formation of public policy.

But we have finally come to a time where we have to look ourselves squarely in the eye, Mr. Chairman, and say and at what

cost; certainly, not at the destruction of Bonneville. I would hope not at the destruction of the irrigated economy of the State of Idaho.

I would hope not at the destruction of the transportation systems in the slack waters of the Columbia and the Snake, which you have helped to build. But we are verging on that, and we have to, if we only allow ourselves to stay at the whims of a judge, we may well march on down that trail.

If not, I would hope that you and I and the rest of us can come together to look at the big picture, and the narrow picture, and all of the pieces, and this is but one piece that we are looking at today, to begin to fashion a solution that maintains the productivity of the multitude of the economies of the region, along with the hopes of saving the salmon, I say the hopes of saving the salmon, but it is now legitimate that we, at least from my opinion, ask and at what price.

Thank you.

Senator HATFIELD. Thank you, Senator Craig.

Senator Kempthorne.

STATEMENT OF HON. DIRK KEMPTHORNE

Senator KEMPTHORNE. Mr. Chairman, thank you very much. May I note, too, just for those that are here and see some of us coming and going, it is not discourtesy, it is the nature of being double and triple booked in other locations as well, other committees.

I want to thank you, Mr. Chairman, for holding this hearing. I share with you a common commitment to restoring the endangered salmon stocks.

I believe that we also share a common commitment to recovery measures that will actually help the salmon and still take into account the economic and other needs of people in Idaho, Oregon, and Washington, and I would like to make just a few points.

First, the market situation for hydropower is radically different today than 10 or even 5 years ago. It is a highly competitive market, and Bonneville Power must be able to compete in that market.

Hydropower should be required to pick up and pay for the external environmental costs of its activities. Other power producers have been asked to do this, but it is not appropriate to interpret every mitigation or recovery option as something that should be bank rolled by hydropower and its ratepayers.

The costs absorbed by hydropower should be directly related to its contribution to the salmon's endangerment and what they are asked to do should be well grounded in science or specifically designed to fill gaps in our scientific knowledge about what recovery methods will work.

Unfortunately, the Federal Government is inclined to experiment with Idaho water, for example, spill regimes, and drawdowns in a way that prevents us from learning from these experiments.

It does this with little regard for the costs of these experiments to the people of the Northwest, and while shutting the door on meaningful information that points us in other directions.

Second, we sometimes forget in Washington the effect that Federal policies have on real people. I recently received a letter from

the general manager of the Raft River Rural Electric Cooperative and the president of the Idaho's Co-op's Council.

Bud Tracy projects that the current and proposed fish and wildlife costs could add $500 million to BPA costs. That means that $132 of an average person's $1,000 power bill are fish recovery costs.

For irrigators who have power bills of $100,000 or more, they will be paying $13,200, up from the $9,300 that they paid last year.

I think that we all would agree that agriculture is a risky business and profit margins are often small. Adding $3,200 to a farmer's cost without any assurance that these costs will benefit salmon is not the right policy. Finally, I would like to suggest to this committee that we must become more creative in our approach to helping the salmon. Technological innovation has been a time-tested method that Americans have used to help us solve our problems.

We should do so here. A number of hydropower engineers across the country are convinced that the time is ripe for breakthroughs in turbine design that can produce a turbine more friendly to fish that inadvertently pass through them, new ideas for surface collection, and bypass for light and sound guidance, and improve transportation within our region.

Technological innovation can be our ally in achieving these twin objectives, which at times seem so incompatible. I would urge this committee to pursue this course with all due speed, and offer my commitment to work with you toward this objective.

PREPARED STATEMENT

I would also note that the third panel coming up today is Mr. DeWitt Moss, from Jerome, ID, who is truly one of the very knowledgeable individuals with regard to water issues and is both pragmatic and a practitioner on good sound thoughts concerning this.

Mr. Chairman, I would ask that my full statement be made part of the record.

Senator HATFIELD. It will be made part of the entire record.

[The statement follows:]

PREPARED STATEMENT OF SENATOR DIRK KEMPTHORNE

Mr. Chairman, thank you for your invitation to participate in this hearing on the salmon recovery efforts, and its cost to the Pacific Northwest, and Bonneville Power Administration in particular. You and I share a common commitment to restoring endangered salmon stocks. Historically, they have been an important source of food and recreational opportunity. Today, as yesterday, they are also part of our unique identity.

I believe we also share a common commitment to recovery measures that will actually help the salmon and still take into account the economic and other needs of people in Idaho, Oregon, and Washington. Being able to assure an adequate, consistently reliable, and affordable energy supply to Pacific Northwest households, agriculture, and industry is part of that equation.

The witnesses testifying today are especially equipped to address the energy issues underlying the salmon recovery debate. I do not intend to cover ground that can be better addressed by those on the front line of our regions energy concerns. I would, however, like to make several points.

First, the market situation for hydropower is radically different today than ten, or even five, years ago. It is a highly competitive market, and Bonneville Power (BPA) must be able to compete in that market if it is to remain a viable entity and meet its repayment obligations to the federal government. Already, I am personally aware of several instances where present BPA customers are seeking alternative sources of electricity to replace and/or supplement their contracts with BPA. As a

result, the National Marine Fisheries Service (NMFS) and other federal agencies need to realize that BPA is not really a deep pocket.

Yes, hydropower should be required to pick up and pay for the external environmental costs of its activities. Other power producers have been asked to do this. But it is not appropriate to interpret every mitigation or recovery option as something that should be bankrolled by hydropower and its ratepayers.

The costs absorbed by hydropower should be directly related to its contribution to the salmon's endangerment, and what they are asked to do should be well-grounded in science or specifically designed to fill gaps in our scientific knowledge about what recovery methods will work. Unfortunately, the federal government is inclined to experiment with Idaho water, spill regimes, and drawdowns in a way that prevents us from learning from these experiments. It does this with little regard for the costs of these experiments to the people of the Northwest and while shutting the door on meaningful information that points us in other directions. I speak here of various efforts to "deep six" the Iwamoto studies on smolt survival through the reservoirs and to ignore what happens to salmon during the ocean phase of their life cycle.

Second, we sometimes forget in Washington the effect that federal policies have on real people. Time and again, I have heard discussions that dismiss a rate-increase driving policy because it allegedly only results in a single digit percentage increase for the average household, or so many dollars a month.

I recently received a letter from the General Manager of the Raft River Rural Electric Cooperative and President of the Idaho Coops Council. He was distressed about the effect on Bonneville Power rates of this Administration's Biological Opinion covering hydropower operations. His coop serves an area that has never been home to spawning anadromous fish.

Based on the current BPA fish and wildlife budget of $350 million, augmented by the additional Administration request of $148 million, he projected the cost to individuals and to irrigators. Remember, irrigated agriculture is the economic mainstay of the communities in the counties served by Raft River. If there is no irrigated agriculture, these communities may become the ghost towns of the 21st century.

While a person with a power bill of $1,000, is paying $132 a year for salmon recovery under the new biological opinion, the cost to an irrigator is substantially greater. Bud Tracy's irrigation customers, who have an annual power bill of $100,000, will pay $13,200 per year for salmon recovery efforts, or $2,200 per month during their six month irrigation season. This is an increase from $9,324.00 presently, or $1,864.00 a month.

Agricultural production is not one of the most certain occupations. So, we are adding almost $4,000 to the annual production costs of Idaho farmers, without any assurance that these costs will benefit salmon, and when drought conditions have been present for seven years.

Mr. Chairman, I ask unanimous consent that the letter from Bud Tracy be included in the hearing record. It outlines the likely economic effect on customers of different types and size.

Finally, I would like to suggest to this Committee that we must become more creative in our approach to helping the salmon. Technological innovation has been a time-tested method that Americans have used to help us solve our problems. We should do so here. A number of hydropower engineers across the country are convinced that the time is ripe for breakthroughs in turbine design that can produce a turbine more friendly to fish that inadvertently pass through them. New ideas for surface collection and bypass, for light and sound guidance, and improved transportation are within our reach.

While it is politically correct to speak of tearing down the dams and returning to natural river conditions, the real solution to benefit salmon is one that will aid salmon recovery while recognizing the genuine needs of the people in the Pacific Northwest to earn an income and raise their families. Technological innovation can be our ally in achieving these twin objectives, which at times seem so incompatible. I urge this Committee to pursue this course with all due speed and offer my commitment to work with you towards this objective.

LETTER FROM BUD TRACY

RAFT RIVER RURAL ELECTRIC COOPERATIVE, INC.,
Malta, ID, March 13, 1995.

Hon. DIRK KEMPTHORNE,
Congress of the United States, Washington, DC.

HON. SENATOR KEMPTHORNE: The impact of the Endangered Species Act (ESA) to our area through the listing of the Northwest Salmon alone, possibly has and will have as concentrated affect on the Mini-Cassia area as anywhere.

It is important to recognize and acknowledge up front that "none" of the anadromous fish ever made it as far up stream as our county and the neighboring Minidoka county due to natural God made barriers.

Our state was established, and its local economy developed, with an irrigated agricultural base.

In the early 1960's the Bonneville Power Administration (BPA) agreed to bring preference power (PF) to Southern and Eastern Idaho (the upper Snake River drainage). A large portion of Cassia and Minidoka Counties are served with BPA's PF power through the following utilities: City of Burley, City of Declo, City of Albion, Unity Light & Power Co., South Side Electric Lines, Inc., Raft River Rural Electric Co-op., East End Mutual Company, LTD., City of Heyburn, Farmers Electric Co., Rural Electric Company, City of Rupert, City of Minidoka, Riverside Electric Company.

In addition to the public entities, the balance of the counties are served by the investor utilities Idaho Power Company (IPCo) or Utah Power (UP & L).

Thus with such a predominate Hydro base in our area the Endangered species Act (ESA) listing has placed an exorbitant burden on the local economy as well as the unprecedented attack upon our water and water rights. With the assumption that the surface and ground water resources are a conjunctive resource the release of any Upper Snake Water will jeopardize not only the surface but continue to deplete the underground aquifer.

Assuming the rule of thumb that for every $25 million BPA requires in revenue the wholesale cost to the preference utilities increase by 1 percent.

With the BPA fish and wildlife budget at $350 million and the National Marine Fish and Wildlife Service (NMFS) biological opinion recently released asking far an additional $148 million, the cost of "fish alone" to the wholesale cost of electricity has an economic impact of over 20 percent.

Now what does that really mean in the real world of our rate payers and what effect will this have upon their ultimate cost of power.

In our Cooperative the average annual residential bill in 1994 was $1,106.34. Their fish cost would be approximately $12.53 per month.

The average irrigation bill was $10,802.42, their fish cost would be appoximately $244.61 per month.

Another way to look at this would be to say our total wholesale cost for BPA power in 1994 was $5,070,726.28. The cost of the present $350,000,000 Fish and Wildlife budget, Raft River's share of this would be approximately $709,900. This would be $705.67 per member per year or $58.81 per month.

With the additional Biological Opinion costs of $148,000,000 the total cost to Raft River Rural Electric per member, per year or $83.67 per member per month.

As you are fully aware averages can be confusing and misleading. With this in mind please consider the following. Real Examples:

Example No. 1: A small irrigator with an annual bill of $3,000 his fish cost would be $67.93 per month.

Example No. 2: A large irrigator with an annual bill of $400,000, his fish cost would be $7,400 per month.

The first and obvious impact is on the farmers with an increased production cost. However, the ultimate impact is born by the entire infrastructure of the Burley-Rupert Area. Their mere existence is dependent upon water and agriculture.

Therefore, away of life from local hot dog and hamburger shops, to banks and clothing stores will be asked to pay the price. Which will, with out a doubt, have to pay the ultimate price with the loss of their business.

When this commences there will be a domino effect which will have the death spiral effect on local and county government by reducing property values which will be the final blow.

With respect to the total State of Idaho as President of the Idaho Cooperative Utilities Association, I can without reservation express the same impact is happening all through the State, as well as impacting all of the local Cooperatives and Municipalities.

This outcome will simply destroy an economy and the lives of rural families. Let's reconsider the human species in the reauthorization of the ESA.

I sincerely believe that to place greater value on a species other than human is wrong.

After all what and who are we protecting it for?

Sincerely,

BUD TRACY,
General Manager.

DEPARTMENT OF ENERGY

BONNEVILLE POWER ADMINISTRATION

STATEMENT OF RANDALL HARDY, ADMINISTRATOR

OPENING REMARKS

Senator HATFIELD. As we turn now to Mr. Hardy, the Administrator of the Bonneville Power Administration, let me just add one further fact.

In setting up this meeting today, I invited each of the colleagues from the States of Washington, Idaho, Montana, and Alaska to submit suggested names of witnesses, and I believe that we have been able to accommodate not only specific requests, but have many important categories of parties represented in this hearing.

We regret, the timeframe being what it is, that we could not have more.

Tremendous interest in the outcome of this hearing today has been expressed by our House colleagues from all of our States, and there may be a similar hearing organized by some of the House colleagues at a later time.

But we would have loved to have been able to accommodate all of our colleagues: House colleagues, as well as our Senate colleagues, but we were not able to do so.

Mr. Hardy, you may proceed to either make a summary statement, and if you want, to answer questions.

Mr. HARDY. Yes, sir; Mr. Chairman, I would like to ask that my full statement be entered in the record.

Senator HATFIELD. It will be.

Mr. HARDY. And I will summarize it. I will speak briefly from a handout that I think each of you have.

Mr. Chairman, as you observed in your opening statement, Bonneville today faces the greatest challenge in its entire 58-year history, and I include in that period the WPPSS period and other periods which, at the time, seemed awfully formidable.

That challenge is summarized in this graph, with our competitiveness picture and how our competitiveness has changed over the last 15 years. The bottom line is, essentially, the cost of Bonneville's power. You will notice that line is pretty stable. It has not gone up all that much over the last 15 years.

What has changed is the top line, which is the cost of alternative generation. Fifteen years ago, when the Power Act passed, Bonneville's wholesale rate was about 10 mills, and the cost of a new nuclear or a coal plant was 70 mills or 80 mills. We had plenty of room to raise rates, and customers simply did not have other choices.

Today our wholesale rate is 27 mills, and the avoided cost of new generation is somewhere between 25 mills and 30 mills. In fact,

this graph is 3 months old, and we are probably already at the crossover point where alternative sources of generation are below or at least equal to our wholesale rate.

This situation is a product of three factors, first, low natural gas prices; second, a west coastwide surplus of electricity borne by a defense restructuring in California, and a number of other factors; and third, the opening up of transmission access nationwide, and particularly in the west coast. This situation in particular, has made low-cost coal-fired power in the desert Southwest, Wyoming, Utah, and other places available in this region at costs that are competitive with our current rates.

We announced a 5-percent rate increase as a preliminary proposal some 3 weeks ago. I am not even sure we can sustain that level of rate increase without losing significant additional customers.

We have tried to deal with this problem in a number of ways. Between last year's budget submittal and this year's budget submittal that you now have under consideration, we have cut almost $250 million a year on average for the next 5 years. But that was not enough. Three weeks ago we identified another $250 million a year on average worth of cost reductions that we believe we will have to undertake to stay competitive. These reductions involve a 1,000-person staff reduction at Bonneville and possibly additional staff reductions.

The 1,000 person reduction is a 20-percent downsizing for BPA. The additional cost reductions involve significant cuts, particularly in the generation and transmission budgets. I am sure we will get into some of those significant reductions in the questions.

But, basically, in the last 15 months or so we have identified one-half a billion dollars a year worth of cost cuts over the next 5 years that we are aggressively pursuing.

The next couple of pages list for you some of the offers that our customers have been receiving. They reference Senator Gorton's observation about the number of people who visited his office, and I think have visited all of your offices. Let me just cite a few offers to give you an example of the competition we have.

Kootenai Electric Co-op of northern Idaho has an offer on the table from ENRON. Who is ENRON? ENRON is the largest natural gas company in the United States, and is an active marketer-broker in the Northwest. That offer starts at a rate below Bonneville's current rate of 27 mills, and escalates by a modest percent each year.

Clark County PUD, our fifth largest customer, has already made a decision to build a combustion turbine and offload one-half of its load from our system. And I now have pending a request from Clark to go to zero, to offload its entire 375 megawatts worth of load by the end of 1996.

Inland Power & Light, our second largest cooperative customer outside of Spokane, has received an offer from the Washington Water Power Co. to offload one-half of its load from Bonneville, again at a price that starts below our current rate, much less any potential rate increase, and escalates by roughly 3 percent a year.

In addition, back in November, we bid on a solicitation from Public Resource Managers, who is putting together a portfolio of resources for a number of our customers.

We offered a price that started at 29 mills, just 2 mills above our existing rate, and we did not even make the short list of selectees, that PRM published that it was going to negotiate with last week.

There is a general pattern in all of these offers. Competitors, whether they are PacifiCorp, or Washington Water Power, or ENRON, or other marketer-brokers, are offering our customers 5-year, and in some cases 10-year contracts, that start below our current rate, and escalate just slightly above our rate at the end of the period.

Now, these are just the offers we know about. I suspect, and we have received some information to this effect, that, in fact, there are a number of offers out there that start and end below our current rate in the 5-year marketplace. That is the pattern and that is what we are trying to deal with.

We have tried to respond to that challenge in four or five different ways. I have mentioned the cost cuts and how we are proceeding with them. We intend to keep the 2-year rate proposal as low as possible. We announced a 5-percent rate increase as a preliminary proposal 3 weeks ago. That number is going to go down. It has to go down if Bonneville is going to stay competitive, and we are working to make that happen.

We have indicated an intention to offer a 5-year rate proposal in the next 45 to 60 days. I will be frank and tell you I am not quite sure how I am going to get to a 5-year rate proposal, but I know I have to get there if we are to be competitive and if we are going to compete with the kinds of offers that I have just described.

We will use cost cutting, 4(h)(10)(c), credits, and the debt rescheduling tools that Dr. Rivlin talked about in an effort not just to pay for the additional salmon cost increment, but also to keep Bonneville competitive more generally.

We will move to simplify our existing contracts. That is why we announced, along with the budget cuts 2 weeks ago, the decision to shelve our tiered rates proposal. This decision was made primarily because the tiers had collapsed and there was no longer a market-based tier two, but also because the decision greatly simplified our ability to offer new power sales contracts. We will move to more tailored power sales contracts for individual customers rather than the omnibus negotiation that we have engaged in so far.

Let me turn a little bit to fish. Bonneville is dedicated to restoring the salmon runs. We are currently spending at a clip of roughly $300 million to $350 million a year, and as many of you have observed, that is going to go to roughly $500 million a year over the next 3 to 4 years.

I should emphasize, however, that fish is not the biggest section of our budget. It is about 10 percent now, and with the inclusion of the 1995 biological opinion costs, it will grow to 13 or 14 percent. There are other sections, for example, the WPPSS debt service, and operations and maintenance of transmission systems, that are larger.

However, fish is far and away the fastest growing segment of our budget. Fish expenditures have changed from 1991 to 1995 and are projected to increase through 1998.

It is no accident that the three Snake River stocks were listed in November 1991, and that cost escalation that has occurred from 1991 to the present has been about $200 million a year from 1991 to 1994. As many have observed, the cost will go up another roughly $160 million over the next 3 to 4 years.

We are grateful for the administration's help with 4(h)(10)(c) that Dr. Rivlin announced, and that we announced formally yesterday.

The 4(h)(10)(c) credit will be of significant assistance, but as many of you observed, and as Dr. Rivlin observed, it is not a long-term solution. It needs to be a bridge to something else. It buys us some time, both for the salmon and for our own competitiveness problem.

Basically, absent some action on your part, Bonneville has three tools to deal with this problem. One tool is 4(h)(10)(c), whatever assistance we can get; the second is the cost cutting that I just announced, and further cost cutting, if necessary; and the third is essentially debt rescheduling by missing a portion of our planned Treasury payment, or at least in this case, lowering the probability that we will meet the planned Treasury payment each year.

Those tools and modest contributions from new revenues, which are problematic in today's marketplace, are the tools we have. Those are the tools we will use to manage ourselves to a stable 5-year rate level, but that begs the question of what is the long-term solution, which is the purpose of today's hearing.

I have two final notes. First, because of good water and because of the 4(h)(10)(c) assistance, we are in relatively good shape for making our fiscal year 1995 planned Treasury payment.

I think we have a good probability of making the payment, and I am not worried. Fiscal year 1996 is more problematic, but, again, with 4(h)(10)(c) assistance, that will be helpful, and if we get a decent break on water conditions, I am optimistic we can make that planned Treasury payment as well.

Finally, Mr. Chairman, I will conclude by saying, as is obvious, we are in a very competitive market. We will do whatever it takes to meet the market, because that is what is necessary for us to remain viable in the fashion that Senator Murray and others have described, and execute the missions that we have.

But that may not and probably will not be enough. That is the purpose of today's hearing, and I am optimistic that you and other members of the delegation will help us as we work toward solutions for the longer-term issues.

Thank you, Mr. Chairman.

[The statement follows:]

PREPARED STATEMENT OF RANDALL W. HARDY

Mr. Chairman and Members of the Subcommittee, it is a pleasure to come before you to present the FY 1996 budget for the Bonneville Power Administration (Bonneville). The Subcommittee's attention and support continue to be essential as we work to address the challenges we face in the Northwest.

The Bonneville Power Administration is at a historical pivot point that will, depending on our response, determine the future of this agency. After five-and-a-half decades of virtually no competition, Bonneville now finds itself in a deregulated, highly competitive marketplace. At the same time, new decisions on Columbia Basin endangered salmon will influence how the hydro system is operated. Bonneville's response is to move decisively to manage the challenges these events pose.

Today, I will first discuss the competitive environment we are facing and the tools we are using to remain competitive. I will then discuss the increasing financial pressures of added costs. Finally, I will comment on our current financial situation as of the end of the first quarter of FY 1995, our current budget, and some of the more important events now affecting Bonneville.

For 58 years, Bonneville has been a "can do" agency, adapting to the Northwest's changing needs, from rural electrification to establishing one of the leading energy conservation programs Bonneville's ability to change remains its greatest strength. This attribute takes on new importance today as Bonneville undergoes what may be its most crucial transformation.

Bonneville's ability to adapt successfully is fundamentally important to the Northwest economy and environment. Our low-cost, non-polluting power has brought new business and industry into the region. In the rural Northwest, Bonneville power has transformed arid expanses into rich croplands. This same reliable power is a major factor in the region's economic expansion

A productive and growing Northwest economy depends on Bonneville. A financially healthy Bonneville is also key to funding the region's fish and wildlife enhancement and energy conservation efforts. In today's competitive utility marketplace, Bonneville must first succeed as a business if it is to serve its wide-ranging regional mission and meet its Federal responsibilities.

COMPETITIVE MARKETPLACE

Utility deregulation has fostered a strong independent wholesale electric power production industry nationwide. In the Northwest, as elsewhere, this industry offers Bonneville customers an alternative. This competitive climate was accelerated with the National Energy Policy Act of 1992, which opened transmission access, not only within the Northwest, but also to utilities among regions.

The costs of new power sources have dropped sharply in recent years, causing the gap between Bonneville's costs and the cost of alternative power sources to narrow dramatically. Ten years ago our price advantage was over 400 percent. We believe that recently this gap has been narrowing rapidly as independent power producers and others enter the Northwest wholesale market. I have attached a number of charts and graphs to my testimony to elaborate on my testimony. Please see Attachment 1 on the avoided cost of alternative generation. In addition, uncertainties about Bonneville's future costs, especially salmon restoration costs, have led some customers to conclude Bonneville might not be competitive in the very near future That could be true were Bonneville to take no action.

Two years ago we took a hard look at the position of our agency. Following business-as-usual, our projections, using current rate levels, showed Bonneville's costs would exceed revenues, annually, by $600 million in just ten years. There was no question that we would have to change the way we do business. Bonneville's Competitiveness Project is the agency's vehicle for creating the necessary change. Bonneville believes the key to its success is for it to be a customer-focused, cost-conscious, results-oriented, market-driven government organization.

It is important to note that the overall goal of Bonneville's Competitiveness Project is to allow Bonneville to more efficiently and effectively accomplish its mission as outlined in organic statute, not to change the mission itself. Bonneville remains committed to the integrity of the region's environment and natural resources, to conservation as the energy resource of first choice, and to providing high quality transmission and other services. Our competitiveness has a direct relationship to our ability to fulfill our mission, including regional utility, social and environmental responsibilities.

There has been a perception by some that Bonneville's focus on customers is an abrogation of our fish and wildlife and other environmental responsibilities. If anyone has a stake in Bonneville's continued success, it is those who are dedicated to preserving the region's fish, wildlife, conservation and renewable resource programs. Bonneville's customers have alternatives to Bonneville power. Without revenues from the power side, it will be difficult, if not impossible, to continue to fund the region's fish, wildlife, conservation and renewables programs. A healthy economy and a healthy environment go hand in hand. One supports the other. A viable Bonneville is critical to the entire region -- environmental concerns as well as business and industry.

SUSTAINING REVENUES

To ensure that we can meet all our regional responsibilities, we believe we must move to stabilize rates to keep our existing customers and attract new revenues as well. Bonneville is looking at how different price increases affect Bonneville's ability to keep customers and thus sustain revenues. We believe this sustainable revenues analysis, based on actual offers being made to our customers, shows that because our customers can choose alternative power suppliers at competitive prices, even small rate increases can lead to a loss of existing customers sales. Total revenues may increase somewhat, especially in the short run with small rate increases less than 5 percent. However, Bonneville believes that as rate increases move much above 5 percent, this changes. Larger rate increases could modify Bonneville's revenue base by driving existing customers away. Our customers have many alternatives to turn to for their power needs. Some, like Clark Public Utilities, Grays Harbor Public Utility District, and Snohomish Public Utility District, have already decided to diversify their power purchases from sources other than Bonneville. Many other customers are being pursued by investor-owned or public utilities, independent power producers, power brokers, and marketers. As of March 1, 1995 Bonneville has received formal requests from six utilities to decrease their current purchases from Bonneville by 472 megawatts. This reduction may result in lower power purchases and lower valued product sales, but final decisions are yet to be made.

An irony of the marketplace is that some of our competitors are also our customers and exchanging utilities under the Residential Exchange Program. Virtually all of our customers, both utilities and industries, are being approached by our competitors. For example:

> Washington Water Power is proposing a 10-year arrangement to serve about half of the load of Inland Power and Light about 27 average megawatts, Bonneville's second-largest co-op customer. The price is potentially competitive with Bonneville's current priority firm rate and escalates at 3 percent a year.
>
> The City of Canby has signed a similar contract for service to most of its 13 average megawatt load with Portland General Electric.
>
> Idaho's Kootenai Electric Co-op has been offered by ENRON a contract to serve all of Kootenai's 27 average megawatt load at prices which start near Bonneville's current priority rate.
>
> In addition, a number of Northwest generating utilities and other West Coast suppliers, including PacifiCorp, BC Hydro, PGE, San Diego Gas and Electric (through its Enova subsidiary), and the Eugene Water and Electric Board, in addition to independent power producers, are offering to serve current Bonneville customers.

Most of these offers have a similar pattern: they start at or below Bonneville's current wholesale rate of 27 mills and escalate by a fixed percentage for five to ten years. They thus start as extremely competitive prices and offer predictability for several years.

As more customers leave, the amount of revenue produced declines. It's clear we need to consider our competitive position when we set our prices.

PROSPECT OF THE CALIFORNIA MARKET

Some critics have suggested that Bonneville is overstating the competitiveness issue. If Bonneville cannot compete in the Northwest, they have said, there is always the California market. The assumption that the California market is our salvation is well-intentioned, but does not reflect current reality.

California today has less expensive or the same alternatives to Northwest power, and it no longer enjoys the economic boom that once supported large extra-regional power imports. The reality is that the same low-cost independent providers that are competing for Bonneville's customers in the Northwest also are competing in the California markets.

As a result of slow load growth, several California utilities also have substantial power surpluses well past the year 2000. These surpluses are depressing prices to historic lows, as utilities opt to sell power at prices below fully allocated cost rather than letting such resources sit idle.

It's not a case of Bonneville's 3-cent power versus a California utility's 8-cent power. Bonneville is competing against other generating utilities and independent suppliers in that market who also offer 2.5 to 3-cent power and against prices forced down by the current surplus, a condition likely to persist for several years.

That does not mean there are not effective and positive arrangements to be forged with California We are moving to maximize the working arrangements between the Northwest and California to provide more seasonal energy exchanges and sales. The competitive market has reduced but certainly not eliminated the economic value of these arrangements. The statutory limit on marketing further reduces the value of these arrangements.

BONNEVILLE COMPETITIVENESS IS CRITICAL

Bonneville's competitiveness is critical to the Pacific Northwest economy. The agency provides nearly half of the electric power and three-fourths of the high-voltage transmission in a very electricity-dependent region.

Bonneville's competitiveness is critical to its customers because the competitiveness and survival of many of the 150 utilities and large industrial customers the agency serves in the region are closely linked to Bonneville's rate levels. Likewise, business and industries serviced by these utilities depend on an economic power supply.

Bonneville's competitiveness is critical to the environment because Bonneville funds conservation activities, and we presently invest roughly $300 million per year on fish and wildlife (not including additional fish mitigation measures recently proposed by the Northwest Power Planning Council, U.S. Fish and Wildlife Service, or National Marine Fisheries Service), in addition to tens of millions for clear air, clean water, and hazardous waste cleanup.

Further, Bonneville's competitiveness is important to the nation's taxpayers because of the annual payments Bonneville plans to make to the U.S. Treasury. For FY 1996-2000, Bonneville's projected annual Treasury obligation is on average about $860 million.

COMPETITIVE TOOLS

Bonneville has three tools to stay competitive: controlling costs, improving services, and increasing revenues from a variety of sources. We have proposed a Business Plan to restructure our entire business approach. The plan is our guide for adjusting to the new environment by managing financial risks, reducing agency costs, and increasing our customers' satisfaction.

In late February, all of Bonneville's key executives met to assess agency marketing and business strategies. We concluded that escalating competition in the marketplace is getting tougher and will continue to get tougher before the playing field levels out. We agreed that in order to meet the competition, further cost reductions would be needed, and we have the tools, the talent, and the will to do it. We further concluded that our overall marketing strategy outlined in the Business Plan is sound and we will continue to keep the course.

CONTROLLING COSTS

We are continuing to take aggressive actions in managing our costs. Thanks to internal cost management, we avoided triggering an interim rate adjustment last October despite a third year of very poor water conditions.

Despite significant and unexpected new costs for power purchases related to drought and fish mitigation--$500 million more than budgeted in the last three years, Bonneville's total operating expenses stayed level for the last three years.

Cost cutting and efficiencies have resulted in reductions of about $240 million a year on average from Bonneville's planned operating expenses for fiscal years 1996-2000. Please see Attachment 2 for a comparison of total operating expenses from the FY1995 Congressional Budget Submission and the 1995 Rate Case data. Preliminary spending levels for 1995 Rate Case data includes updated assumptions and more cost reductions than are included in the FY 1996 Congressional Budget. These cuts will total at least $1 billion by the end of the decade.

As the competition gets tougher and market prices drop, we recognize that even more stringent steps will be needed to close the gap between expenses and revenues. To the extent possible, over the next five years, we will seek an additional $1.3 billion in cuts--this is an average of an additional $250 million annually. These additional cost reductions are expected to be included in the final Business Plan set for release in June.

By the end of this month we will have reduced our workforce by about 350 Bonneville employees from the time we initiated the Competitiveness Project. We expect to reduce Bonneville contractors by about 200 by the end of FY 1995. We are on target to meet our goal of reducing the overall workforce by 1,000 workers by the end of FY 1997. This overall 20 percent reduction is divided equally between contractors and Bonneville employees. It is likely that the $1.3 billion cost reduction goal will further increase this number.

Further examples of cost-cutting and efficiency include: terminating two partially completed nuclear plants; in cooperation with the Bureau of Reclamation, improving Grand Coulee Dam generation efficiency, thereby adding revenues in power sales; altering a major maintenance project; early cleanup of the Ross Complex Superfund Site, and negotiating an agreement in principle to resolve delivery of the Canadian Entitlement downstream benefits under the Columbia River Treaty, thus saving alternative resources costs and the costs of building a new transmission line. Regarding additional cost cutting, all elements of the budget are being considered. In particular, we are looking at resource acquisition projects.

Further, and as a result of recent management decisions, all current generating resources on line and under development are being reviewed in order to achieve savings of about half their costs. In addition, transmission capital investments will be significantly reduced.

Regarding Washington Nuclear Project No.2, (WNP-2) preliminary analysis indicates, that given decommissioning costs of about $450 million, it is significantly more cost-effective to manage WNP-2 costs down to 25-27 mills in the near term. In addition, reliability analysis shows the plant is important for fall-winter capacity. However, should the plant fail to manage to cost targets, termination will be re-examined.

REINVENTION/IMPROVING SERVICE

Bonneville has completely reorganized its work force to focus on customer service. Prior to the re-organization, we had no sales force. Now the agency is mobilized around account executives who have direct contact with individual customers and who are empowered to respond quickly and creatively. The feedback from our customers has been overwhelmingly positive about this new service-oriented focus.

As part of the Administration's FY 1996 proposal to reinvent government, the Department of Energy is preparing legislation to make Bonneville a wholly-owned government corporation under the Government Corporation Control Act. This would increase Bonneville's flexibility over personnel, procurement, financial, budget, and litigation functions to allow Bonneville to compete more effectively in electric power markets. Bonneville has already obtained administrative relief from significant barriers in these areas as a National Performance Review reinvention laboratory. This legislation would make permanent the relief obtained administratively as well as relieve the agency from additional administrative burdens which are statutory in nature.

IMPROVING REVENUES

Bonneville's Draft Business Plan identifies several means to protect and increase revenues. Cost cutting is not the sole means to close the revenue gap. Bonneville is committed to building revenues through enhancing current products and existing markets, as well as seeking new markets. By unbundling products and services, we can offer custom-tailored packages and ensure that customers pay only for goods and services they need, rather than for one bulk product. At the same time, Bonneville's marketing department is developing new products and services that will benefit customers and enhance our revenues.

Initially, Bonneville proposed instituting tiered rates as a competitive tool, however, in light of the rapidly evolving marketplace and customer concerns, has decided to temporarily shelve tiered rates. Three key factors contributed to this initial decision, which we expect will be confirmed in contract negotiations. First, the market itself. Prices have collapsed to the point where the difference between tiers is insignificant. Second, a major goal of tiering is to send a market signal to invoke energy conservation. It is now clear that, even without tiering, customers are moving to develop conservation programs. We are confident that the Northwest Power Planning Council's Regional Power Plan conservation targets can be achieved. Finally, given current conditions, the complexity associated with implementing tiered rates appeared to be a disincentive for doing business with Bonneville and at odds with our objective to stay customer focused. This decision responds directly to our customers and new market realities.

Steps outlined in the Draft Business Plan, which we now expect to finalize in June, are essential to maintaining our competitive position. Failure to act will lead to significant rate increases over the next decade. If we lose customers and revenues, we jeopardize our ability to fulfill legislative mandates which include our broader commitments to fish and wildlife, energy conservation, renewable resource development and other Northwest values, and meet our annual obligation to the U.S. Treasury of about $860 million on average for FY 1996-2000.

SALMON RESTORATION

We believe the costs of restoring depleted salmon is one of the major factors in defining whether Bonneville remains competitive. Restoration of salmon stocks is possibly the most difficult issue confronting the Northwest. Over the past 15 years, Bonneville has incurred costs exceeding $2 billion for all of the fish and wildlife mitigation programs. In the last four years, these aggregate

annual costs, including opportunity losses, have more than doubled, from $150 million to about $350 million. Currently, about I of every 10 dollars of Bonneville's operating expenses for FY 1995 is targeted for fish and wildlife expenditures. Please see Attachment 4 on BPA Fish & Wildlife Investment. This Administration supports developing healthy Columbia Basin salmon stocks and maintaining a financially healthy Bonneville.

Bonneville's annual fish and wildlife investment estimate for FY 1996, including purchase power and foregone revenues, ranges from about $280 to $355 million, depending on water conditions. It does not take into account additional fish mitigation measures recently proposed by the

Northwest Power Planning Council, U.S. Fish and Wildlife Service, or National Marine Fisheries Service. The 1994 Columbia River Basin Fish and Wildlife Program adopted by the Council in December 1994 and the Biological Opinion issued by the National Marine Fisheries Service earlier this month on operation of the Federal Columbia River Power System call for increased augmentation of flows during juvenile fish migration, increased spill, and additional structural changes at hydroelectric projects to potentially improve fish passage. All of these efforts result in increased expenditures or lost revenues by Bonneville. They could add approximately $100 million to $200 million in annual costs. Please see Attachments 4 and 5 relating to such costs This would result in total fish and wildlife expenditures of about 13 to 14 percent of Bonneville's total operating expenses.

FOCUSING ON FISH RESULTS

Bonneville is moving ahead to meet its commitment to the region's fish and wildlife. We are forging creative exchanges and power arrangements with other regions, developing innovative water agreements, and implementing changes in hydroelectric operations that will maximize fish survival and minimize costs.

This is occurring despite a prolonged drought that has compounded the salmon crisis, giving us less water to work with. In each of the last three years, we have had to import more electric power than we export.

For some time, the lack of definitive biology has been an obstacle in salmon recovery efforts Bonneville is actively carrying out fish restoration measures and assuring that results be monitored and evaluated. Ultimately, this will allow us to prove the effectiveness of measures and increase the base of scientific knowledge, thus providing a benefit to all involved parties.

CURRENT FINANCIAL STATUS

Bonneville's financial performance over the past several years is a testament to the uncertainty and volatility of the hydro-based environment under which we operate. The early years of the nineties were times of positive net revenues and a strengthening financial position. The last several years have challenged Bonneville as never before.

When I last appeared before this committee, Bonneville was projecting in its FY 1995 Congressional budget a financial reserve level at the end of FY 1995 of $351 million, which was a decrease of $284 million from the $635 million that had been projected in the FY 1994 budget This year's Congressional budget projects a final reserve level for FY 1995 of $87.1 million. This downward trend has been due to the long-term impact of the drought conditions, projected low aluminum prices, and actions we are initiating to protect and restore endangered species of salmon. As of the first three months of FY 1995, Bonneville is estimating year end reserves of $169 million due to improved stream conditions and increased aluminum prices. This reserve projection, however, does not take into account fish mitigations costs that will be paid in the early months of FY 1996, or potential additional fish costs.

BONNEVILLE TREASURY PAYMENTS

In keeping with this Subcommittee's direction, one of our most important priorities is to assure that Bonneville's payments to the U.S. Treasury are made in full and on time. During FY 1994 Bonneville made its full annual Treasury payment of just under $700 million for the eleventh straight year.

At the close of FY 1994, Bonneville's cumulative principal and interest cash payments on the taxpayer's investment in the Federal Columbia River Power System totaled about $9 billion, of which $6.29 billion has been for interest and $2.61 billion has been for principal The total Federal investment yet to be repaid as of the end of FY 1994 was $10.1 billion.

In spite of the difficulties we continue to experience, we anticipate, based on our end of First Quarter FY 1995 estimates and receipts, being able to make our FY 1995 Treasury payment of over $1 billion in full and on time. About $156 million of this payment results from the early retirement of debt with receipts from the sale of capacity to non-federal participants in the Third Alternating Current Intertie.

DEBT FINANCING STRATEGIES

Through the Draft Business Plan, Bonneville is exploring initiatives with its customers and constituents to reduce its level of debt financing in order to both delay the exhaustion of the borrowing authority caps and improve Bonneville's debt-equity position. The initiatives are to identify additional reductions in capital spending through the application of a capital budgeting process; revenue finance about $30 million in capital investments each year beginning in FY 1996; to the extent allowable, shift costs from the Transmission/Fish and Wildlife borrowing authority to the Conservation borrowing authority; and utilize third-party financing of capital investments when possible.

The Senate Committee on Appropriations, in its 1995 report on the Energy and Water Development Appropriation Bill, requested that Bonneville present a preferred strategy for rectifying its high degree of financial leverage. Bonneville addressed this concern through the development of the capital spending initiatives mentioned above and through reductions in capital spending developed in its Draft Business Plan. The draft plan and the FY 1996 Congressional Budget submittal included a reduction in capital spending of about 32 percent for the period FY 1996-2002, compared to the FY 1995 Congressional Budget submittal. To remain competitive in the current business environment, Bonneville will vigorously pursue any additional opportunities for further reductions in capital spending that may arise.

FISCAL YEAR 1996 BUDGET IN BRIEF

Since its programs are funded by sales of power and associated services, reimbursements, and proceeds of bond sales to the Treasury, Bonneville has not requested or received annual appropriations. Bonneville's FY 1996 budget estimates total obligations of $3,496 million and capital transfers/debt reduction of $200.8 million.

In support of Bonneville reinvention goals, the agency has modified portions of the expense side of its budget structure to simplify programs and more closely align programs to the responsible organization structures. The budget has also been summarized in the old structure to assure continuity with the Congressional Committees during the transition period. Structural changes to Bonneville's capital budget program include combining Transmission System Development with Transmission System Replacements to create a unified Transmission Services program. The environmental capital components of the former Transmission and Replacement Programs have been combined with Fish and Wildlife capital investments to establish a comprehensive Environmental Fish and Wildlife program. Marketing, Conservation and Production incorporates Energy Conservation and Renewable Resources investments. Operating expense program structural changes include combining the traditional Energy Resources, Power Marketing and Scheduling into a combined Marketing, Conservation and Production. Transmission Services expenses combine System Maintenance and Operations with Engineering.

The following table provides detail under the new structure for fiscal years 1994 through 1996:

(Dollars in Millions)

CAPITAL INVESTMENTS	FY 1994 Actuals	FY 1995 Estimate	FY 1996 Estimate
Marketing, Conservation & Production	108.1	153.4	84.2
Transmission Services	192.0	199.6	223.1
Associated Projects	22.2	26.1	25.3
Environment/Fish & Wildlife	34.6	40.7	32.1
Capital Equipment	12.8	13.4	13.3
Capitalized Bond Premiums	15.6	14.6	0
SUBTOTAL CAPITAL OBLIGATIONS	385.3	447.8	378.0
Borrowing Authority to Finance Capital Obligations	385.3	447.8	378.0
Borrowing authority To Finance Other Obligations	(44.9) 1/	201.5 1/	(270.4) 1/
TOTAL BORROWING AUTHORITY	340.3	649.3	107.6
Expensed and Reimbursable	2,908.4	3,024.9	3,118.0
Capital Transfers	172.7	502.2	200.8
BONNEVILLE TOTAL	3,466.4	3,974.9	3,696.8

1/ Borrowing authority to finance other obligations represents the use of or the building up of deferred borrowing.

The Department of Energy budget overview displayed net budget authority for Bonneville. The table below portrays how those numbers are derived from borrowing authority and offsetting collections (dollars in millions):

	FY 1994 Actuals	FY 1995 Estimate	FY 1996 Estimate
Appropriations Transferred to Other Accounts (Mitchell Act Hatcheries Funding)			(14.1)
Total Borrowing Authority	340.4 1	649.3 1	107.6
Spending Authority from Offsetting Collections (Adjusted)	2,904.3	2,904.0	3,402.5
Total Budget Authority	3,244.7	3,553.3	3,496.0
Offsetting Collections	(3,077.0)	(3,406.2)	(3,603.3)
Net Budget Authority	167.7	147.1	(107.3)

From 1937, when it was created, through FY 1994, Bonneville has returned about $11 billion in cash payments to the Treasury for interest, amortization, and operations and maintenance of the Federal facilities of the Federal Columbia River Power System. During FY 1996, we anticipate paying $747.1 million to the Treasury, of which $200.8 million will be applied to the principal on debt owed to the taxpayer, $411.9 million will be interest, and the balance of $134.4 million will reimburse the Treasury for appropriations provided to the Army Corps of Engineers, the Bureau of Reclamation, and the U.S. Fish and Wildlife Service for annual hydroelectric and fish hatchery facilities operation and maintenance expenses. In addition to its payment to the Treasury in

FY 1996, Bonneville will make an initial annual settlement payment directly to the Confederated Tribes of the Colville Reservation of about $15.3 million, pursuant to the Confederated Tribes of the Colville Reservation Grand Coulee Dam Settlement Act, Public Law 103-436.

Due to the capital intensive nature of Bonneville's role as a wholesale electric utility, reliable and cost-effective sources of capital are critical to the success of Bonneville's mission. A vital factor to this success in the next decade will be Bonneville's ability to respond in a timely and flexible manner to unforeseen risks and new opportunities, while also providing for program and rate stability. To be successful, Bonneville will need to maintain reliable and cost-effective capital funding through the U.S. Treasury. Using current capital program estimates, the borrowing authority limit established by the 1974 Federal Columbia River Transmission System Act ($1.25 billion) and increased by the 1983 Energy and Water Development Appropriations Act (an additional $1.25 billion, for a total of $2.5 billion), will be reached during FY 1998, absent further action. This borrowing authority may be used for all Bonneville investments, including new transmission line development and system replacements, fish and wildlife facilities, and direct funding of Bureau of Reclamation and Corps of Engineers additions, replacements and improvements. An additional amount of borrowing authority was established by the 1980 Pacific Northwest Power Planning Act to fund conservation and renewable energy investments ($1.25 billion, for a total Bonneville borrowing authority limit of $3.75 billion). Using current conservation capital program estimates, this limit will not be reached until after FY 2000.

Almost one third ($1,011.8 million) of Bonneville's FY 1996 budget is earmarked for the gross cost of the Residential Exchange Program. The 1980 Pacific Northwest Power Planning Act established the residential exchange in order to extend the benefits of the Federal power system to all residential and small farm electric power consumers in the Pacific Northwest. The gross cost of the Residential Exchange Program is offset by revenues from the exchanging utilities of $808.0 million, resulting in an estimated $203.8 million net cost of the Residential Exchange Program in FY 1996

The FY 1996 budget also provides $158.1 million in direct obligations for transmission services, $79.9 million for environmental and fish & wildlife activities; $73.5 million for conservation resources, and $265.3 million for power marketing, scheduling, and spot power purchases.

MITCHELL ACT HATCHERY FUNDING

Legislation that modifies 16 U.S.C. 755-757, is proposed to authorize Bonneville to fund the operation and maintenance of "Mitchell Act" facilities through the transfer of funds to the National Oceanic and Atmospheric Administration (NOAA). Currently, the NOAA is responsible for funding these facilities. Under this change, the region is provided an increased role in the management of these hatchery facilities in order to better protect fishery resources affected by dam construction. The additional cost of $14.1 million per year for FY 1996-2000 is included in the President's Budget as a negative appropriation transfer to NOAA Revenue estimates have also been assumed to increase to cover these proposed additional costs

DIRECT LOANS FOR CONSERVATION

As part of reinvention, Bonneville is reaffirming its conservation goals and substantially changing the way it approaches acquiring conservation. The Draft Business Plan supports the Northwest Power Planning Council's goal for regional cost-effective conservation and focuses on decentralizing the region's conservation efforts by 1996. Much of the direct responsibility for meeting the Northwest Power Planning Council's conservation goals will shift to our customers A direct loan program is an important transition tool for meeting the Northwest Power Planning Council's conservation goal and for helping to assure Bonneville's competitiveness. The loan program will provide a return of funds to Bonneville for its conservation services while at the same time helping utilities meet their conservation targets established in the Northwest Power Planning Council's Plan. Part of the conservation goal will still be met by Bonneville funded programs that aim for electricity savings on a broad scale.

Bonneville has included in this budget provisions in our appropriations language markup approving access to our authority to issue direct loans. This authority was granted in the Pacific Northwest Power Planning Act, which gave Bonneville $1.25 billion for conservation and renewable resource loans and grants. Bonneville has issued direct loans in the past and, since this is a pre-existing authority, Bonneville believes, based on preliminary contacts with the OMB and CBO, that issuing loans once more will not pose budget deficit scorekeeping problems for the Congressional committees. To assure planning certainty for conducting the Conservation program, Bonneville has included appropriations language in the budget to allow $29 million in conservation loans during FY 1996.

PERFORMANCE MEASURES

Included in the FY 1996 Congressional Budget Submission are seven performance measures based on those measures included in the agency's FY 1994 Annual Management Report. They address the key areas of Bonneville's business, including 1) fulfillment of fish and wildlife responsibilities, 2) status of Treasury repayment, 3) meeting customer load, 4) transmission system performance, 5) system safety, 6) Bonneville conservation resource costs and 7) rate competitiveness. Bonneville is continuing to evaluate and refine its business strategies, objectives and success indicators as a fundamental part of its Competitiveness Project.

OTHER SIGNIFICANT EVENTS

POWER SALES CONTRACTS

Bonneville's customers want more tailored contracts and they want simplicity in both rates and contracts. We are committed to provide this. We are moving away from the complicated "omnibus" power sales contracts of the past.

Negotiations with customers on long-term power sales contracts began in September, with customers and interest groups participating in the discussions. Although tiered rates have temporarily been put on hold, unbundled products are being introduced and customer needs are being addressed in the light of the new business environment. Proposed agreements in principle have been developed for most major issues, and a draft summary of the proposed contract principles and key issues should be ready for comment soon. Bonneville intends to offer new contracts by early fall, to be effective in October 1996. Customers who prefer to continue to purchase power under their existing contracts may do so until those contracts expire in 2001.

1995 RATE CASE

Bonneville is on a course to stabilize its rates through the end of the decade. It is increasingly apparent that customers value stability as well as competitive price. Bonneville will make a major commitment to five-year rate stability at price levels consistent with our preliminary rate proposal. However, due to poor water conditions, added generation expenses and increased salmon recovery costs, we have announced a 5 percent proposed rate increase for 1996-97. This increase is needed to give us a reasonable probability of making our Treasury payment and building financial reserves. Key factors affecting our rates include the protracted drought, increased fish costs, generation debt service and additional generation costs

Bonneville is offering customers what we believe to be an innovative expanded approach in its new rate case. Recognizing that many customers put a premium on price stability, Bonneville is offering customers a choice of a two-year rate schedule or a five-year rate schedule. While prices may be different, both will be competitive with the market. Bonneville has reviewed the proposals competitors have put before customers and is prepared to offer products and services that are not only price competitive, but also more reliable and more stable.

Bonneville is well aware that in the new marketplace, the highest rates do not necessarily generate the most revenue. Now that our customers have alternatives, it is clear that as our prices go up, Bonneville customers have the option to move to other suppliers. It would make little sense to set rates so high that customers are driven away. That would impair our ability to meet our costs, including those related to our fish and wildlife and conservation obligations.

LOOKING TOWARD A HEALTHY FUTURE

Bonneville's response to market pressure will be a critical issue as we move forward. We are not idle--rather we are taking aggressive actions to remain competitive. Of paramount concern will be finding ways to stabilize costs to keep the agency financially viable. To the extent our competitiveness is threatened, we will need to join with others to find innovative ways to achieve this goal.

If the uncertainties Bonneville faces seem large, they are definitely not insurmountable. Bonneville started two years ago to change direction. Today, we are well down the path to meeting the challenges posed by competition.

Thanks to an excellent and dedicated work force, support from the Department of Energy, as well as useful advice from customers and others, Bonneville is moving toward its future aggressively. The Draft Business Plan, corporate reorganization, downsizing, cost cutting, the potential for becoming a government corporation, and program reinvention are all concrete moves to ensure Bonneville remains a viable and valuable contributor to the Pacific Northwest well into the 21st century.

The actions we have taken in the last two years and will complete in 1995 are major steps toward a new Bonneville--one that is leaner, faster, more flexible, and more service oriented--both toward customers and our social obligations.

The facts are that our costs are going down and our work force is being reduced. We are responding quickly to customer needs. We are committed to becoming a cost-conscious, results-oriented and market-driven organization. And, we are committed to effectively meeting our environmental obligations.

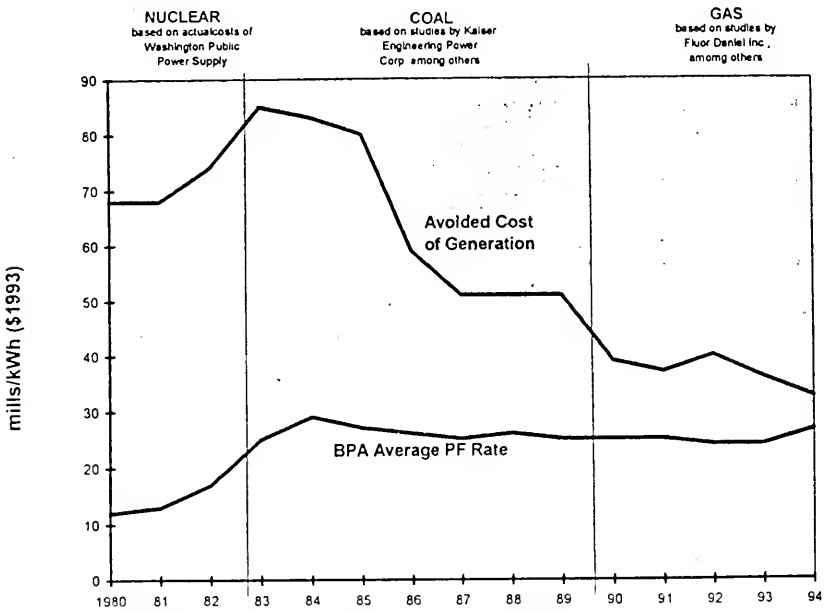
I am confident that the Bonneville that will emerge from our current competitiveness and reinvention activities will be a stronger, healthier agency that will be well positioned to deal with the challenges of the future. I look forward to our continued good relationship with this Subcommittee as we experience this change process together.

In the final analysis, we must do whatever it takes to meet the market, including even more aggressive cost cutting, development of new markets, and securing assistance with costs from the Administration. These are major steps in what will be a long and difficult transition, but steps that we must take to succeed in today's new, intensely competitive utility marketplace.

Thank you for the opportunity to testify today.

ATTACHMENT NO. 1

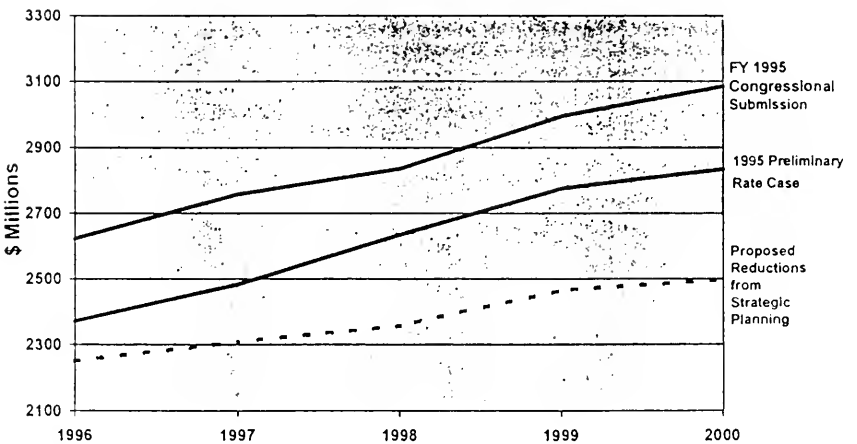
AVOIDED COST OF GENERATION VS. BPA AVERAGE RATE



Major uncertaintities requiring resolution are repayment reform and fish costs

ATTACHMENT NO. 2

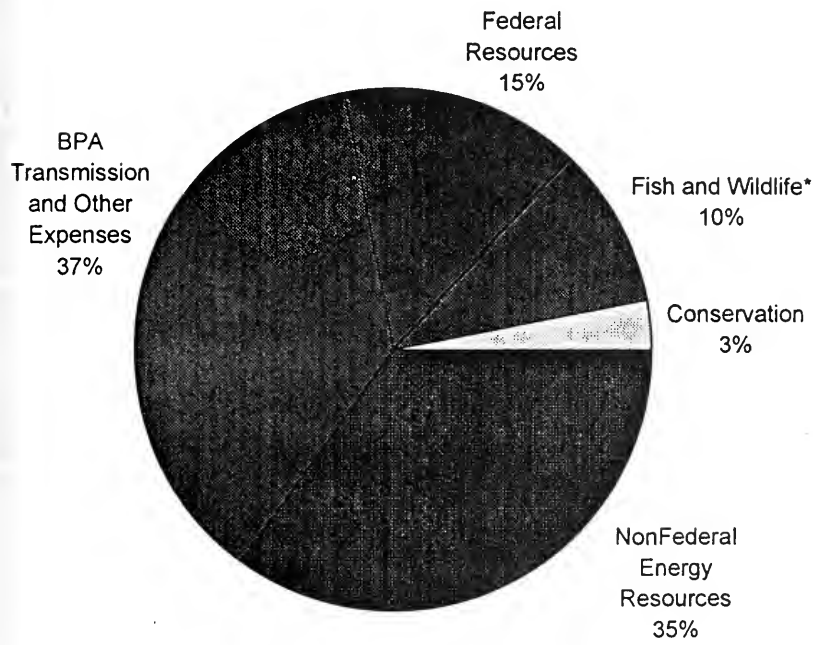
Total Operating Expenses 1/



1/ Total Operating Expenses include BPA O&M, other entities O&M, non-federal debt service, net Residential Exchange, Interest, and Depreciation Does not include projections for 1995 Biological Opinion.

ATTACHMENT NO. 3

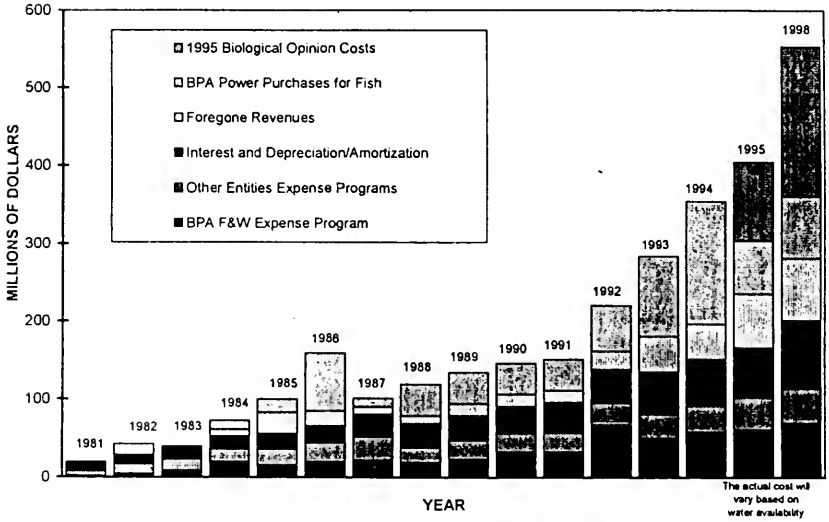
Bonneville Projected Total Operating Expenses - FY 1995



*Does not include projections for 1995 Biological Opinion

ATTACHMENT NO. 4

BPA FISH & WILDLIFE INVESTMENTS



ATTACHMENT NO. 5

1995 BIOLOGICAL OPINION COSTS TO BPA

(INCREMENTAL TO THE 1994-98 BIOLOGICAL OPINION)

REVISED AS OF 2/28/95

Fiscal Year	Draft 1995 Biological Opinion (Millions $)						
	1995	1996	1997	1998		2001 [7] No Drawdown	2001 [8] w/ Drawdown
1. Energy Costs [1]							
a. Expected value energy costs (average over 50 water years) [2]	76	61	60	59		50 [10]	178 [10]
b. Reserve coverage for increase in water risk	0	17	19	20		19	23
c. Contingent spill (not in TOTAL) [3]	NE	NE	NE	NE		NE	NE
d. Contingent draft (not in TOTAL) [3]	8-14	8-14	8-14	8-14		8-14	8-14
e. Max energy cost (not in TOTAL)	114	189	188	187		220	381
2. Capacity Costs							
Operational flexibility at John Day	0	16	16	16		16	16
1% peak efficiency	9	9	9	9		9	9
3. Upper Snake River Water Acquisition [4]	0	0	0	0		16	16
4. Idaho Power Shaping Costs	5	5	5	5		10	10
5. Reimbursable Investment Costs							
a. Planned investment costs [5]	0	0.2	5	12		26	26
b. Contingent investment costs [6]	0	0	12	27		102	267
6. Fish Program Costs [7]	11	32	39	40		39	39
TOTALS: [9]	101	140	185	188		287	584

1/ This table assumes there would be no compensation of Canadian parties by BPA for violation of the Columbia River Treaty. However, BPA costs for replacing up to 20 feet of draft from full from Arrow could be $25 million in a year.

2/ Energy cost estimates assume replacement of hydro system losses with short-term purchases. In the longer run, reliability concerns may cause some of these losses to be replaced by some amount of combustion turbines, increasing the long-term costs of this plan. In addition, these costs represent costs to BPA only; BPA costs are estimated to be 75 percent of total regional costs.

3/ 1995 BO allows for TMT to modify project draft limits and spill levels. Draft and spill beyond the levels described in BO would increase costs, potentially significantly, but cannot be determined precisely in advance. (N.E.=not estimated)

4/ This assumes that release rates are increased from the present 1.5 kcfs limits for snails.

5/ Includes prototype testing of surface bypass, engineering and design for LSN drawdown, JDA to MOP, relocation of BON outfalls, additional fish barges, and other miscellaneous system improvements.

6/ Includes installation of baffled spillways, surface bypass for turbine units, sibling basin modifications at IHR and JDA, and TDA screens.

7/ This is a rough estimate and includes BPA estimates of research, monitoring and evaluation costs for measures in the draft Biological Opinion plus new hatchery, habitat, and harvest measures, as estimated by Northwest Power Planning Council.

8/ This is a rough estimate of the increase that will be necessary in BPA's revenue requirement. However, detailed rates and revenue model analysis has not yet been performed; therefore these numbers are subject to change.

9/ Assumes year-round LSN natural river drawdown and JDA spillway crest drawdown. If LSN drawdown is limited to spillway crest for 4.5 months, energy costs would decrease by approximately $100 million and contingent investment costs would increase by approximately $30 million.

10/ This estimate reflects a $20 million reduction due to less spill resulting from the installation of baffled spillways.

Senator HATFIELD. Senator Gorton.

Senator GORTON. Mr. Hardy, one of the ways in which the BPA and the administration propose to pay for the biological opinion costs is, and I quote, "To reform its financial practices."

What does this mean? Is it likely to entail missing the annual Treasury payment at some time in the future?

Mr. HARDY. Possibly. Reform the financial practices is a generic statement that, in essence, refers to building up our cash reserves more slowly than we otherwise would, which translates into lowering the probability of making our planned Treasury payment.

Typically, we maintain a very high probability, 85 to 95 percent, of making our planned Treasury payment each year. Clearly, that percentage will go down significantly as a result both of the competitive pressures and the cost pressures associated with salmon and other items.

Senator GORTON. I want to compliment you on your management, and your predecessors on their management over the last 10 years or so, where we have met those payment schedules.

Nothing, in my view, or little, in my view, can be more dangerous with respect to acceptance here in the Congress as a whole of BPA and its place in the United States than the thought of beginning to miss those payments again, as has happened in the past.

This particular phrase worries me for exactly that reason. I do not regard it as acceptable that we should put ourselves at risk in the way that missing a payment will put us at risk, and I know you will do everything possible to avoid it, but the reason for this hearing, at least in part, is to try to see to it that you have a greater guarantee of not missing that debt payment than you can possibly have under the present regime.

One of the charts at the back of your testimony here includes a lot of assumptions and estimates. How comfortable are you with the cost to BPA of the biological opinion on your chart?

I know it goes way up. I suppose that is a midline. It could be lower, but it could be considerably higher, is that not the case?

Mr. HARDY. That is true. This cost of the 1995 biological opinion is a midpoint estimate, and probably the most single significant variable, at least in the near term is water conditions. The chart estimates are midpoint, assuming average water years.

If there is a drought year, the costs would be much higher. If we have an excellent water year, the costs would be substantially lower.

Senator GORTON. So far this looks like a good water year, does it not?

Mr. HARDY. The current water year is a little below average, but compared to the last 4 years, it is a very good water year.

Senator GORTON. Mr. Chairman, I have another engagement. I will try to be back.

Senator HATFIELD. Thank you. We hope you can come back.

Senator Murray.

Senator MURRAY. Thank you, Mr. Chairman.

And welcome, Mr. Hardy. You said yesterday that the full application of 4(h)(10)(c), combined with other financial measures, gives Bonneville some breathing room in the short term, is that correct?

Mr. HARDY. That is correct.

Senator MURRAY. I believe you also said that BPA will lose customers regardless of the fish issue, because of current market conditions, is that correct?

Mr. HARDY. In my estimation, yes, that is correct.

Senator MURRAY. So assuming that the cost deal described yesterday, can BPA now implement the biological opinion in 1995 and 1996 without exacerbating competitiveness problems over the next few years?

Mr. HARDY. We can implement the 1995 biological opinion in a way that certainly will allow us not to have to raise rates by the 5 percent that we put in the initial proposal, and hopefully we can lower this rate increase.

In terms of how that affects our overall competitiveness posture, we are significantly better off than if we did not have the assistance. However, any upward price pressure, in the view of a declining market, gives us significant problems.

The 4(h)(10)(c) credit is very helpful in dealing with the next 2 years, and the kind of initial cost increase that comes with paying for the 1995 biological opinion.

An equally pressing problem that we have, in terms of the customer perceptions, and I am assuming you will hear this from your next panel, is long-term price certainty, and lack of predictability.

What will Judge Marsh do? What will happen to market conditions, and a variety of other things? That is what the 5-year rate is designed to address, but ultimately, to sustain this kind of a multiyear rate proposal, we need something beyond what we have now.

Senator MURRAY. But for the next several years that chart that you showed us at the beginning should level off, we should be OK there.

Mr. HARDY. Bonneville's rates will level off. The real question is: Where does the top line on the first chart go? Where is the market going to go? If the market prices level off and do not get any lower, we will probably have a decent chance, but if the market prices continue to go down, regardless of fish costs or not, we will be faced with a significantly greater probability of losing load. I cannot tell you where the market is going to head today, except it has gone down dramatically, even in the last 3 months.

Senator MURRAY. And that is regardless of fish.

Mr. HARDY. Market changes are irrespective of fish, but the fact that Bonneville has another fish cost increment exacerbates that problem. But I should emphasize that first and foremost we have a market problem.

We happen to have a fish problem and a particular fish timing problem but the basic problem here is more the market, more than anything else. We are dealing with other costs, of which fish has received the most attention, but it is also far from being the only cost.

Senator MURRAY. On this chart you said 10 percent goes to fish and part of this goes to WPPSS. Where is WPPSS in this chart?

Mr. HARDY. The non-Federal debt service, the dark blue category on attachment 3, is basically almost all WPPSS debt.

Senator MURRAY. This whole thing is WPPSS debt?

Mr. HARDY. The dark blue part below is mostly WPPSS debt, and the operating costs of WPPSS plant No. 2.

Senator MURRAY. It makes it easy.

Mr. HARDY. Modest other costs are included.

Senator MURRAY. And that goes off in what, 2015?

Mr. HARDY. It expires in steps between 2010 and 2020. By 2015 or 2016, the bulk of it is repaid, and the outstanding debt will be almost down to zero.

Senator MURRAY. In another vein, BPA sells power at 27 mills or 28 mills wholesale. Can you describe for us the items that create the difference between actual costs of running the dam and the price you charge customers?

Mr. HARDY. The actual costs of running a dam, or the basic O&M costs of a dam are less than five or six mills. They are relatively minimal.

The difference is essentially reflected, to a large extent, in this chart, in terms of the difference between the 5- or 6-mill operating costs of the dams, and Bonneville's 27-mill rate.

This difference is essentially due to the debt service on the dams, that is repaying the Federal Government for the appropriations that built the dams and the transmission and other expenses slice on the chart lines in the first place. This difference also includes the operating costs of WPPSS plant No. 2, and the debt service on plant No. 2 and plants 1 and 3, the mothball plants.

Finally, this difference is due to the fish costs, the 10-percent slice from the chart, and conservation, which is the 3-percent slice from the chart. And that essentially makes up all of the other costs that we have that get you from a less than 5 mill or a 6 mill operating cost for the dams, which generate 90 percent of Bonneville's power, up to the 27-mill rate that we have to charge to cover all of our costs.

Senator MURRAY. So can we say that all things being equal, hydropower is still the most cost-effective competitive source of energy in the Pacific Northwest?

Mr. HARDY. In raw power production costs, that is absolutely correct. As you add in fish mitigation cost hydropower, I think, it is quite competitive, but that is the challenge we have right now. What we are competing with is not just low-cost natural gas, and combustion turbines, but low-variable-cost coal resources in other regions of the country, companies that are essentially selling into our market at prices in the midtwenties just to cover their operating costs and the transmission charges. Essentially, their goal is to gain market share.

This has all of a sudden been transformed into an extremely competitive market, and that is what we are seeing.

Senator MURRAY. OK. Thank you, Mr. Chairman.

Senator HATFIELD. Thank you, Senator Murray.

Senator Kempthorne.

Senator KEMPTHORNE. Mr. Chairman, thank you very much.

Mr. Hardy, you said that the Federal credits offered by the administration are a bridge and not a long-term solution. What, in your view, is the long-term solution?

Mr. HARDY. Essentially, I think that is the purpose of the hearing today. There have been a number of solutions and a number

of ideas that have been expressed. I should emphasize the administration has not formulated a view one way or the other.

I think Dr. Rivlin, in her statement, indicated an openness to working with the delegation toward a long-term solution.

There have been a variety of ideas, cost caps. Senator Bacaus has introduced——

Senator KEMPTHORNE. But from your perspective, Mr. Hardy, what is your recommendation of a long-term solution?

Mr. HARDY. My perspective is that you need to have some ability to look at both a way to deal with the lack of certainty involved with the fish costs, and maybe some other mix of alternatives that deal with some of the marketing restrictions that we currently have placed on us. While these restrictions may have been appropriate for a former time, they may not be appropriate now.

Senator KEMPTHORNE. Mr. Hardy, as you know, because we have had conversations in the past, you know that I am a strong advocate for technological innovation to help us with this issue of the salmon recovery, and different private hydropower entities in the Pacific Northwest are engaged in new technology efforts to modify the bypass systems, or the new turbine designs, fish-friendly turbines term that we have heard used.

How can the Federal Government better tap into these efforts to help salmon and avoid the huge costs that are contemplated by some of the recovery proposals?

Mr. HARDY. I think that the Federal Government can be helpful and I appreciate, Senator Kempthorne, your interest in some of those technologies. Bonneville and the National Marine Fisheries Services are actively working with the Corps of Engineers to investigate some of those alternatives.

I would say the most promising ones are baffled spillways and surface collectors. In the midst of almost no agreement on almost anything in the fish area, that is the one technology that seems to have a fairly universal acceptance as offering real potential for getting fish past the dams.

There are two problems: First, is how fast the fish get down the river, but the other is how they get past each of the structures. Baffled spillways and surface collectors appear to offer some real promise.

We are engaged in working with the Corps right now to try to identify a 3- to 4-year prototype testing program for that technology. My assumption is that fish-friendly turbines and other things may help but the surface collector, and baffled spillways technology appear to be the most promising tools that we can see on the immediate horizon to solve the dam bypass problem.

Senator KEMPTHORNE. What efforts are underway toward that end? What sort of funding is available?

Mr. HARDY. The Corps is actively seeking funding to implement a 4-year prototype program, as I understand it, that will test baffled spillways and surface collectors at The Dalles, at lower Granite, and at a number of other dams.

We have this authority, by virtue of the Energy Policy Act of 1992, to directly fund activities that we and the Corps may mutually agree on. We have indicated an openness to direct funds for, at least, some portion of these facilities—for example, pit tag detec-

tors, and other tools—this would essentially cut some lead time off of the normal 1 to 2 years needed to go through the appropriations process. So we have indicated an openness to trying to do that, and the Corps has indicated an openness to looking at their own procurement practices to try to make those more flexible.

I hope that the accomplishment of those things will allow us to get significant facilities in place over the next 3 to 4 years, and by the time we get to fiscal year 1998, or thereabouts, we will know enough about whether a systemwide installation of surface collectors, and baffled spillways makes sense or not.

Senator KEMPTHORNE. All right. Would you tell me whether BPA's fish biologists believe that the latest recommendations from NMFS will benefit salmon, and are they worth the costing imposed on Bonneville and others in the region?

Mr. HARDY. I would say, as has been the case in the past, our biologists have some differences with the NMFS biologists on these issues.

This whole area is fraught with assumptions, and the biggest thing we need, and the role Bonneville is trying to play here, is working with NMFS not to debate the respective judgments in biology, but to collect decent data so we can make data based decisions.

I know Will Stelle, the recently appointed NMFS Director, is committed to that. I am also committed and if we can collect the data, flow survival studies, and other data, my hope is that in 2 or 3 years we can be in a position to make much better judgments on what the cost-benefit tradeoff is, and what will lead us to success in this area. That is the position we are trying to play.

Senator KEMPTHORNE. Do you agree with me, Mr. Hardy that, for example, on the spilling of the water over the dams—from a previous hearing that was held at the Environmental and Public Works Committee, the National Marine Fisheries Service, and the Corps stated that was an experiment.

Do you agree with me that some of these experiments were being done where we are not capturing data that helps us with decisions later?

Mr. HARDY. That may or may not have been the case in the past, but we are absolutely dedicated, for instance, to the spill that is going to occur this year, and in future years, to collect the data, so we can start to make judgments about different levels of nitrogen super-saturation or other issues needed to make more discrete judgments.

I am confident that NMFS is just as dedicated as we are. The Corps is also trying to have a data collection effort that has integrity. As we go through this process, whether it is the amount of spill, the amount of transportation, or the volume of flows, we want to monitor this well enough so that at least in 2 or 3 years we can provide ourselves and you with much more precise answers about what the benefits are.

Senator KEMPTHORNE. Mr. Chairman, I have one more question, but in light of the time, if you would like, I could submit it for the record.

Senator HATFIELD. Whatever you would like to do, Senator.

Senator KEMPTHORNE. This will be brief then. In previous years, Bonneville Power has fulfilled its commitment to repay Idaho Power for water that it has shaped to benefit salmon.

I understand that BPA does not plan to do this for 1995. Is that, in fact, BPA's policy, and is that fair, in light of the assistance BPA will be receiving from the Federal Government?

Mr. HARDY. We are, in fact, looking at reducing or eliminating the shaping costs for Idaho Power that we previously funded.

I am looking at $250 million a year on average worth of budget cuts. I am literally eliminating most of our generation budget and a significant number of transmission projects, and I am reducing 20 percent of our staff. In that context, Senator, yes, I think it is fair.

Senator KEMPTHORNE. Thank you.

Mr. Chairman, thank you very much. I will be leaving temporarily, but I do intend to return.

Senator HATFIELD. You are welcome to come back any time.

Senator KEMPTHORNE. Thank you.

Senator HATFIELD. We will be here, I am sure, no matter how long you are gone.

Mr. Hardy, the biological opinion, what directions do you have for drawdown?

Mr. HARDY. As I understand it, the direction of 1995 biological opinion is, essentially, to look at some advanced planning and design starting in 1996, and to make kind of a go/no-go decision on drawdown in 1999.

So it is not unlike, say, the planning council's program, which had more immediate steps toward drawdown, with an assumption that that was the way to go.

I think the NMFS plan is a bit more cautious, in trying to gather some more data, and test the surface collector technology before making a commitment one way or the other to drawdown. That commitment, with a whole series of phase-in steps, would be—the decision would be scheduled as I understand it, in about 1999.

Senator HATFIELD. Are you in the planning and feasibility phase of a possible drawdown?

Mr. HARDY. That's——

Senator HATFIELD. You have no instructions for any immediate drawdown.

Mr. HARDY. Other than John Day.

Senator HATFIELD. Yes; I am talking about the lower Snake.

Mr. HARDY. The lower Snake project entails looking at some of the core problems that have to be resolved before proceeding with an immediate drawdown.

There are significant issues of passage at the dams. Particularly if there was a spillway crest drawdown. How you would do that, and how you would get the fish past the lower Snake dams would be significant concerns.

I think the judgment that NMFS has made, which we agree with, is to resolve those problems, or at least know how to resolve them, before proceeding with a drawdown strategy that may present more problems than it resolves.

Senator HATFIELD. Would that have an impact on costs?

Mr. HARDY. Absolutely. You will see a column in the fifth chart that was passed out. Post 2000, there are basically two directions you can go. One is without drawdown, where the costs increase from $200 million a year to about $280 million.

I think Senator Craig referenced it. The other option is with drawdown, where the cost increment is a one-half a billion dollars or more——

Senator HATFIELD. Additional.

Mr. HARDY [continuing]. Additional, over the $350 million we are paying now.

Senator HATFIELD. Another one-half billion dollars?

Mr. HARDY. Yes, sir.

Senator HATFIELD. What contract rights do you have now with those various customers as they move out of the Bonneville supply system?

Mr. HARDY. We have in our existing contracts a 7-year notice period before being able to leave the system. That requirement, however, has a number of offramps in it, which makes its use somewhat problematic.

First of all, only our utility customers are included. Our industrial customers can get off the system with 12 months notice. They represent 3,000 megawatts of our 8,500 megawatt load and can leave on a year's notice.

For the remaining 5,000 or 5,500 megawatts represented by public utilities, we have a 7-year notice period. But these customers can get off each year if the system is in deficit. This year we were 200 megawatts in deficit, and Clark and Snohomish County PUD's rapidly filled that void.

As soon as we do the deficit calculation for next year, it is highly likely, given the demands of the 1995 biological opinion that we will have another deficit, and folks will have contract rights on a first-come, first-serve basis, the right to get off Bonneville's system up to the limit of the deficit that we have in that particular year.

Finally, the contract right has a number of other offramps. For example, if the resource to be moved off the system is a cogeneration resource, there is only a 2½ year notice period.

The conclusion I come to is that the 7-year limitation has enough holes in it that our ability to use it to, in essence, hold customers more permanently, is problematic.

Senator HATFIELD. Mr. Hardy, some have argued that you could enforce a contract right on those who leave on the basis of the investments made during their time with Bonneville. I think WPPSS is one. What is your view?

Mr. HARDY. The so-called stranded investment charge presents a number of issues. First off, we need legislation to implement it. If we could negotiate something with a willing customer to charge another five or seven mills, we have the authority to do that, but I think you can assess the likelihood of success of getting to such an agreement.

To impose such a charge on a unilateral basis would require legislation. The difficulty that I see is how would one collect such a charge, or given the authority to impose it, could one collect it?

Clark County PUD is a good example, Senator. Here is a utility that has already taken 200 megawatts off of our system and wants

to take the remaining 200 megawatts of its load off as quickly as it can.

Clark County is going to build a turbine within its own service territory. Clark is interconnected on the eastern side of the county with PacifiCorp.

If we try to levy the stranded investment charge on the transmission system, Clark could be in a position where it could take all of its load through PacifiCorp, and build a resource within its own service territory to take its load to zero.

So Bonneville could not collect such a change on the power side, and could not collect it on the transmission side. I am not sure where it could be collected.

Roughly 50 percent of our preference customers are served not directly by Bonneville, but by transfer agreements through neighboring investor-owned utilities. A whole chunk of our load could easily avoid the so-called wires charge, and that is the most frequently talked about mechanism.

All that being said, if that is the direction the delegation would ultimately want to go, we obviously want to work with you to do whatever is needed. I would say if that were deemed to be the direction such a charge would have to be very broad based, so it could attach to virtually any transaction that Bonneville would do with an entity.

I think you can predict how this would characterize it as a heavy regulatory approach, which would produce a reaction among customers.

If they were not going to act like Clark County before we did that, they certainly would be highly motivated to act like that after we did it.

Senator HATFIELD. I have heard comments made publicly that Bonneville could sell its power anyway. They are not going to sit around and try to find a way to store surplus power. Comment on that, would you?

Mr. HARDY. We can sell our power, but the question is at what price can we sell it?

Senator HATFIELD. What price?

Mr. HARDY. Sell it for, right now.

Senator HATFIELD. What would happen to the 27 mills?

Mr. HARDY. Our estimate is that in the current market we would be, to the extent a customer leaves our system, forfeiting a 27-mill sale for something that is more in the 15- to 20-mill range on the spot power market.

To give you some idea of what the cost hit is with that differential, for every 50 megawatts of power that leaves our system, we would lose $3 million to $5 million.

So, for example, if Clark takes all 400 megawatts of its load off of our system, Bonneville is looking at something that is in the $25 million to $40 million range. We currently have——

Senator HATFIELD. But only on a spot market.

Mr. HARDY. That is right. We currently have requests pending from a total of six customers to offload almost 500 megawatts from our system.

That is a $30 million to $50 million cost hit, if that were allowed to occur, or if that, in fact, does occur over the next year or two.

Senator HATFIELD. In the matter of cutting down on your costs, let me take up WPPSS II. They shut down for 4 days in February. As I understand it, and correct my statistics if they are wrong, that action cost $251 million in operational costs.

You buy power at 3.4 cents per kilowatt hour, and you have a gas market for sale at 2.7 cents per kilowatt hour. Have you thought about terminating WPPSS II?

Mr. HARDY. Yes, we have. Essentially, as part of the cost cuts that we have identified in the generation budget, we have told the supply system, given the figures you just cited, that they need to get their costs, their operating costs of that plant down from their current 34 mill level to 25 mills to 27 mills in the next 2 years. If they cannot do that, then termination becomes——

Senator HATFIELD. So they are on notice.

Mr. HARDY. They are on notice. And I would observe further that we can get more cost savings more quickly by that approach than we can by a termination approach.

Given our Trojan experience with Portland General, it takes you 3 or 4 years before actually starting to realize significant net cost savings, because there are a lot of——

Senator HATFIELD. A time line.

Mr. HARDY [continuing]. Decommissioning and other costs, so my desire, since it is clearly a near-term problem that we have, as well as a long-term one, is to get as much savings as quickly as possible, hence, challenge the supply system to get their costs down to 25 to 27 mills.

I think they can do it. They have already lowered their costs and increased their plant factors significantly in the last 18 months, and we have reason for optimism. But it is a major challenge to them and to us.

Senator HATFIELD. Are you satisfied with the safety record?

Mr. HARDY. I am satisfied with the safety record and I am satisfied with their cost performance and their plant factor improvement over the 18 months, since the new executive director took over.

Senator HATFIELD. And they are still producing waste——

Mr. HARDY. Yes, sir.

Senator HATFIELD [continuing]. Coming back to Senator Johnston's point a while ago.

Mr. HARDY. Like every other nuclear plant in the country.

Senator HATFIELD. Thank you, Mr. Hardy. We appreciate your testimony, and we will be continuing our discussions.

ADDITIONAL COMMITTEE QUESTIONS

We will submit the balance of the questions for response in the record.

[The following questions were not asked at the hearing, but were submitted to the Department for response subsequent to the hearing:]

QUESTIONS SUBMITTED BY SENATOR MARK HATFIELD

Bonneville Power Administration

Question Speculation abounds regarding what effect the Administration's so-called "cost reduction" efforts will have on Bonneville and its customers Most of this speculation revolves around whether or not BPA can survive in a competitive marketplace if the costs of salmon recovery become too large

Could you please describe for the Committee your view of the competitive market place?

Answer Yes I will describe the situation in the marketplace for electric energy in the Pacific Northwest, changes taking place in sales to Bonneville's customers, current market prices, and the marketing activities of independent power producer operating in the region

The marketplace in the Pacific Northwest is extremely competitive The causes for this competitiveness are many, including the steep decline in gas prices over the last couple of years, increases in gas supply, a large surplus of energy on the West Coast, the entrance of marketers, brokers, and independent power producers into the marketplace, and deregulation of the electricity industry Prices both for sales from utility systems and new generation from combustion turbines are quite competitive with current Bonneville rates, and are likely to stay that way

Current projections of the cost of power from new gas-fired generation over around 25 mills per kilowatt-hour at the bus bar Bonneville's current average priority firm rate is 27 1 mills, based on projected fiscal year 1994 and fiscal year 1995 costs, loads, and revenues Bonneville's customers report regular and frequent visits from competitors of all kinds Several independent power producers are actively pursuing projects and customers in the Pacific Northwest As much as an additional 1000 average megawatts of new generation sponsored by independent power producers are in the early stages of development The ability to price its products at market prices will be crucially important to Bonneville's success in this competitive marketplace Therefore, costs of all kinds will need to be controlled and predictable

Overall, nearly 450 average megawatts of Bonneville sales have been lost already In addition, Requests For Proposals in process could lead to an additional decline in sales from Bonneville of up to 1,200 average megawatts Also, two direct-service industrial customers recently gave notice to Bonneville of their decision to take about 250 average megawatts of their business to competitors at very attractive prices

Let me elaborate. Clark Public Utilities, which purchases about 400 average megawatts from Bonneville, concluded a Request For Proposal in the fall of 1994 and is now building a 248-megawatt gas-fired combustion turbine with Cogentrix, a major independent power producer from North Carolina. In addition, Clark has secured purchases from PacifiCorp and Washington Water Power to cover its needs between now and the time the new combustion turbine comes on-line at prices comparable to Bonneville's current priority firm rate. The current load loss estimate to Bonneville for Clark is about 200 average megawatts. Snohomish County Public Utility District has decided to purchase 60 average megawatts from Washington Water Power for at least one year. And, Grays Harbor Public Utility District has decided to retain its 50 megawatts of output from the Centralia coal plant rather than buy power from Bonneville.

To round out the 500 average megawatts of lost or nearly lost sales, customers representing another 175 average megawatts of current sales have requested and received approval to leave Bonneville in the near future. This includes a recent decision by Canby Utility Board to take its business, 13 average megawatts, to Portland General Electric and a recent decision by Eugene Water and Electric Board to take 100 average megawatts off the Bonneville system and buy from four other suppliers.

Future declines and increases in sales are also possible, depending on the prices and products that Bonneville and its competitors offer. For example, two large Requests For Proposals issued on behalf of about 40 Bonneville customers, are currently in process and could lead to a loss in sales of up to 1,200 average megawatts to competitors. The direct-service industrial customers also could take their business to competitors, since they were granted 250 average megawatts in waivers to their current notice provisions as part of the agreement for extension of current rates with a 4 percent surcharge. Northwest Aluminum Company in late April announced that it would purchase 70 megawatts less from Bonneville in favor of a 5-year contract with Washington Water Power at an average rate of 20 mills for the entire contract period.

Market prices for spot and block purchases of power have been under 16 mills since January - indicating the low price of gas as well as the surplus of generating capacity on the West Coast. Utilities with excess generating capacity are able to buy spot gas at very attractive prices and then sell the energy at a slight mark-up, resulting in very low prices. Euro Brokers, Incorporated, a new power broker on the West Coast, recently offered a block of power, on behalf of one of its clients, for all 12 months of 1996 at a price of only 21 mills. Alcoa Aluminum signed a 1-year contract with Enron for 50 megawatts at 19 mills.

Independent power producers are also quite active in the Pacific Northwest and have significant potential to compete successfully with Bonneville. One large facility already has its siting permits and could construct up to 395 megawatts

within the next couple of years and market that power to current Bonneville customers KVA Resources is in the permitting process right now for a site in Creston, Washington, where it hopes to build 800 megawatts of combustion turbine generation Diamond Energy is working with the City of Klamath Falls to build a combustion turbine near the California border at a site very close to existing transmission and an existing gas pipeline Power Resources Managers has about 750 megawatts of new generation on the short-list from its recent Request For Proposal that could be built within the next few years These resources could meet the needs of customers who have already decided to buy power from a competitor, or they could lead to additional declines in sales On the other hand, BPA in late April completed a power sales agreement with West Oregon Electric Co-op from Vernonia, Oregon to retain their eight megawatt load for five more years

To summarize, then, the marketplace for electricity in the Pacific Northwest is quite competitive - and likely to stay that way Considerable excess capacity exists, including additional power from the Inland Southwest, and considerable capacity is in the planning stage Recent efforts to deregulate the electricity industry have allowed new participants into the wholesale market, such as independent power producers, and current low gas prices and increased efficiencies of combustion turbines together have resulted in about a 25 percent drop in the price of generation down to almost 25 mills - to where it is very competitive with Bonneville's rates In addition, 5-year contracts, backed mainly by existing surplus resources on the West Coast, are being offered at prices closer to 20 mills The recent Notice of Proposed Rulemaking by the Federal Energy Regulatory Commission regarding restructuring of the industry and open access for transmission systems will only add to the competitiveness of this market

Could you please describe how Bonneville's customers currently view it as a power supplier?

Answer In 1993, Bonneville conducted a customer satisfaction survey of all of its customers When asked about their overall satisfaction with Bonneville, about 60 percent said they were satisfied, the other 40 percent indicated dissatisfaction with Bonneville Reasons volunteered for being dissatisfied with Bonneville focused primarily on poor customer service and negative comments about Bonneville's cumbersome processes Some customers said that customers' best interests are not considered, that Bonneville is not responsive and not "customer-driven " They commented that Bonneville's processes were too bureaucratic and too process-oriented, and not sufficiently results-oriented In fact, 65 percent of our customers indicated that they were dissatisfied with Bonneville's processes Bonneville's customers also consistently rated their satisfaction with Bonneville far below their idea of an "excellent" power supplier on the attributes of reliability, responsiveness, empathy, and assurance

Since the 1993 survey, Bonneville has undergone dramatic reorganization, largely in response to the results of the customer survey Each customer now has an Account Executive who works closely with the customer to meet their needs Diverse power, transmission and demand-side-management products are being developed that are designed to give customers more choices and more flexibility While many customers are still waiting to see whether Bonneville continues its efforts to be more responsive, recent informal feedback from customers indicates that they see and appreciate Bonneville's efforts to become a better power and transmission supplier

Bonneville has committed itself to measure customer satisfaction quantitatively, through frequent surveys, and to set specific satisfaction targets It will use this information in a strategic manner, to make adjustments to meet our customers' needs Customers will receive the 1995 customer survey on May 1

Question In my review of the materials prepared by Bonneville detailing the incremental costs of the National Marine Fisheries Service Biological Opinion, I noticed that the average yearly costs of the Opinion are about $165.5 million Am I correct that these are incremental costs and should be added to the $300-$350 million already being spent by Bonneville on its fish and wildlife program?

Answer Yes, you are correct that the average yearly costs of the National Marine Fisheries Service Biological Opinion are incremental to Bonneville's existing annual fish and wildlife program costs of between $300 - $350 million

Question What is the total cost of the program with the new costs added in?

Answer The total cost of the Bonneville fish and wildlife program with the new costs added in for fiscal years 1996, 1997, and 1998, are estimated at $477 million, $515 million and $554 million, respectively.

It is also useful to note that Bonneville Endangered Species Act salmon costs are a subset of the total cost of the Bonneville fish and wildlife program Likewise, the Endangered Species Act salmon cost in the Columbia and Snake River Basin represent a subset of the larger cost associated with preserving, protecting, and enhancing salmon in the basin Currently, the Administration estimates for Columbia and Snake River Basin Salmon costs to the Federal Government are $501 million in fiscal year 1995 and $611 million in fiscal year 1996 Current Administration analysis indicates that Bonneville electric rate payers are responsible for $335 million (67%) in fiscal year 1995, including $114 million in foregone revenue, and $434 million (71%), including $131 million in foregone revenues Taxpayers are responsible for about $165 million (33%) in fiscal year 1995 and $177 million (29%) in fiscal year 1996. These Administration estimates include updated revisions for the National Marine Fisheries Biological

opinion for only Bonneville, but don't include updated estimates for other Federal agencies

Question I note that the estimated cost of the Biological Opinion could include an extra $297 million per year by 2001 if draw downs are implemented What is the Opinion's direction relative to drawdown of the lower Snake River projects?

Answer The Biological Opinion's direction regarding drawdown of the lower Snake River projects is to proceed with studies and certain design work that would need to occur if a decision was made in the future to proceed with implementation There is no direction in the Biological Opinion to proceed with drawdown The National Marine Fisheries Service's Biological Opinion neither supports nor rejects drawdown of the lower Snake River projects Recognizing scientific uncertainty, the Opinion emphasizes the need for and importance of research, monitoring, and evaluation leading to a decision point in 1999 regarding whether to implement drawdown or an alternative approach such as transportation and use of surface collectors

Question Many of Bonneville's customers are considering leaving, and some are actually acting to leave, BPA's system What contract rights does Bonneville have to preclude customers from leaving the system?

Answer A customer might leave Bonneville's system by requesting termination of its entire contract, or it may simply provide notice consistent with the terms of the contract to reduce, in whole or in part, the amount of power it purchases from Bonneville for the remainder of the 20 year contract term up to June 30, 2001

Under utility contracts, a utility customer can terminate its Bonneville service by giving 7 years' notice and submitting a Firm Resource Exhibit, stating what non-Federal resources will be dedicated to serve its firm regional load and showing no load on Bonneville Bonneville must then determine whether that "termination will cause no adverse economic impacts on Bonneville's other customers" The contract does not further define "adverse economic impacts," nor does it specify any particular method of how any amount of money would be calculated or how it would be charged

A direct-service industry customer can terminate Bonneville service for any reason, in whole or in part, by merely giving Bonneville 12 months' notice of termination The direct-service industry contract provides that a direct-service industry terminating service must reimburse Bonneville for unrecoverable costs incurred by Bonneville through the term of the contract by reason of the termination These costs include the unamortized investment, if any, in Bonneville substation or transmission facilities whose primary purpose is to serve the direct-

service industry's load, including amounts paid to a third party for transfer service to that load. Bonneville is required by the contract to try to mitigate these costs.

Instead of triggering this termination provision, a utility customer could request an incremental reduction of load on Bonneville by use of the many contractual provisions available to it to submit changes in their Firm Resource Exhibits. Depending on whether Bonneville is surplus or deficit, some contractual provisions enable the customer to reduce load on Bonneville in 7 years or 6 months, respectively. Other provisions are triggered regardless of Bonneville's supply situation. For example, the contract enables a customer to take load off with only 30 months' notice if it intends to serve regional load with a renewable or co-generation resource.

Question. How enforceable are those rights?

Answer. Bonneville's power sales contracts were basically not designed to prevent its customers from reducing or eliminating the amount of power which they take from Bonneville. Were Bonneville to impose monetary consequences upon a customer seeking to terminate its contract, the customer may choose instead to reduce its load in steps under the contract to mitigate or avoid termination consequences to the extent it has a contract right to do so.

Question. Is Bonneville addressing these issues in its new power sales contracts?

Answer. In the recently completed first phase of power sale contract negotiations, Bonneville and the customers reached a tentative agreement that matched Bonneville's need for load certainty with the customers' need for rate certainty. Bonneville is developing 2 and 5-year requirements products which would carry 2 and 5-year rate certainty, respectively. In some cases, the load commitment period becomes a take-or-pay obligation of the customer. For those customers reducing their requirements purchases from Bonneville, we have reached tentative agreement requiring 7 years' notice to return to requirements service. This provision enables Bonneville to remarket any unpurchased requirements power into higher-margin long-term markets, although Bonneville's ability to market such power outside the Northwest is still significantly constrained by the Regional Preference Act of 1964.

Question. If BPA's customers do leave the system, what are the agency's alternatives for selling the surplus power?

Answer. As I indicated earlier, market prices for spot and block purchases of power by Bonneville have been under 16 mills since January. The loss of a 27-mill preference-firm sale, then by creating surplus power, and resort to the 15- to 20-mill spot market to sell that surplus does create a revenue loss. Given current

spot market prices and given the estimated 500 megawatts of load that we expect to leave Bonneville's system, we are looking at a possible $30 million to $50 million revenue reduction in the next year or two, or longer, depending on the duration of current market conditions.

Question Some have argued Bonneville should consider charging customers who leave the system for the costs of the investments which are left behind Is Bonneville considering such charges?

Answer Bonneville is considering such charges

Bonneville has established an ad hoc interdisciplinary team to examine the issue of stranded investment Part of the impetus of this study is the Federal Energy Regulatory Commission's recent Notice Of Proposed Rulemaking on open access to electric power transmission

Question In particular, can Bonneville charge exiting customers, who had signed up for WOOPS, for their share of the remaining WOOPS debt costs?

Answer With Bonneville's strategic business objectives providing overall guidance, an ad hoc interdisciplinary Bonneville team on stranded investment will identify Bonneville's strategy on how to handle the stranded investment issue, including the Washington Public Power Supply System debt costs During the recent power sales contract negotiations, Bonneville made a commitment to look at the issue of stranded investment and return to the customers with our thoughts Bonneville will be meeting with the customers in the near future to discuss the agency's objectives regarding stranded investment and seek customers input As stated earlier, Bonneville's statutory obligations to recover total system costs certainty included the requirement to recover supply system costs

Question Speaking of WOOPS, in light of 1)reliability problems at the WNP-2 plant (it just had a 4-day shutdown on Feb 19), 2)the $251 million in operating expenses for the WNP-2 plant, and 3) the high costs of purchasing power from that facility)3 4 cents per kilowatt hour compared with 2 7 cents for gas), have you looked at the possibility of terminating WNP-2 as part of your costs cutting efforts?

Answer Yes We have Essentially, as part of the cost cuts that we have identified in the generation budget, we have told the Supply System, given the figures to just cited that they need to get their costs, their operating cost of that plant dowr from their current 34 mill level to 25 mills to 27 mills in the next two years I would observe further that we can get more cost savings by that approach then we can by a termination approach

Question It is my understanding that most of the costs imposed by the NMFS Biological Opinion for the FY 1995 river operating season are actually borne by BPA during FY 1996 Is this true?

Answer Yes, some of the costs will occur in fiscal year 1996 as energy is purchased to return water used for fish flow augmentation to the reservoirs Using hydro regulation models that relied on many possible water year conditions that could occur for 1995, Bonneville estimated that on average, 40 percent of the costs could occur in fiscal year 1996

Question Is any money included in the Administration's budget request for fiscal year 1996 to offset Bonneville's fish and wildlife costs?

Answer The Administration's fiscal year 1996 budget request does not include an offset to Bonneville's fish and wildlife costs However, last month, the Administration agreed to provide some relief to Bonneville's increasing fish and wildlife investments through implementation of authorities granted under section 4(h)(10)(C) of the Pacific Northwest Electric Power Planning and Conservation Act

Implementation of the Act's authorities will allow Bonneville to recoup about $30 million per year of its direct fish expenses that are allocated to non-power purposes, and an additional estimated $30 million each year in fiscal years 1995 and 1996 to offset purchased power costs related to fish.

Question Last July Congressman George Miller, former Chairman of the House Natural Resources Committee, sent a letter to Secretary O'Leary concerning BPA's efforts to receive some financial relief under section 4(h)(10)(C) of the Northwest Power Act To ensure the official record for the hearing is complete, please provide the Subcommittee with a copy of Congressman Miller's letter, and the Administration's response to it

Answer I will provide the material for the record

LETTER FROM HAZEL R. O'LEARY

The Secretary of Energy
Washington, DC 20585

December 5, 1994

The Honorable George Miller
Chairman
Committee on Natural Resources
U.S. House of Representatives
Washington, D.C. 20515

Dear Chairman Miller.

Thank you for your letter of July 11, 1994, questioning the Bonneville Power Administration's interpretation of authorities under section 4(h)(10)(C) of the Pacific Northwest Electric Power Planning and Conservation Act (Act), 16 U S C § 839b(h)(10)(C)

Bonneville Administrator Randall W Hardy has provided the Department with a memorandum that sets forth a detailed legal analysis in support of Bonneville's interpretation of section 4(h)(10)(C) The Department's Office of General Counsel has conducted a careful examination of the legal analysis contained in the Administrator's memorandum and agrees with Bonneville's interpretation of section 4(h)(10)(C) and that the Administrator has statutory authority to allocate to non-power project purposes a share of the replacement power costs Bonneville incurs through implementation of flow and spill mitigation measures However, the Office of General Counsel also agrees with the enclosed views of the Office of the Solicitor, Department of the Interior, that the Northwest Power Act is a unique statute applying only to Bonneville and that Bonneville's interpretation of 4(h)(10)(C) " . should not, and will not, serve as a precedent on how power purchase costs generally are allocated at federal water resource facilities that are governed by different laws " Enclosed is the memorandum from the Bonneville Administrator and answers to the specific questions posed at the end of your letter

The legal analysis conducted by Bonneville as expressed in the Administrator's memorandum, as well as Bonneville's June 6, 1994, legal opinion, have also been examined in the Office of the Solicitor of the Interior, the Army General Counsel, and the Army Corps of Engineers' Office of Chief Counsel They defer to Bonneville's interpretation of section 4(h)(10)(C) Enclosed are copies of the advice received from these other agencies

Thank you again for this opportunity to respond to your concerns

Sincerely,

Hazel R O'Leary

BACKGROUND PAPER

Chairman Miller agrees that the cost of certain Bonneville Power Administration (BPA) fish mitigation measures are allocable on a non-reimbursable basis to all project purposes. Nonetheless, he questions whether the same rationale should apply to replacement power costs BPA incurs when fish flow measures are implemented.

Changes in dam operations for authorized project purposes, such as navigation, flood control, and irrigation, can and do change the amount of power which can be generated. They can force BPA to purchase power to meet its load. Those purchase power costs are entirely borne by ratepayers. There is no allocation of those purchase power costs to other project purposes. However, the Northwest Power Act (Act) changed how the Federal Columbia River Power System (FCRPS) is operated and how the cost of fish flow measures are allocated.

The Act required the Pacific Northwest Electric Power and Conservation Planning Council (Council) to create a Fish and Wildlife Program (Program), and to include fish flow measures in the Program. 16 U.S.C. § 839b(h)(6)(E)(ii). Fish flow measures include spill to move outmigrating salmonid smolts past dam structures and turbines, as well as flow augmentation to move smolts downstream between dams more quickly. See, e.g., Volume II of the Council's, 1992 Columbia River Basin Fish and Wildlife Program--Strategy for Salmon 23-30.

In operating and managing the FCRPS, the Corps of Engineers (Corps), the Bureau of Reclamation (BOR), and BPA must exercise their responsibilities by "taking into account at each relevant stage of decisionmaking processes to the fullest extent practicable, the program adopted by the Council." 16 U.S.C. § 839b(h)(11)(A)(ii). In compliance with the Act, these Federal agencies have implemented the Program's fish flow measures, as well as additional fish flow measures recommended by the National Marine Fisheries Service.

Congress saw that implementation of fish flow measures would reduce the amount of hydroelectric power generated by the FCRPS, and that such reductions would compel BPA to purchase replacement power to serve its load. Consequently, Congress authorized BPA to purchase replacement power to ensure implementation of fish flow measures. 16 U.S.C. §§ 838i(b)(6)(iv), (b)(12); see H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. II, at 54 (1980).

Congress realized further that BPA's purchase of replacement power necessitated by implementation of the Program's fish flow measures would be expensive, so it required the Council to consider the burden of those measures on the ratepayers by taking into account certain principles regarding the financial impact and the source of funding for those measures. One principle is that "[c]onsumers of electric

power shall bear the cost of measures designed to deal with adverse impacts caused by the development and operation of electric power facilities and programs only." 16 U.S.C. § 839b(h)(8)(B) (emphasis added).

Another principle is that "[m]onetary costs and electric power losses resulting from the implementation of the Program shall be allocated by the Administrator consistent with individual project impacts and system-wide objectives of this subsection." 16 U.S.C. § 839b(h)(8)(D) (emphasis added); see also H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. II, at 45 (1980). While these principles are directed to the Council, they are fully consistent with and support BPA's interpretation of its obligation under section 4(h)(10)(C) that it must allocate its replacement power costs for fish flow measures among all project purposes.

The monetary costs incurred in implementing flow and spill measures are BPA's replacement power costs. These are fish mitigation costs which meet the same factual and legal tests as BPA's expenditures for hatcheries, habitat restoration, fisheries research, and other Program measures. Therefore, section 4(h)(10)(C) of the Act requires BPA to allocate replacement power costs for fish flow measures among all project purposes to the same extent it allocates its other expenditures for the protection, mitigation, and enhancement of fish affected by development and operation of the FCRPS.

The floor debate statements of Representative Lujan do not alter BPA's statutory duties under section 4(h)(10)(C). Representative Lujan's statements were broad descriptions of the overall effects of the Act. To take his statements as absolutist and technically precise would be at odds with some of the major purposes of the Act. It would also conflict with numerous specific, unambiguous provisions of the Act, all of which ensure that ratepayers shall have a reliable economic power supply and bear the costs only of mitigation of the Federal hydroelectric impacts on fish and wildlife. See, e.g., 16 U.S.C. §§ 839(2), b(h)(5) and b(h)(8)(B). The House Interior Committee report specifically states that section 4(h) will provide a system for ensuring "fish and wildlife obligations are fulfilled while simultaneously assuring the region an economical and reliable power supply." H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. II, at 37 (1980).

BPA's interpretation of section 4(h)(10)(C) is consistent with past interpretations of cost allocation law. The Corps' Digest of Water Resources Policies and Authorities, EP 1165-2-1 (Feb. 15, 1989), and the Interagency Agreement on Cost Allocation (March 12, 1954) between the Department of the Interior, the Department of the Army, and the Federal Power Commission, state that joint project costs shall be allocated among all project purposes, and separable project costs shall be allocated to the purposes they serve. The agreements do not state or imply that the cost of a flow measure benefiting fish to the detriment of power cannot be shared jointly. To the contrary, the Corps decided that until benefits gained and benefits foregone could be determined from experience, it would

allocate the costs of a flow enhancement experiment jointly, to all project purposes, because the flow was deemed necessary as a result of the existence of the Federal dams generally, not any particular project purpose or specific project feature. Corps, Report on Methodology and Recommendations For Allocating Costs Associated With Drawdown of John Day And Lower Granite Reservoirs (February 5, 1994).

In summary, my review of the pertinent sections of the Act, especially section 4(h)(10)(C), 16 U.S.C. 839b(h)(10)(C), and the accompanying report of the House Interior Committee, H.R. Rep. No. 976, 96th Cong., 2d Sess. pt. II, at 45 (1980), leads me to conclude that Congress directed the BPA Administrator to allocate between BPA ratepayers and the taxpayers all fish mitigation expenses incurred by the Administrator in the exercise of his responsibilities under section 4(h) of the Act. These expenditures include replacement power costs related to spill and flow measures for the purpose of fish mitigation, to the extent that such expenditures exceed the hydro power share of the Federal Columbia River projects.

Relying on the existing accounting procedures for the FCRPS, I have determined that the BPA ratepayer share of such costs is approximately 73 percent of all system-wide fish mitigation measures, including replacement power purchases. The remaining 27 percent of these costs are for non-power purposes and are non-reimbursable. Section 4(h)(10)(C) requires me to allocate those mitigation costs and credit BPA's Treasury debt in an amount equal to the non-power share of those costs. 16 U.S.C. § 839b(h)(10)(C); see H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. II, at 45 (1980).

Accordingly, I conclude that BPA's allocation of the replacement power costs related to fish flow measures is in accordance with the authorities granted under the provisions of the Act.

I have shared the analysis contained in this memorandum with the Department of the Interior's Solicitor, the Department of the Army's General Counsel, and the Army Corps of Engineers' Office of Chief Counsel. They defer to BPA's interpretation of section 4(h)(10)(C). Copies of the advice received from these agencies are enclosed.

The specific questions Chairman Miller posed at the end of his letter are addressed in Enclosure A.

Enclosures

Enclosure A

1. **Have any of the PMAs, without express direction from Congress, ever allocated any purchase power costs to a project purpose other than power? If so, please describe each instance, the amount of purchase power costs allocated to non-power purposes, and the legal basis for such an allocation.**

None of the PMAs has allocated purchase power costs to a non-power project purpose absent explicit statutory direction. Besides section 4(h)(10)(C) of the Northwest Power Act, there are only two instances where Congress has allowed a PMA to allocate purchase power costs to non-power purposes. First, as mentioned in your letter, the Western Area Power Administration is required to treat as non-reimbursable the costs of releases from Shasta Dam to reduce water temperatures downstream to preserve anadromous fisheries. See Energy and Water Development Appropriations Act, Pub. L. No. 101-514, 104 Stat. 2074, 2092 (1991). Second, experimental flows have been and will be required to test the environmental impacts of different flow regimes in the Grand Canyon below Glen Canyon dam. The experimental flows have been required for the supporting studies of the Glen Canyon EIS. They will be also required as part of long-term monitoring once the EIS is completed. Under sections 1805 and 1807 of the Grand Canyon Protection Act, Pub. L. No. 102-575, 106 Stat. 4600, 4672, all costs of the EIS, long-term monitoring, and the supporting studies of both are non-reimbursable. The costs of the purchased power bought only because of the experimental flows, is therefore, also a cost of the supporting studies and is also non-reimbursable. This is confirmed in the legislative history which states that "the Secretary shall consider", to be "nonreimbursable", the "costs of the Glen Canyon EIS, including the purchase of replacement energy necessitated by research flows, and the costs of the long-term monitoring program . . .". S. Rep. No. 267, 102d Cong., 2d Sess. 139 (1992). The said Senate report also recognizes these costs "may be substantial and the benefits therefrom shared by the general public".

2. **What is the cost to taxpayers of Western's purchase power costs incurred due to lost generation caused by the spill of water to protect salmon below Shasta Dam? What has been the total cost of this provision to the taxpayers since it was enacted? Provide an estimate of the cost that will be incurred by the taxpayers due to the provision for FY 1995 to FY 1999.**

The total cost of purchase power incurred due to Shasta bypass operations is $31.3 million through the end of FY 1993. The estimated cost for FY 1994 is $10.5 million. The FY 1994 figure is based on the July Bureau of Reclamation forecast for Central Valley Project power plant operations. The cost of Shasta bypass operations including actual costs from FY 1987 through FY 1993 and estimated costs from FY 1994 through FY 1999 are shown in the following table.

SHASTA DAM PURCHASE POWER DUE TO WATER RELEASES ($ in Millions)	
Fiscal Year	Purchase Power Cost*
1987	$ 0.9
1988	$ 4.3
1989	$ 1.8
1990	$ 1.8
1991	$ 2.9
1992	$ 12.6
1993	$ 7.0
1994	$ 10.5
1995	$ 9.6
1996	$ 9.1
1997	$ 9.7
1998	$ 10.4
1999	$ 11.0

*These Purchase Power Costs will not be incurred after 1997 if the Temperature Control Device is completed as scheduled.

3. **What is the proposed FY 1995 purchase power budget for each of the PMAs? Provide an estimate of the purchase power costs incurred annually by each PMA since FY 1984 due to water flow regimes instituted to further non-power purposes. Please break down the purchase power costs incurred by each PMA due to the requirements of each non-power project purpose.**

BONNEVILLE POWER ADMINISTRATION

BPA's proposed FY 1995 purchase power budget is $107.6 million. BPA has generally not identified the various purchase power costs attributable to system operations for non-power purposes. Because past power purchases have not been accounted for in a way that permits identification of the need for the purchase, the information requested would be extremely difficult and time consuming to compile. BPA absorbs purchase power costs for power shortfalls incurred as a result of project operations benefiting other authorized project purposes, so BPA has never before needed to track the cause of those costs.

Consequently, a further breakdown of the power purchase costs attributable to each non-power project purpose would be virtually impossible to compile with any accuracy.

However, there is an exception in that BPA has generally documented its replacement power purchases necessitated by implementation of flow measures for fish. BPA has done so in an attempt to ensure its efforts to protect, mitigate, and enhance fish and wildlife were consistent with the Council's Fish and Wildlife Program, and to enable BPA to fulfill its section 4(h)(10)(C) allocation duties.

Shown below is a table of purchase power costs from FY 1984-1994. The total purchase power costs are displayed in the first column. Total costs for replacement power purchased for fish operations are displayed in the second column. The non-power share of the costs of replacement power purchased for fish operations is displayed in the third column. This represents the non-reimbursable replacement power costs for BPA that were calculated according to section 4(h)(10)(C) criteria. The non-reimbursable costs are comprised of 27% of the replacement power purchased for fish mitigation costs net of the revenues. The establishment of a 27% system-wide allocation is based on a weighted distribution of each hydro project's non-reimbursable allocations.

BPA Purchase Power and Replacement Power Costs
($ in Millions)

FISCAL YEAR	TOTAL PURCHASE POWER	TOTAL REPLACEMENT POWER PURCHASED FOR FISH OPERATIONS
1984	$2.3	$0.0
1985	$10.1	$0.0
1986	$0.9	$2.0
1987	$2.7	$0.0
1988	$19.5	$0.0
1989	$93.0	$39.0
1990	$10.5	$24.0
1991	$21.1	$13.0
1992	$136.6	$97.0
1993	$211.6	$110.0
1994	$186.1	$144.0
Total	$694.4	$429.0

1/ Purchases are reduced by the amount of revenue received.

"Based on a not very rigorous analysis BPA has estimated the cost to power of irrigation diversions is in the range of $150 to $300 million annually. BPA would expect that there are costs associated recreation, navigation and flood control but no analysis has been conducted. It should be noted that BPA is not proposing to offset the costs of these project purposed because we are unaware of any applicable statutory authority similar to Section 4(h)(10)(C)."

WESTERN AREA POWER ADMINISTRATION

Western's proposed FY 1995 purchase power and wheeling budget is $267 million, including use of annual appropriations and alternative financing. Western has experienced some situations where purchase power costs were incurred due to flood

conditions and fish and wildlife protection. Each occurrence is described below, followed by a table summarizing the annual purchase power costs necessitated by non-power project operations.

Last winter, Western's Phoenix Area Office experienced restricted generation releases due to flooding in the lower Colorado River where compensating generation was facilitated by interproject transfers. These interproject transfer costs were allocated strictly to power.

Western's Pick-Sloan Missouri Basin Program has made purchases of energy in the past due to flow regimes instituted to benefit other project functions. The only actions documented were the purchases of energy made in FY 1993 for flood control, costing power customers approximately $10 million.

The Corps of Engineers has also instituted a flow regime on the Missouri River to improve the nesting survival rate for the Least Tern and Piping Plover, birds protected under the Endangered Species Act. This has affected flows in the spring and summer seasons, but to date Western has mitigated these impacts operationally. Because the Missouri River Basin has had an extended drought, it is difficult to attribute the cause of the shortfalls for which Western purchased power.

As mentioned previously, the purchase power requirement of the Colorado River Storage Project has increased due to special releases and test flows necessary for the Glen Canyon Dam EIS and its supporting studies. These costs are considered non-reimbursable and have totaled $10.4 million over FY 1984-94. In addition, $5.2 million of reimbursable purchase power expenses have been incurred over this period for environmental purposes.

The increased purchase power costs incurred at the Shasta Dam due to bypasses necessary for temperature control in the Sacramento River in order to enhance the endangered salmon runs are also non-reimbursable.

Bypasses for temperature control of the Trinity River have increased the purchase power costs associated with the Trinity River Division. Unlike the releases at Shasta, these costs are considered reimbursable. Increasing flows and other administrative actions required by the Trinity River Basin Fish and Wildlife Restoration Act of 1984 also compel Western to purchase power. Increased flows reduce power generation at the Spring Creek, Carr, and Keswick power plants.

Western Purchase Power Costs Due to Non-Power Water Flow Regimes (dollars in millions)						
	Non-Reimbursable		Reimbursable			
FY	Colorado River Storage Project	Central Valley Project's Shasta Dam	Central Valley Project's Trinity River Division	Pick-Sloan Missouri River Basin Program	Phoenix Area Office (Inter-project transfers)	Colorado River Storage Project
1984	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 0.0
1985	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 0.0	$ 0.0
1986	$ 0.4	$ 0.0	$ 6.6	$ 0.0	$ 0.0	$ 0.0
1987	$ 0.0	$ 0.9	$ 3.5	$ 0.0	$ 0.0	$ 0.0
1988	$ 0.0	$ 4.3	$ 4.9	$ 0.0	$ 0.0	$ 0.0
1989	$ 0.0	$ 1.8	$ 6.3	$ 0.0	$ 0.0	$ 0.0
1990	$ 1.9	$ 1.8	$ 2.8	$ 0.0	$ 0.0	$ 0.0
1991	$ 3.9	$ 2.9	$ 3.6	$ 0.0	$ 0.0	$ 0.0
1992	$ 4.2	$ 12.6	$ 7.0	$ 0.0	$ 0.0	$ 0.0
1993	$ 0.0	$ 7.0	$ 8.3	$ 10.0	$ 3.9	$ 5.2
1994	$ 0.0	$ 10.5	$ 0.0	$ 0.0	$ 0.0	$ 0.0
Total	$ 10.4	$ 41.8	$ 43.0	$ 10.0	$ 3.9	$ 5.2

SOUTHEASTERN POWER ADMINISTRATION

The proposed purchase power budget for FY 1995 is $9.6 million. This does not include $3 million in carry-forward funds requested for environmental testing of the pump units at the Richard B. Russell project. The following table shows purchase power costs in millions from FY 1984-1995
broken out by power and non-power project purpose.

Southeastern Power Purchases ($ in Millions)		
FISCAL YEAR	POWER	NON-POWER
1984	.8	--
1985	.2	--
1986	8.0	--
1987	4.0	--
1988	14.0	--
1989	4.2	--
1990	.7	--
1991	.9	--
1992	2.8	--
1993	4.1	--
1994	6.4 Est.	--
1995	9.6 Est.	--

SOUTHWESTERN POWER ADMINISTRATION

The proposed FY 1995 purchase power budget request for Southwestern is $503,000. However, Southwestern will meet all of its direct purchase power needs for FY 1995 through a combination of banked energy arrangements and its continuing fund authority. The FY 1995 request of $503,000 will be supplemented by the use of deferred funds from previous years and reimbursable authority to meet contract commitments for transmission of Federal power to preference customers.

In 1988 Southwestern purchased $359,298 worth of energy to support the capacity of Southwestern's Federal Power System. The purchased energy, ultimately paid for by Southwestern's ratepayers, was necessary to replace hydropower resources depleted at the direction of the Corps of Engineers to sustain barge traffic on the McClellan-Kerr Navigation System during a declared navigation emergency.

Water diversions for fisheries have caused the loss of about 180,153,000 kilowatt-hours of energy during the period, October 1990 through 1993. That loss of energy represents about $904,000 of revenue that would have been used to repay Southwestern's hydropower investment. In addition, it represents a loss of about $3,770,000 of benefits to Southwestern's ratepayers because of replacement energy which they purchased. The loss of hydropower energy also reflects an increase in fossil fuel emission from the additional generation.

LETTER FROM GEORGE MILLER

July 11, 1994

The Honorable Hazel R. O'Leary
Secretary
Department of Energy
Washington, D.C. 20585

The Honorable Bruce Babbitt
Secretary
Department of the Interior
Washington, D.C. 20240

Dear Secretary O'Leary and Secretary Babbitt:

I have been following with great interest the Administration's efforts to protect endangered salmon in the Columbia River Basin. While I have no objection whatsoever to the recent decision to provide short-term financial assistance to the Bonneville Power Administration for expenses related to fish mitigation, I am troubled by the June 6, 1994, legal opinion prepared by Bonneville's General Counsel in support of this action. I do agree that legal authority may exist for Bonneville to shift certain fish mitigation costs from Bonneville ratepayers to the taxpayer; however, I question Bonneville's construction of its authority on this matter.

The legal opinion states that Section 4(h)(10)(c) (16 U.S.C. § 839b(h)(10)(C)) of the Pacific Northwest Electric Power Planning and Conservation Act (hereinafter cited as "the Act") gives the Administrator of Bonneville the authority to allocate costs incurred by the agency, including fish and wildlife expenditures, in accordance with project purposes. Put simply, if Bonneville, i.e. power, is paying for a disproportionate share of fish mitigation expenditures that benefit all project purposes these expenditures may be allocated to other project purposes that are "non-reimbursable" and the responsibility of the taxpayer rather than Bonneville ratepayers. This is a reasonable construction of Section 4(h)(10)(c) and is simply a restatement of the well settled principle of law that the costs of multipurpose water projects shall be allocated in accordance with project purposes. See e.g., Sec. 9(c) Reclamation Project Act of 1939, 43 U.S.C. § 485h(b); Sec. 7 Bonneville Project Act, 16 U.S.C. § 832f; Sec. 5 Flood Control Act of 1944, 16 U.S.C. §825s.

However, I question the next phase of Bonneville's legal analysis which states that a portion of purchase power costs that Bonneville incurs due to changes in water flows related to fish mitigation can be allocated to project purposes other than power. This interpretation is counter to past interpretation of cost allocation law by both the Bureau and the Corps. See e.g., Army Corps Policy on Cost Allocation, EP 1165-2-1, Feb. 15, 1989; Interagency Agreement on Cost Allocation, Departments of the Interior and Army and Federal Power Commission, March 12, 1954.

I am unaware of any instance in the history of all the Power Marketing Administrations (PMAs) where, absent an explicit directive from Congress, a PMA has allocated purchase power costs to non-power purposes. Power is not purchased to benefit non-power project purposes such as irrigation, flood control or navigation. It is purchased entirely for the benefit and use of Bonneville's power customers. Therefore, under the Flood Control Act and Reclamation law these purchase power costs have been allocated to power.

Although Bonneville has extensive fish and wildlife responsibilities under the Act it has no legal authority to control river flows and consequently has no legal right to a specific amount of electricity from the federal Columbia River Power System (FCRPS). River flows are controlled by the project operating agencies, the Bureau of Reclamation and the Corps of Engineers, in accordance with project purposes, state water law and other federal law. The hydroelectricity is generated by the

operating agencies, not Bonneville. Power output from the FCRPS is affected by many different requirements that the operating agencies must meet, including the need to satisfy water rights claims under State law, flood control, navigation, and, of course, endangered species protection. Bonneville's legal responsibility is to market the hydroelectricity not consumed by the projects themselves. 16 U.S.C. § 825s. To the extent Bonneville has signed contracts to provide electricity in excess of that generated by the Bureau and the Corps, the cost of meeting these contractual obligations is Bonneville's.

The longstanding policy of assigning purchase power costs to power is dismissed in the opinion which states, "That the purchase of replacement power furthers the power purpose of the project is of no consequence."(p.11) No statute, regulation, case law or administrative ruling is cited in support of this assertion. Instead, the opinion cites a December 1993 draft report by the Corps of Engineers regarding the allocation of construction and operation and maintenance costs (O&M) for proposed dam modifications that would benefit all project purposes.(p. 11, note 9). The allocation of construction and O&M costs by the Corps for a measure that benefits all project purposes is irrelevant to the issue of purchase power.

The opinion posits that Sec. 4(h)(10)(c) read in combination with Section 8(a) of the Act, which gives Bonneville the authority to make short-term power purchases due to changes in flows, supports allocating certain power purchase costs to non-power purposes. I am unaware of any language in the statute or legislative history of the Act that support this interpretation. In fact, the plain language and legislative history of the Act are to the contrary. Section 2 of the Act, states that a purpose of the Act is to "provide that the customers of the Bonneville Power Administration and their consumers continue to pay all costs necessary to produce, transmit and conserve resources to meet the region's electric power requirements...." 16 U.S.C. §839(4) (emphasis added). Section 7(a)(1) of the Act directs Bonneville to recover in its rates, "..... the costs associated with the acquisition, conservation and transmission of electric power..." 16 U.S.C. 839e(a)(1) (emphasis added). The plain language of other statutes that preceded the Act and continue to apply to Bonneville is also counter to the conclusion that purchase power costs can be allocated to non-power purposes. For example, The Flood Control Act of 1944 requires that Bonneville recover the "cost of producing such electric energy" marketed by the agency. 16 U.S.C. §825s.

The opinion's conclusion that Section 4 of the Act can be construed to make certain purchase power costs the responsibility of the taxpayer is also inconsistent with the statements of Representative Lujan, a Member of the Interior Committee, who, according to the legal opinion, worked with the Ad Hoc Pacific Northwest Power-Fisheries Committee to draft Section 4. (p.9) As part of his discussion of the Act, including Section 4, Representative Lujan said:

> It provides for the rebuilding of the salmon and steelhead runs that have been damaged by hydro development on the Columbia River, with the cost to be paid by the ratepayers in the Northwest, not the U.S. taxpayers.
>
> Every single thing that Bonneville is authorized to do in the act must be paid for by the power consumers of the Northwest, and by nobody else. 126 Cong. Rec. 9845 (Sept. 29, 1980).

Representative Lujan's statements are consistent with the plain language of the Act and statements made by Representative Swift, who played a major role in the drafting of the Act, and Representative Symms, a member of the Interior Committee, that all costs associated with the Act would be borne by BPA ratepayers. 126 Cong. Rec. 9851 (Sept. 29, 1980) (Statement of

Representative Swift); 126 Cong. Rec. 9855 (Sept. 29, 1980) Statement of Representative Symms).

That the Act gives Bonneville explicit authority to buy power needed due to changes in flows is of no relevance to the question of whether power purchase costs can be allocated to project purposes other than power. In fact, the authority of Bonneville and the other PMAs to purchase power in order to "firm up" the hydroelectricity resource existed well before passage of the Act. Kansas City Power and Light Co., et al. v. McKay, 115 F. Supp. 402, 417 (D.D.C 1953). j'ment vacated on other grounds, 225 F. 2nd 925 (D.C. Cir. 1955). The Act gives Bonneville the authority to do many things, including contracting for new energy resources and providing the benefits of preference power to residential customers of investor-owned utilities. Sec. 5, 16 U.S.C. § 839c; Sec. 6, 16 U.S.C. § 838d. No one would argue that because the Act gives Bonneville the preceding authorities that the costs related to their exercise should be assigned to a project purpose other than power. Contracting for new energy resources, residential exchange, and purchase power expenses due to changes in flows are all costs properly assignable to power.

As mentioned earlier it is a well settled principle of law that the cost of purchase power is to be assigned to power. The language of Sec. 4(h)(10)(c) of the Act does nothing to change this. The Interior Committee report language on the provision confirms this reading:

> The allocation of particular costs to individual projects and among different project purposes, as is required by existing law, is preserved in this subparagraph to avoid establishing any precedent of a different allocation result. Thus, power, irrigation, navigation, recreation and other project purposes will continue to bear only their established shares of the total costs attributable to protection and mitigation measures. H.R. Rep. No. 96-976, 96th Cong. 2nd. Sess, Pt. 2 at 45 (1980) (emphasis added).

The Act also does not give Bonneville the authority to change project purpose allocations. On this point I agree with Bonneville's legal opinion, which states, "Because project purpose allocations for each dam are set by statute or by established pre-Act method, the Administrator has no discretion to change them." (pg. 10, note 8)

Although Bonneville does not have the authority to allocate purchase power costs to non-power purposes or to change project purpose allocations that does not mean all Bonneville expenditures related to fish mitigation measures are solely the responsibility of Bonneville and its ratepayers. It may be possible to apply Section 4(h)(10)(c) to fish mitigation measures such as hatcheries and fish ladders, that have been entirely financed by Bonneville and its ratepayers, but benefit all project purposes. For example, if Bonneville spends $10 million for the construction of a fish ladder at a dam where 80 percent of project costs have been allocated to power, it would be possible for Bonneville to allocate $2 million to other project purposes that are not the responsibility of power, i.e. Bonneville, to pay for.

I'm sure that you agree that any action the Administration takes in this area must be in accordance with the law. Therefore, I request that the Administration, including the Office of the General Counsel at the Department of Energy, the Office of the Solicitor at the Department of the Interior, and the Office of the Chief Counsel at the Corps of Engineers conduct a comprehensive review of the Bonneville legal opinion that evaluates the abovementioned legal issues. I also request that the following questions be addressed as part of the Administration's consideration of this matter:

1. Have any of the PMAs, without express direction from Congress, ever allocated any purchase power costs to a project purpose other than power? If so, please describe each instance, the amount of purchase power costs allocated to non-power purposes, and the legal basis for such an allocation.

2. I am aware of one express direction from Congress that makes federal taxpayers responsible for purchase power costs incurred due to lost generation caused by the spill of water to protect salmon below Shasta Dam in California (P.L. 101-514). What has been the total cost of this provision to taxpayers since it was enacted? Please provide an estimate of the cost that will be incurred by the taxpayers due to this provision for FY 1995 to FY 1999.

3. What is the proposed FY 1995 purchase power budget for each of the federal PMAs (Bonneville, Western, Southwestern and Southeastern)? Please provide an estimate of the purchase power costs incurred every year by each PMA since FY 1984 due to water flow regimes instituted to further non-power purposes, including flood control, navigation, irrigation, recreation, the protection of fish and wildlife (including endangered species), and cultural resources (i.e. the Grand Canyon National Park). Please break down the purchase power costs incurred by each PMA due to the requirements of each non-power project purpose.

In conclusion, I reemphasize that I have no objection whatsoever to the Administration's decision to provide short-term financial assistance to Bonneville for expenses related to fish mitigation. I also agree that legal authority may exist for Bonneville to shift certain fish mitigation costs from Bonneville ratepayers to the taxpayer. As outlined in this letter, my concerns about this issue are purely legal in nature.

I would appreciate receiving a response to this letter by August 8, 1994. Thank you for your consideration.

Sincerely,

GEORGE MILLER
Chairman

LETTER FROM RONALD C. ALLEN

Harvey Spigal
General Counsel
Bonneville Power Administration
Routing: AP
P.O. Box 3621
Portland, Oregon 97208

Dear Mr. Spigal:

This letter replies to a request of Mr. Philip Key of your office that I review your Memorandum to your Administrator dated June 6, 1994 and concerning an Interpretation of Section 4 (h) (10) (c) of the Northwest Power Act. I appreciate your sharing your Memorandum with me. I understand and appreciate your interpretation of Section 4 (h) (10) (c). I defer to your interpretation of that authority that the Bonneville Power Administration is responsible for administering.

Sincerely,

Ronald C. Allen
Senior Assistant Chief Counsel
for Legislation and General Law

LETTER FROM J. ALEX WARD

September 2, 1994

Philip Key
Office of General Counsel
Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208

Dear Mr. Key:

This letter responds to your request for this office's review of your proposed response to Congressman Miller concerning the allocation of power purchase costs to purposes other than power. We understand the position you are proposing to take. Because it is statute that the Bonneville Power Administration is responsible for implementing, we defer to your interpretation of 16 U.S.C. § 839b(h)(10)(C).

Sincerely,

J. Alex Ward
Assistant to the General Counsel

LETTER FROM JOHN D. LESHY

OCT 12 1994

Robert R. Nordhaus, General Counsel
Department of Energy
Forrestal Bldg.
1000 Independence Ave., S.W.
Washington, D.C. 20585

Dear Mr. Nordhaus:

As you know, on July 11, 1994, Congressman George Miller, Chairman of the House Committee on Natural Resources, wrote to the Secretary of Energy and the Secretary of the Interior expressing concern about a legal opinion of the general counsel of the Bonneville Power Administration (BPA) which found that BPA had authority to allocate certain costs incurred by BPA to purchase power to cover power sale contractual commitments. Chairman Miller requested that, among others, the Interior Solicitor's Office "conduct a comprehensive review of the Bonneville legal opinion." What follows is a report on our review.

Chairman Miller's primary concern is that BPA has erroneously concluded that it has authority under the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act), Pub. L. 96-501, 94 Stat. 2697, 16 U.S.C. § 839 et seq., to allocate purchase power costs it incurs when taking measures under the Northwest Power Act to assist fish and wildlife, notably species of Snake River salmon that have been listed for protection under the Endangered Species Act. Chairman Miller's letter agrees generally that section 4(h)(10)(C), 16 U.S.C. § 839b(h)(10)(C), of the Northwest Power Act permits BPA to allocate fish mitigation costs to non-power purposes. But he points out that allocation of purchase power costs to non-power purposes has been done only by federal power marketing agencies pursuant to an explicit directive from Congress. BPA, he continues, has no control over flows and thus can sell power that can be generated only once other project purposes are met. If BPA has signed contracts in excess of that output, Chairman Miller states it is BPA's responsibility to purchase the additional power to meet the contract obligations. He also points out that BPA has not supported its position in its legal opinion.

In addition to BPA's June 6, 1994 legal opinion and Chairman Miller's letter, we have reviewed the BPA reply to the Miller letter provided to us by BPA's General Counsel's Office. After considering these documents and the relevant sections and legislative history of the Northwest Power Act, we understand the basis for BPA's conclusion that it has authority to allocate the purchase power costs in question to be as follows:

- Under the Northwest Power Act, 16 U.S.C. 838i(b)(6)(iv), BPA can purchase power on a short-term basis to meet BPA's fish mitigation obligations under the Northwest Power Act.

- The Northwest Power Planning Council (NPPC) must develop a Fish and Wildlife Program to "protect, mitigate and enhance fish and wildlife." 16 U.S.C. 839(b)(h)(1)(A). The program must include provisions for flow measures, id. at (6)(E)(ii). Flow measures include spill, where water is sent over spillways instead of through turbines at dams in the migratory pathway of salmon.

- BPA must use its funds and authorities to "protect, mitigate and enhance fish and wildlife to the extent affected by the development and operation" of any hydro project in Columbia River Basin "consistent with the . . . program" developed by the NPPC. 16 U.S.C. 839b(h)(10)(A). Under this section, one of the mitigation measures for which BPA would use its

funds and authorities would be flow/spill measures that are consistent with flow/spill measures developed by NPPC under 839(h)(6)(B)(ii).

- The Northwest Power Act directs NPPC to "consider" specific "principles" when it develops its fish program. 16 U.S.C. 839b(h)(8). One principle addresses monetary costs 839b(h)(8)(D) (emphasis added):

  > Monetary costs and electric power losses resulting from implementation of the program shall be allocated by [BPA] consistent with individual project impacts and systemwide objectives of [16 U.S.C. 839b(h)].

- BPA may allocate amounts expended for "each activity" under the NPPC plan "to the various project purposes." 16 U.S.C. 839b(h)(10)(C).

  - BPA treats costs it incurs when the flow measures of the NPPC fish program are implemented as the purchase power costs incurred when water is spilled instead of put through turbines at dams in the salmon's migratory pathway.

  - Under the "principle" enunciated under 839b(h)(8)(D), the cost for power purchase is a "monetary cost . . . resulting from implementation of the program" that "shall be allocated" by BPA, as would be costs for hatcheries.

  - Put in terms of 839b(h)(10)(C), purchase power costs for flow/spill mitigation measures are an "amount expended" for an "activity" under the NPPC program, which in this instance would be the flow/spill mitigation measures. It is important to clarify here that, as discussed below, the only category of purchase power costs allocable by BPA are those incurred for fish and wildlife mitigation measures.

With this understanding of BPA's position in mind,[1] and with particular note that the matter of controversy raised in Chairman Miller's letter relates only to allocation by BPA of power purchase costs incurred under the fish mitigation provisions (section 4(h)) of the Northwest Power Act, we agree BPA has stated a reasonable interpretation of its authority to allocate some power purchase costs. We also believe, however, that BPA's interpretation should not, and will not, serve as a precedent on how power purchase costs generally are allocated at federal water resource facilities.

First, the authority to allocate does not rest upon an interpretation that BPA is exercising BPA authority over flow decisions. Chairman Miller's main concern appears to be that decisions concerning flows from federal dams in the Columbia River Basin are not made by BPA, but by the Corps of Engineers

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[1] We have shared our understanding of BPA's legal reasoning with staff of the BPA general counsel's office, who have indicated our understanding comports with that office's position.

and the Bureau of Reclamation. Thus, to the extent the NPPC program includes flow measures, these measures would be implemented by the operating agencies, not BPA. We do not believe BPA is interpreting the Northwest Power Act's costs allocation authority to include control by BPA over dam operations, including operations taken for fish mitigation, and we would resist any such interpretation. Rather, we understand BPA to argue that it uses its funds, not its authority,[2] to implement flow measures when it incurs power purchase costs as a result of those flow measures. BPA relies on a particular section of the Northwest Power Act, 16 U.S.C. § 839b(h)(10)(A), which directs BPA to use its funds as well as its authorities to "protect, mitigate and enhance fish and wildlife" as support for its position.

Second, BPA general counsel staff have stated to us that purchase power costs incurred for reasons other than flows implemented pursuant to section 4(h) of the Northwest Power Act would, under current law, be allocable only by the federal hydropower operating agencies (the Corps of Engineers and Bureau of Reclamation). Similarly, we perceive no intent by BPA to seek to expand application of its authority beyond the confines of section 4(h)(10)(C) of the Northwest Power Act, i.e., the authority to allocate only those costs incurred when performing fish and wildlife mitigation efforts consistent with the NPPC program.[3]

Third, given that BPA's authorities extend only to costs it incurs under section 4(h) of the Northwest Power Act, the statutes and regulations that govern allocation of other power costs (some of which were cited in Chairman Miller's letter) will continue to govern other allocations made by the operating agencies. The operating agencies and BPA have a long history of coordinating the allocation of costs under these authorities. This relationship will allow the Corps, BPA and Reclamation to consult and coordinate allocations where the issue of whether a power purchase cost is properly deemed a fish mitigation measure is a close one.

Finally, Chairman Miller has correctly pointed out that federal power marketing agencies have allocated power purchase costs only when expressly authorized by Congress. The recently enacted Grand Canyon Protection Act, for example, unequivocally makes the costs of certain purchase power costs non-reimbursable. See Reclamation Projects Authorization and Adjustment Act of 1992, Pub. L. No. 102-575, Title XVIII, 106 Stat. 4600, 4672. The

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[2] BPA does use its authority under 16 U.S.C. § 838i(b)(5)(iv) to incur power purchase costs. Also, with regard to operations for hydropower production, including measures taken for spill, the operating agencies coordinate closely with BPA on decisions to release water for power production.

[3] Recently, some actions by the hydropower agencies to assist fish migration were taken pursuant to the Endangered Species Act. Our understanding is that, since the listing of Snake River salmon under the ESA, BPA has deemed the actions it takes and costs it incurs to comply with the ESA are per se consistent with the NPPC program, thus allowing the costs of these measures to be allocated pursuant to section 4(h)(10)(C). Under this interpretation, BPA would have very broad authority to use its funds and authorities to implement any fish protection measures mandated under the ESA as well as those authorized under the Northwest Power Act.

Northwest Power Act is, admittedly, not as explicit as this. Nevertheless, recognizing that BPA is primarily responsible for interpreting the extent and nature of its authority under the Act, BPA's reading of the statute is reasonable, limited as it is to allocation of purchase power costs incurred for flow/spill measures implemented by Reclamation or the Corps that are consistent with the NPPC fish and wildlife program.

Please contact our office if you would like to discuss this issue further.

Sincerely,

John D. Leshy
Solicitor

MEMORANDUM FROM HARVARD P. SPIGAL

Memorandum

DATE June 6, 1994

FROM Harvard P. Spigal, General Counsel - AP

SUBJECT Interpretation of Section 4(h)(10)(C) of the Northwest Power Act*

TO Randall W. Hardy
Administrator and Chief Executive Officer - A

INTRODUCTION

The Corps of Engineers (Corps) and the Bureau of Reclamation (Reclamation) have agreed to increase spill and augment flow in the Columbia and Snake Rivers. This spill exceeds levels proposed by the National Marine Fisheries Service (NMFS) in its 1994-1998 Biological Opinion.[1/] Spill was increased as an experiment to determine whether it would assist survival of threatened and endangered salmon populations.

The Bonneville Power Administration (BPA) estimates the additional net power cost of spill to BPA in Fiscal Year 1994 will be up to $20 million through June 20, up to an additional $23 million through July 31, and an additional $22 million through August 30, for a total of up to $73 million. Further measures proposed to meet the Biological Opinion flow targets could cost BPA an additional $90 million. These expenditures exceed the $351 million already budgeted for BPA's Fish and Wildlife Program implementation, the Biological Opinion actions, and annual Treasury payments for hydroelectric project operation and maintenance associated with fish mitigation, as discussed below.

This unanticipated and unprecedented increase in BPA's fish and wildlife mitigation spending threatens to force BPA to defer a portion of its annual Treasury payment or to trigger an increase in electric power rates, or possibly both.

BPA proposes to administratively reduce its financial burden for this additional spill and flow. Authority supporting such action is expressly set forth in section 4(h)(10)(C) of the Pacific Northwest Electric Power Planning and Conservation Act, 16 U.S.C. § 839b(h)(10)(C) (Northwest Power Act).

1/ NMFS prepared its Biological Opinion under section 7 of the Endangered Species Act, 16 U.S.C. §§ 1531-1544 (ESA). It addresses operation of the Federal Columbia River Power System through January 31, 1999.

DISCUSSION

I. Background and History of Hydroelectric Project Purpose Allocations and BPA's Obligation to Repay the Power Purpose Share of Those Allocations to the Treasury

Section 4(h)(10)(C) of the Northwest Power Act directs BPA to treat expenditures in excess of the power share of a hydroelectric project's cost as "payments for other project costs for which BPA is responsible under law." H.R. Rep. No. 96-976, 96th Cong. 2d Sess., pt. 2, at 45 (1980). To understand how this accounting provision works, it is important to understand how the power purpose share of hydroelectric project costs is determined and repaid, and the project costs for which BPA is responsible under existing law.

A. BPA is Obligated to Recover Its Costs and Repay the Federal Investment in the Hydropower System Through its Rates.

Congress established BPA in the Bonneville Project Act of 1937 to market power generated at the Bonneville Dam, and to construct transmission lines to deliver that power to wholesale purchasers. 16 U.S.C. §§ 832-832i. The BPA Administrator's authority to market power expanded over the years as other Federal dams were built in the Pacific Northwest by the Army Corps of Engineers (Corps) and Bureau of Reclamation (Reclamation). See, e.g., Flood Control Act of 1944, 16 U.S.C. § 825s; Exec. Order No. 8526, 5 Fed. Reg. 3,390 (1940); see also, Aluminum Co. of Am. v. Central Lincoln Peoples' Util. Dist., 467 U.S. 380, 386 n.5 (1984). The combined generation and transmission facilities became known as the Federal Columbia River Power System (FCRPS). With the passage of the 1974 Federal Columbia River Transmission System Act, 16 U.S.C. §§ 838-838k (Transmission System Act), the Administrator was, with minor exceptions, "designated as the marketing agent for all electric power generated by Federal generating plants in the Pacific Northwest" constructed by the Corps and Reclamation. 16 U.S.C. § 838f. Today, BPA markets power from 30 Federal hydroelectric projects.

The projects for which BPA is designated as the power marketing agent are generally multiple-purpose projects. This means the projects serve multiple purposes such as power production, navigation, recreation, flood control, irrigation, fish and wildlife enhancement, and other miscellaneous purposes.[2/]

BPA is not responsible for recovering all project costs. Rather, with the limited exception of irrigation assistance discussed below, BPA's responsibility for project cost recovery extends only to recovering costs properly allocable to the FCRPS. These costs are sometimes referred to as reimbursable costs because BPA reimburses the Treasury for the Federal investment allocated to the FCRPS.[3/]

BPA's statutory ratesetting directives express BPA's responsibility for project cost recovery. Section 7 of the Bonneville Project Act directs BPA to establish rates for the sale of power to recover "the cost of producing and

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2/ See, e.g., Bonneville Project Act, 16 U.S.C. § 832; Act of August 4, 1939, 43 U.S.C. § 485h(a)-(b); Federal Water Project Recreation Act, 16 U.S.C. §§ 460l-12, 13, 18; Flood Control Act of 1962, 16 U.S.C. § 460d, 33 U.S.C. §§ 701n, 701r-1, 701s; S. Rep. No. 2258, 87th Cong., 2d Sess. 141 (1962); Flood Control Act of 1950, 33 U.S.C. §§ 701-1 et seq.; River and Harbor Act of 1945, 33 U.S.C. §§ 545b, 603a; Act of August 30, 1935, ch. 831, 49 Stat. 1028, 1039; Columbia Basin Project Act, 16 U.S.C. §§ 835 et seq.; Hungry Horse Dam Act, 43 U.S.C. §§ 593 et seq.; Reclamation Act of 1902, 43 U.S.C. §§ 371 et seq.; Reclamation Act of 1939, 43 U.S.C. §§ 485 et seq.; H.R. Rep. No. 1507, 80th Cong., 2d Sess. 2 (1948).

3/ Conversely, non-reimbursable costs are project costs for which BPA has no reimbursement obligation. Such costs generally benefit only a nonpower purpose.

transmitting such electric energy, including the amortization of the capital investment over a reasonable period of years." 16 U.S.C. § 832f. Section 7 requires that the rates be "based upon an allocation of costs made by the Federal Power Commission" and that, with regard to costs of the Bonneville Project, "the Federal Power Commission may allocate to the costs of electric facilities such a share of the cost of facilities having joint value for the production of electric energy and other purposes as the power development may fairly bear as compared with such other purposes." Id.

Section 9 of the subsequently enacted Transmission System Act provides that power marketed by BPA shall be sold under rate schedules drawn "having regard to the recovery . . . of the cost of producing and transmitting such electric power, including the amortization of the capital investment allocated to power over a reasonable period of years" and certain irrigation costs. 16 U.S.C. §§ 838g, 8381(b)(9).[4/] This language is virtually identical to language in

Section 5 of the Flood Control Act of 1944. See 16 U.S.C. § 825s.

Section 7(a)(1) of the Northwest Power Act incorporates the ratemaking requirements of the Transmission System Act and the Flood Control Act, and also provides that BPA's rates shall be established and revised "to recover, in accordance with sound business principles, the costs associated with the acquisition, conservation, and transmission of electric power, including the amortization of the Federal investment in the Federal Columbia River Power System (including irrigation costs required to be repaid out of power revenues) over a reasonable period of years and the other costs and expenses incurred by the Administrator pursuant to this Act and other provisions of law." 16 U.S.C. § 839e(a)(1).

4/ The references in the Transmission System Act to irrigation costs, and in the Northwest Power Act to "irrigation costs required to be repaid out of power revenues," (16 U.S.C. § 839e(a)(1)), refer to the exception to the rule that BPA's rates recover only project costs properly allocable to power production. This exception is commonly referred to as "irrigation assistance." A number of statutes enacted during the last fifty years authorized Reclamation projects in the Pacific Northwest, and directed BPA to establish its rates to repay project costs assigned to irrigation water users, but beyond their ability to repay. See, e.g., 43 U.S.C. § 615v (The Dalles Dam). Some statutes specifically direct BPA to repay such costs from net revenues, after power features are repaid and within the repayment period prescribed by law. Other project authorizations, while not as specific, were based on Reclamation feasibility studies which established power's allocation of irrigation costs beyond the water users' ability to pay and power's payment of that obligation from net revenues.

Reclamation determines the amount of irrigation assistance the FCRPS must provide. This determination is based on Reclamation's estimates of the irrigators' ability to repay. The irrigators' ability to pay is determined by Reclamation using a representative farm budget with certain adjustments. Each year, Reclamation submits updated irrigation data to BPA. BPA includes this information in its repayment studies and as part of its audited FCRPS financial statements.

5/ Costs of the Bonneville Dam were allocated in 1945. On the basis of studies by the Federal Power Commission staff and other data, the Chief Engineer of the Army Corps of Engineers prepared and submitted a report dated June 15, 1945, entitled, "Bonneville Project and Transmission System, Allocation of Costs." The Commission, based on the report, made a determination as to portions of the Bonneville Dam's costs allocable to power purposes. 4 F.P.C. 950, 952 (1945). Allocation of costs of some other projects--the McNary, Lower Granite, Little Goose, Lower Monumental and Ice Harbor projects--were made or confirmed by the Commission because authorizing legislation for the projects required that their power be delivered to the Secretary of Energy for disposition in accordance with laws relating to the disposition of power from the Bonneville Project. River and Harbor Act of 1945, 33 U.S.C. §§ 545b. Those laws include the cost allocation directive of section 7 of the Bonneville Project Act.

B. The Allocation of Project Costs

Allocation of project costs among the varying project purposes is a practice that has developed historically. Generally, allocations of costs of projects constructed pursuant to the Reclamation laws are made by the Secretary of the Interior, 43 U.S.C. § 485h(a)-(b), and allocations of costs of Corps projects are made by the Secretary of the Army.[57] In other cases, as noted earlier, Section 7 of the Bonneville Project Act provided that BPA's rate schedules be based upon an allocation of costs made by the Federal Power Commission. 16 U.S.C. § 832f.

An Inter-Agency Committee on Water Resources was formed to determine the appropriate allocation of project costs. By the "Interagency Agreement on Cost Allocation of March 12, 1954," among the Departments of the Interior and Army and the Federal Power Commission (now the FERC), the "Separable Costs-Remaining Benefits" (SCRB) method was adopted for most cost allocations of multi-purpose project costs (the agreement does allow for the use of two related, alternative methods in certain circumstances). That document, the Proposed Practices for Economic Analysis of River Basin Projects (the "Green Book"), prepared by the Inter-Agency Committee on Water Resources (May 1958), and the Corps of Engineers' manual EM 1160-2-101, Cost Allocations for Multiple Purpose Projects, are now the primary guides to allocations prepared by the Corps. The aim of the SCRB method is to allocate costs among project purposes so that each purpose shares equitably in the savings resulting from combining the purposes in a multi-purpose project.

The cost allocation procedures used by Reclamation for its projects differ somewhat from those of the Corps. Reclamation allocations are prepared and approved by Reclamation, after consultation with the Corps and BPA; FERC is not involved in approving Reclamation allocations. Reclamation uses the "Alternative Justifiable Expenditure Method," one of the three methods considered acceptable for allocating costs according to the Interagency Agreement on Cost Allocation of March 12, 1954. The method differs from the SCRB method only in that it identifies specific costs of various functions rather than their separable costs (in effect classifying a larger share of costs as joint).

The object of the various methodologies is to allocate costs to each project purpose by assigning the cost of the various features of the project to these purposes. The methodologies distinguish between specific and joint features of projects. Where a feature serves one purpose the assignment is simple. For example, navigation locks are only used for navigation. Thus the locks are considered specific features, and their costs are allocated to the purpose of navigation. Since navigation does not generate revenue sufficient to repay the cost of navigation features, all costs are assigned to the taxpayer. In contrast, a specific feature serving a power purpose only, such as a powerhouse, produces substantial revenue and is repaid by the ratepayers. Other features, like the dam structure, spillway, and reservoir, benefit all users and are joint features repaid by all project purposes.

Thus, for BPA, the total repayment cost for a project is the sum of the power specific costs, the power share of joint costs, and any other costs assigned to power, such as irrigation assistance.

C. Congress Did Not Prescribe a Fixed Schedule of Repayment of Costs Allocated to Power.

Once costs have been allocated to power, the BPA ratesetting directives discussed above prescribe cost recovery. No fixed schedule of repayment is stated; rather, BPA is directed to establish its rates to recover amortization of the capital investment allocated to power "over a reasonable period of years." See, e.g., 16 U.S.C. § 838g. The details of the repayment policy have been established through administrative interpretation of the basic statutory requirements. The traditional repayment approach was described by Congress in connection with construction of the Grand Coulee Third Powerhouse:

> The repayment studies are based upon year-by-year forecasts of system revenues and costs over the repayment period. Revenues are applied first to pay the costs of operation, maintenance, replacements, and interest. All remaining revenues are applied to repay the capital investment in commercial power facilities, and irrigation assistance as it falls due. Accordingly, there is no annual schedule of capital repayment. The test of the sufficiency of revenues is whether the capital investment can be repaid within the overall repayment period established for each power project, each increment of investment in the transmission system, and each block of irrigation assistance. Hence, repayment may proceed at a faster or slower pace from year to year as conditions change. Annual operating costs and revenues, of course, may vary from year to year, as they are affected by extremes of weather conditions, streamflows, current economic conditions, changing markets, and the absorption of new projects into the system.

H.R. Rep. 1409, 85th Cong., 2d Sess. 10 (1966); see also, 112 Cong. Rec. 8,423 (Apr. 19, 1966) (Rep. Aspinall).

The current administrative interpretation, which has its antecedents in prior policies and historical practice, is embodied in the Secretary of Energy's order RA 6120.2. The order requires that BPA establish its rates to repay the Federal investments properly allocable to power within the average expected service life of the facility or within 50 years, whichever is less. BPA develops a repayment schedule both to comply with investment due dates and to minimize costs over the repayment period. Costs are minimized in accordance with RA 6120.2 by repaying the highest interest-bearing investments first, to the extent possible. Adherence to this schedule would result in some investments being repaid before their due dates, while assuring that all investments will be repaid by their due dates.

D. The Bonneville Fund is Available to the Administrator For Expenditures BPA Deems "Necessary or Appropriate."

Once BPA sets its rates and earns revenues based on those rates, the revenues are deposited in the BPA fund. Section 11 of the Transmission System Act established in the Treasury of the United States a single fund--the BPA fund--consisting of all BPA receipts from all sources, including trust funds, bond sales, and power and transmission revenues. 16 U.S.C. § 838i(a). The Administrator has broad authority to make expenditures from the fund so long as they are "necessary or appropriate to carry out the duties imposed upon the Administrator pursuant to law. . . ." Id. § 838i(b).

The Transmission System Act also lists examples of purposes for which BPA may expend its funds, including (1) making such payments to the credit of the Reclamation fund or other funds, or to the credit of miscellaneous receipts of the Treasury as are "required by or pursuant to law to be charged to and returned to the general fund of the Treasury for the repayment of the Federal investment in the Federal Columbia River Power System from electric power marketed by the Administrator," and (2) "making such payments, as shall be required to carry out the purposes and provisions of the Pacific Northwest Power Planning and Conservation Act . . . ." 16 U.S.C. § 838i(b). Priority of payments from the BPA fund are to be made in accordance with the directives of section 13(b) of the Transmission System Act and paragraph 8(c)(3) of RA 6120.2.

II. Section 4(h)(10)(A) of the Northwest Power Act Directs the Administrator to Use the BPA Fund to Protect, Mitigate, and Enhance Fish and Wildlife in the Columbia River Basin.

With regard to expenditures authorized from the BPA fund, one of the "purposes and provisions" of the Northwest Power Act is set forth in section 4(h)(10)(A). It provides:

> The Administrator shall use the Bonneville Power Administration fund and the authorities available to the Administrator under this Act and other laws administered by the Administrator 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 plan, if in existence, the program adopted by the Council[6/] under this subsection, and the purposes of this chapter. Expenditures of the Administrator pursuant to this paragraph shall be in addition to, not in lieu of, other expenditures authorized or required from other entities under other agreements or provisions of law.

16 U.S.C. § 839b(h)(10)(A). This is the funding authority BPA uses when it purchases replacement power needed as a result of providing additional spill or flows for fish. See also 16 U.S.C. § 8381(b)(6)(iv). As indicated in the "Introduction" to this Opinion, those costs have increased precipitously this fiscal year.

While this provision grants the Administrator broad authority in how BPA protects, mitigates, and enhances fish and wildlife, it and accompanying provisions of the Northwest Power Act set limits on that authority as well. One important limitation is that "[c]onsumers of electric power shall bear the cost of measures designed to deal with adverse impacts caused by the development and operation of electric power facilities and programs only." 16 U.S.C. § 839(b)(h)(8)(B) (emphasis added). Thus, while BPA may initially finance measures that mitigate simultaneously for both power and non-power impacts, ratepayers should not bear the full cost of such measures.

In addition, the Administrator may not use the BPA fund in lieu of "other expenditures authorized or required from other entities under other . . . provisions of law." 16 U.S.C. § 839(b)(h)(10)(A). Thus, where BPA, the Corps, and Reclamation are spilling or otherwise releasing water to mitigate for the impact of the dams' reservoirs, and those reservoirs serve all project purposes, then the allocations done pursuant to statute serve as "other provisions of law" that require other purposes to share such mitigation costs. The ratepayers are not authorized to bear such costs alone.

Finally, BPA has a duty to provide the Pacific Northwest with "an adequate, efficient, economical and reliable power supply," 16 U.S.C. § 839(2), and to do so while keeping rates to consumers as low as possible "consistent with sound business principles." Id. § 838g(1). Allowing BPA to absorb the full cost of fish mitigation measures that benefit all project purposes increases the risk of rate increases and missed or delayed annual Treasury payments, thus threatening BPA's ability to fulfill these statutory mandates.

6/ The Council includes two representatives from Washington, Oregon, Idaho, and Montana. 16 U.S.C. § 839b(a)(2), (a)(2)(B). The Council develops the Fish and Wildlife Program with advice from the Region's tribes, fish and wildlife management agencies, utilities, and the public. Id. § 839b(a)(1), (g)(3). The Council must develop the Program mindful of the fact that "[m]onetary costs and electric power losses resulting from implementation of the program shall be allocated by the Administrator consistent with individual project impacts and system-wide objectives of this subsection." Id. § 839b(h)(8)(D). BPA uses the Program as a guide in fulfilling its statutory duty to protect, mitigate and enhance fish and wildlife affected by the development and operation of federal hydroelectric projects in the Columbia River Basin. For instance, the Program calls for additional spill and flow augmentation to protect listed and nonlisted species. While BPA does not have to implement the specific measures found in the Program, BPA must act consistently with the Program. Id. § 839b(h)(10)(A). In addition, the Corps, Reclamation and BPA must exercise their responsibilities with respect to operating federal hydroelectric projects on the Columbia River system by "taking into account at each relevant stage of the decisionmaking processes to the fullest extent practicable, the program adopted by the Council. . . ." Id. § 839b(h)(11)(A)(ii).

III. Section 4(h)(10)(C) Provides the Mechanism for BPA to Recover Expenditures For Fish and Wildlife Mitigation Made on Behalf of the Non-Power Purposes of the Federal Hydroelectric Projects in the Columbia Basin.

When the Administrator exercises his authority to expend funds for a measure to mitigate fish or wildlife under the Northwest Power Act[1/], section 4(h)(10)(C) of the Act directs BPA to assign those costs among the Federal hydroelectric projects.

The section states:

> The amounts expended by the Administrator for each activity pursuant to this subsection shall be allocated as appropriate by the Administrator, in consultation with the Corps of Engineers and the Water and Power Resources Service, among the various hydroelectric projects of the Federal Columbia River Power System. Amounts so allocated shall be allocated to the various project purposes in accordance with existing accounting procedures of the Federal Columbia River Power System.

16 U.S.C. § 839b(h)(10)(C) (emphasis added). This section grants BPA discretion to decide which hydroelectric projects should be assigned the costs of fish and wildlife measures. Central Lincoln Peoples' Util. Dist. v. Johnson, 735 F.2d 1101, 1124 (9th Cir. 1984). BPA must consult with the Corps and Reclamation, but the Administrator makes the final decision. 16 U.S.C. § 839b(h)(10)(C).

With regard to the allocation of fish and wildlife expenditures to the various project purposes, the Interior Committee Report states:

> The allocation of particular costs to individual projects and among different project purposes, as is required by existing law, is preserved in this subparagraph to avoid establishing any precedent of a different allocation result. Thus, power, irrigation, navigation, recreation and other project purposes will continue to bear only their established shares of the total costs attributable to the protection and mitigation measures. All expenditures by BPA are to be made on a reimbursable basis vis-a-vis other project purposes, although BPA will have the flexibility to treat expenditures in excess of its allocated share as being payments for other project costs for which BPA is responsible under existing law.

H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. 2 at 45 (1980) (emphasis added).

This is consistent with the Ad Hoc Pacific Northwest Power-Fisheries Committee report. The Ad Hoc group, working with Representative Lujan, drafted section 4 of the Act. 126 Cong. Rec. 9845-46 (Sept. 29, 1980) (Ad Hoc group's proposals adopted as amendments "with only a few modifications"); see also H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. 2 at 43 (1980). The Ad Hoc group stated that section 4(h)(10)(C) would provide BPA "the flexibility to treat expenditures in excess of its allocated share as being payments for other project costs for which BPA is responsible." Report of Ad Hoc Pacific Northwest Power-Fisheries Committee 7 (Aug. 11, 1980). The Commerce Committee Report adopted the Ad Hoc Committee language verbatim. See H.R. Rep. No. 976, 96th Cong, 2d Sess., pt. 2 at 45 (1980). Congress and fish and power interests agreed BPA had the authority to "treat expenditures in excess of its

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1/ BPA's actions should be taken under section 4(h)(10)(A) of the Northwest Power Act to assure its ability to offset Treasury payments. If BPA were to act under the authority of another statute, section 4(h)(10)(C) might not apply. In the case of additional spill and flow augmentation for fish, however, BPA is using its section 4(h)(10)(A) authority to protect and mitigate listed and non-listed species.

allocated share as being payments for other project costs for which BPA is responsible under existing law." Id.; see also Stephen Brown, Note, Breathing Life Back Into a Drowned Resource: Mitigating Wildlife Losses in the Columbia Basin Under the Northwest Power Act, 18 Envt'l L. Rev. 571, 594 (1988).

Consequently, the Administrator may choose to finance a measure that addresses the impacts from many Federal dams, and assign that system-wide measure to be financed through a single hydroelectric project, so long as that assignment has a rational basis.[8/] The Administrator may also locate that system-wide measure at one project, yet under section 4(h)(10)(C) authority assign the measure to another project. BPA may then subtract from its Treasury payment any amounts exceeding the power purpose share of the project to which the measure is assigned.

As discussed above, allocation of project costs to particular projects and the purposes of those projects requires many technical determinations. As a legal matter, however, it is the clear object of Northwest Power Act sections 4(h)(8)(B), (8)(D), (10)(A), and (10)(C) to ensure that power customers effectively bear only an appropriate share of fish and wildlife expenditures. This can be accomplished by treating BPA's expenditures in excess of power's allocated share as payments "required by or pursuant to law to be charged and returned to the general fund of the Treasury for the repayment of the Federal investment in the Federal Columbia River Power System from electric power marketed by the Administrator." 16 U.S.C. § 838i(b)(10); see also H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. 2, at 45 (1980).

IV. Section 4(h)(10)(C) is Applicable to Past, Present, and Future Expenditures BPA Makes to Mitigate for Nonpower Purposes of the Federal Hydroelectric Projects in the Columbia Basin.

Section 4(h)(10)(C) applies to both site-specific measures located at particular hydroelectric projects, and to system-wide or nonsite-specific projects that mitigate for overall Federal Columbia River Power System impacts. The assignment directive exists regardless of whether the expenditure has been made in the past or will be made in the present or future. However, this directive does not apply to foregone revenues.

A. Section 4(h)(10)(C) Allocation Provision Applies to Replacement Power Costs.

Replacement power costs are considered fish mitigation costs according to two provisions of the Northwest Power Act. Section 8(a) of the Act, which amends section 11(b)(6) of the Transmission System Act, gives BPA the authority to purchase power "on a short-term basis to meet the Administrator's [section 4(h) fish and wildlife] obligations." 16 U.S.C § 838i(b)(6)(iv). Similarly, section 8(b) of the Act, which amends section 11(b)(12) of the Transmission System Act, allows BPA to make payments "as shall be required to carry out the purposes and provisions of the [Act]." Id. § 838i(b)(12). The Interior Committee Report on section 8(b) explains BPA can

> use the BPA Fund to make short-term power purchases to enable BPA to meet its obligation under the fish and wildlife provisions of this bill (e.g., to buy power to replace power generating capability that may be lost through a spill for fish passage purposes at a Federal dam). This is designed to reduce conflicts between fisheries agencies and BPA customers by ensuring BPA can meet its obligation to each.

8/ The Administrator may assign the measure to a hydroelectric project where the power purpose allocation is 100 percent of the project costs, such as the Bonneville Dam second powerhouse. Or, the Administrator could assign the measure to a project with a power purpose allocation of 50 percent, such Bonneville Dam's first powerhouse. Because the project purpose allocations for each dam are set by statute or by established pre-Act methods, the Administrator has no discretion to change them.

H.R. Rep. 976, 96th Cong., 2d Sess., pt. 2, at 54 (Sept. 16, 1980).

Replacement power costs fall comfortably into the plain language of these provisions. Such costs are incurred on a short term basis, usually from May to June, July or August. BPA incurs these costs when it replaces generating capability lost as a result of spill for fish. The costs enable BPA to fulfill both its contractual obligations to supply power and its fish obligations. Therefore, replacement power costs should be allocated pursuant section 4(h)(10)(C).

That the purchase of replacement power furthers the power purpose of the project is of no consequence. Rather, the focus is on the actions taken to benefit fish: spill and flow augmentation. The cost of that mitigation is the cost of BPA's replacement power. According to current allocation methodologies, the cost of spill and flow augmentation is a joint cost to be shared among all project purposes.[9/] This is consistent with a fundamental principle of Regional Act mitigation: consumers of electric power should pay only for power's share of the costs. 16 U.S.C. § 839b(h)(8).

B. Section 4(h)(10)(C) Also Should Be Applied to BPA's Past Payments for Fish and Wildlife Mitigation in Excess of the Power Purpose Share of that Mitigation.

Since passage of the Northwest Power Act, BPA has spent $270 to $325 million[10/] on fish and wildlife mitigation not attributable to the power purposes of Columbia River Basin Federal hydroelectric projects. This figure does not include lost revenues which total approximately $79 million.

The measures funded are too numerous to list[11/], but all have been funded as either a part of the Council's Fish and Wildlife Program or consistent with the Program. Consequently, section 4(h)(10)(C) applies to the sums already expended. Prior years' expenditures in excess of the power share of mitigation should be treated in a future year as BPA payments required to be made to the Treasury because Congress intended BPA's customers to "bear the cost of measures designed to deal with adverse impacts caused by the development and operation of electric power facilities and programs only." 16 U.S.C. § 839b(h)(8)(B).

9/ See generally, Corps, Draft Report on Methodology and Recommendations For Allocating Costs Associated With Drawdown of John Day and Lower Granite Reservoirs 5 (Dec. 1993). When allocating fish mitigation measures to project purposes, the Corps assigns the measures to the responsible or causative purposes of the project in the same way as other project costs. Id. (citing Water Resources and Development Act, 33 U.S.C. § 2283(c)). The Corps has not found that any particular project purpose has caused the need for flow enhancement measures such as reservoir drawdown. Id. at 6. The cost of such measures is a joint cost shared among all project purposes according to the existing allocations.

10/ BPA does not always identify the reasons replacement power is needed, so BPA can only approximate its expenditures for replacement power needed as a result of fish mitigation.

11/ Prior to taking action under section 4(h)(10)(C), the Administrator would assign site-specific measures that serve the site where they are located to the hydroproject where they are located. Offsite, site-specific, or system-wide measures that benefit the entire Federal Columbia River Power System can be assigned to a specific hydroproject or be addressed using a weighted methodology that accounts for the size, output, and project purpose allocations of each hydroproject in the system. See generally, BPA Office of Financial Management Memorandum, attached. Both of these proposals are supported by section 4(h)(10)(C) and the provisions of the Act requiring mitigation on a system-wide basis. See 16 U.S.C. §§ 839(b)(h)(10)(A), (h)(11)(A); see also, H.R. Rep. No. 976, 96th Cong., 2d Sess., pt. 2, at 38.

No schedule for payment reduction is prescribed. When BPA takes credit for such costs is a discretionary matter left to the Administrator, and can be determined during the normal budgetary process. See section I.C., supra.

C. Section 4(h)(10)(C) Does Not Apply to Lost Revenues.

BPA loses revenues by providing spill and flow augmentation because water spilled over a dam's spillway does not generate electric energy. There appear to be no tenable legal arguments for applying section 4(h)(10)(C) to lost revenues. While this is a mitigation cost borne by the ratepayers alone, it is not redressable under this provision.

D. BPA Has Not Used Section 4(h)(10)(C) to Date.

Prior to the passage of the Northwest Power Act, BPA lacked express authority to directly fund fish and wildlife mitigation at Federal hydroelectric projects. Congress appropriated funds to finance mitigation measures at the projects. The appropriations language generally specified the site of the measure, and BPA repaid the Treasury for the power purpose share of the expenditure based on existing project purpose allocations for that site. BPA funded less than 100 percent of the cost of such measures, unless the appropriations language assigned the measure to a hydroelectric project with a 100 percent allocation for the power purpose.

After passage of the Act, Congress continued to authorize and appropriate funds for mitigation measures at Federal hydroelectric projects. In addition, BPA began to exercise its express mitigation funding authority, but BPA did not meet its section 4(h)(10)(C) obligation. Where BPA funded mitigation through the BPA Fund, not appropriations, it did not use its section 4(h)(10)(C) authority.

V. Implementing Section 4(h)(10)(C)

Section 4(h)(10)(C) instructs the Administrator to use "existing accounting procedures" when making assignment determinations. 16 U.S.C. § 839b(h)(10)(C)[12/]. This is most readily accomplished when site-specific measures serve the site at which they are located.

Greater difficulty is encountered with respect to offsite, site-specific, or system-wide measures serving the entire hydrosystem. For these measures, the Administrator may assign the measure to a particular hydroelectric project or projects on a case-by-case basis. 16 U.S.C. § 839b(h)(10)(C).

BPA also could develop a formula for allocating costs to projects based on existing accounting procedures. The formula should reflect the nonpower purpose share of the entire hydroelectric system.

Whether BPA elects to use a formula or simply assign system-wide measures to specific hydroelectric projects on a case-by-case basis, it is interpreting and implementing the Northwest Power Act. Accordingly, rulemaking is not required under the Administrative Procedure Act, 5 U.S.C. §§ 500-576. See Mt. Diablo Hosp. Dist. v. Bowen, 860 F.2d 951, 956 (9th Cir. 1988) (policies "merely clarify[ing] or explain[ing] existing law or regulations" are exempt from rulemaking procedures because they are interpretive rules).

12/ The accounting procedures BPA used in the accompanying Memorandum by the Office of Financial Management are identical to those existing in 1980.

CONCLUSION

Shortly after passage of the Northwest Power Act in 1980, BPA debated how to fulfill its section 4(h)(10)(C) obligations. BPA did not act because it believed the amounts then being expended were de minimus, and thus did not justify the effort to make the assignments. However, the duty to assign a measure to a hydroelectric project and allocate the measure's costs to the various project purposes is not discretionary, and the significantly increasing annual cost of fish and wildlife mitigation compels reexamination of BPA's prior practice. The magnitude of such costs has now placed at risk the Administrator's statutory obligation to provide "an adequate, efficient, economical and reliable power supply," 16 U.S.C. § 839(2), and to do so while keeping rates to consumers as low as possible "consistent with sound business principles." 16 U.S.C. § 838g(1).

Congress designed section 4(h)(10)(C) to assure that BPA ratepayers would pay only for the fish and wildlife costs associated with the power purpose of the Federal dams from which they benefit. Other provisions of BPA's enabling legislation support this outcome. Any expenditures in excess of this amount were to be absorbed on a non-reimburseable basis by the United States and be treated as payments for other project costs for which BPA is responsible under existing law. This obligation covers all fish and wildlife mitigation measures BPA has implemented since adoption of the Northwest Power Act, and measures BPA implements now or in the future, including purchases of replacement power. This is inclusive of ESA expenditures, provided that such expenditures are consistent with the Council's Program. This obligation does not cover lost revenues.

BPA can assign system-wide measures to specific hydroelectric projects, or calculate what the system-wide nonpower purpose share of such measures would be. BPA can then reduce its Treasury payments by an amount equal to the mitigation BPA funded on behalf of the non-power purposes. Beyond coordination with other affected Federal entities, there are no administrative or legal actions necessary before BPA implements section 4(h)(10)(C).

Attachment

Development of System-wide Fish and Wildlife Percent of Joint Costs Allocated to Power

The Northwest Power Act, Section 4(h)(10)(C), assigned the Administrator authority to decide which hydro-project should be assigned the costs of fish and wildlife measures. This authority is applicable to both site-specific measures located at particular hydro-projects, and for system-wide or non-site specific projects that mitigate for impacts of the FCRPS as a system. An allocation for a system-wide fish and wildlife program should be developed by BPA.

ANALYSIS

Table F-4, WP-93-FS-BPA-07, which is labeled as Document D for this study, is the source for the percent of joint costs allocated to power to each specific multi-purpose facility. Three options were studied to develop a system-wide allocation:

Document A - The established joint allocation percentages for power were applied to the distributive share of each projects cumulative MWH produced. This application recognizes the connection between the productivity of a project to generate revenue that is used to pay for fish and wildlife measures. This results in a 27% non-power allocation.

Document B - Each multi-purpose Federal project was weighed equally against the established joint allocation percentage for power. This is the method the Corps of Engineers applies to the expenditures of the System Operation Review (SOR) Progam. This results in a 30% non-power allocation. The inequity between a small multi-pupose project like Cougar and a large multi-pupose project like Bonneville is difficult to defend.

Document C - The established joint allocation percentages for power were applied to the distributive share of each projects plant in service. This application weighs the established joint allocation percentage for power based on the capital cost BPA has incurred per project. This results in a 23% non-power allocation. Although Bonneville is a large producer, little weight is given to it because of the low cost of construction in the 1930's.

RECOMMENDATION

The allocation described in Document A is recommeded. The ability for BPA to pay for Fish and Wildlife programs is based on revenue and borrowing authority which are affected by the productivity of the generation projects.

DOCUMENT A

Project	MWH -1000	X JT % =	Fiscal Year 1992
Bureau Project			
Boise	5,871	0.000643	8.70
Columbia Basin	710,836	0.38654	43.20
Hungry Horse	36,275	0.031963	70.00
Minidoka-Palisades	21,576	0.00038	1.40
Yakima	19,878	0.00573	22.90
SUBTOTAL	794,436	0.43	
Corps Projects			
Albeni	67732	0.016606	97.50
Bonneville I	489308	0.061519	50.00
Bonneville II	0	0	100.00
Chief Joseph	485479	0.122076	100.00
Cougar	22251	0.001287	23.00
Detroit-Big Cliff	69520	0.00708	40.50
Dworshak	248890	0.054699	87.40
Green Peter-Foster	57279	0.007129	49.50
Hills Creek	22779	0.001403	24.50
Ice Harbor	185132	0.03659	78.60
John Day	386886	0.075395	77.50
Libby	282925	0.055491	78.00
Little Goose	214463	0.050314	93.30
Lookout Point-dexter	77484	0.00604	31.00
Lost Creek	23751	0.000328	5.50
Lower Granite	267964	0.066303	98.40
Lower Monumental	232751	0.055073	94.10
McNary	452934	0.092594	81.30
The Dalles	389344	0.072448	74.00
SUBTOTAL	3976872	0.782375	
TOTAL	4,771,308		
	0.722914		

DOCUMENT B

Project	Plant in Service	X JT.% =	Fiscal Year 1992
Bureau Project			
Boise	1	0.0174	8.70
Columbia Basin	1	0.0864	43.20
Hungry Horse	1	0.14	70.00
Minidoka-Palisades	1	0.0028	1.40
Yakima	1	0.0458	22.90
SUBTOTAL	5	0.29	
Corps Projects			
Albeni	1	0.051316	97.50
Bonneville I	1	0.026316	50.00
Bonneville II	1	0.052632	100.00
Chief Joseph	1	0.052632	100.00
Cougar	1	0.012105	23.00
Detroit-Big Cliff	1	0.021316	40.50
Dworshak	1	0.046	87.40
Green Peter-Foster	1	0.026053	49.50
Hills Creek	1	0.012895	24.50
Ice Harbor	1	0.041368	78.60
John Day	1	0.040789	77.50
Libby	1	0.041053	78.00
Little Goose	1	0.049105	93.30
Lookout Point-dexter	1	0.016316	31.00
Lost Creek	1	0.002895	5.50
Lower Granite	1	0.051789	98.40
Lower Monumental	1	0.049526	94.10
McNary	1	0.042789	81.30
The Dalles	1	0.038947	74.00
SUBTOTAL	19	0.675842	
TOTAL	24		
	0.595958		

DOCUMENT C

Project	Plant in Service	X JT % =	Fiscal Year 1992
Bureau Project			
Boise	11,122	0.000816	8.70
Columbia Basin	1,072,760	0.390737	43.20
Hungry Horse	81,321	0.047995	70.00
Minidoka-Palisades	14,330	0.000169	1.40
Yakima	6,514	0.001258	22.90
SUBTOTAL	1,186,047	0.44	
Corps Projects			
Albeni	35641	0.008078	97.50
Bonneville I	76190	0.008856	50.00
Bonneville II	734345	0.170712	100.00

Project	Plant in Service	X JT % =	Fiscal Year 1992
Chief Joseph	554660	0.128941	100.00
Cougar	20349	0.001088	23.00
Detroit-Big Cliff	41428	0.0039	40.50
Dworshak	304019	0.06177	87.40
Green Peter-Foster	50123	0.005768	49.50
Hills Creek	17549	0.001	24.50
Ice Harbor	138255	0.025262	78.60
John Day	455552	0.082074	77.50
Libby	473993	0.085947	78.00
Little Goose	203203	0.044073	93.30
Lookout Point-dexter	47636	0.003433	31.00
Lost Creek	27066	0.000346	5.50
Lower Granite	327236	0.074855	98.40
Lower Monumental	222993	0.04878	94.10
McNary	278598	0.052654	81.30
The Dalles	292816	0.050372	74.00
SUBTOTAL	4301652	0.85791	
TOTAL	5,487,699		
	0.767799		

DOCUMENT D

Project	Fiscal Year 1992
Bureau Project	
Boise	8.7
Columbia Basin	43.2
Hungry Horse	70.0
Minidoka-Palisades	1.4
Yakima	22.9
Corps Projects	
Albeni	97.5
Bonneville I	50.0
Bonneville II	100.0
Chief Joseph	100.0
Cougar	23.0
Detroit-Big Cliff	40.5
Dworshak	87.4
Green Peter-Foster	49.5
Hills Creek	24.5
Ice Harbor	78.6
John Day	77.5
Libby	78.0
Little Goose	93.3
Lookout Point-dexter	31.0
Lost Creek	5.5
Lower Granite	98.4
Lower Monumental	94.1
McNary	81.3
The Dalles	74.0

1/ Plant costs will not change once a final plant allocation is in place.

Question: It is my understanding that the U.S./Canada Treaty has provided major benefits to the U. S. And Canada over the years. Would you please describe what the Treaty provided and what these benefits are?

Answer: The Treaty required Canada to construct and operate 15.5 million acre-feet of storage in Canada for power and flood control benefits in Canada and the United States. The United States was also permitted to build Libby, which backs water about 40 miles into Canada, on the Kootenay River in Montana with 5 million acre-feet of storage. This more than doubled the storage in the Northwest at that time.

Operation of the Treaty projects virtually eliminated the threat of devastating floods on the Columbia River. The United States paid to Canada $64.4 million in 1964 for one-half of the estimated flood control benefit through 2024.

The operation of Canadian Treaty storage provides very important power benefits to the United States by reshaping the flow of the Columbia River to meet demand for electricity in the Northwest. Canada, under the Treaty, is entitled to one-half of the estimated increase in downstream power benefits in the United States due to the operation of Canadian storage, termed the Canadian Entitlement, and computed in accordance with procedures outlined in the Treaty. Current estimates of the Canadian Entitlement are up to 1,400 megawatts of capacity and 550 average megawatts of energy.

Question: Is implementation of the Treaty voluntary?

Answer: No. The Treaty has a minimum term of sixty years that started in 1964 and continues until at least 2024. Either country may terminate the Treaty, except for certain provisions, after 2024, with at least 10 years notice.

Question: How much latitude does the U.S. have in coming up with Annual Operating Plan and Detailed Operating Plans under the Treaty?

Answer: The Treaty requires that the Entities prepare an Assured Operating Plan for Canadian Treaty storage for the sixth succeeding operating year in accordance with Annexes A and B of the Treaty. The Treaty requires that the Assured Operating Plan be prepared on the basis of optimum power and flood control benefits in the United States and Canada.

Treaty Article XIV 2 (k) permits the Entities to prepare and implement Detailed Operating Plans that may produce results more advantageous to both countries than those that would arise from operation under the plans referred to in Annexes A and B. The Entities typically develop and implement Detailed

Operating Plans that are based on the Annual Operating Plan and contain revisions as mutually agreed

Question: It is my understanding that BPA, as the US Entity under the Treaty, has been negotiating new agreements and plans related to the Treaty Would you describe them please?

Answer: At the time the Treaty was signed in 1964, Canada did not have a demand for its Entitlement A group of United States utilities formed the Columbia Storage Power Exchange corporation to purchase the Entitlement from Canada for a period of 30 years. This purchase expires in phases beginning in 1998 through 2003. At that time, the United States Entity must deliver the Entitlement to Canada at a point near Oliver, British Columbia, unless the Entities agree to other arrangements pursuant to the Treaty.

In 1994, the United States and Canada negotiated principles for proposed agreement for delivery and disposition of the Canadian Entitlement The major components of the proposed agreement provide that First, the United States will deliver Canada's Entitlement over existing lines rather than over a new high-voltage line which otherwise would have to be built, probably from Grand Coulee to Oliver, British Columbia, Second, the United States will permit Canada to dispose of all or a portion of the Canadian Entitlement in the United States, and Finally, the United States will purchase through September 15, 2024, that portion of the Canadian Entitlement capacity that exceeds 950 megawatts for $180 million, U S This capacity, estimated to be as much as 450 megawatts, would otherwise be delivered to Canada

The Entities are currently negotiating the Entity, Entitlement capacity buy down, and transmission agreements to implement the principles The disposition of the Canadian Entitlement in the United States will be authorized by an exchange of notes between the United States and Canadian governments

The United States Entity and Bonneville are also negotiating renewal of the Pacific Northwest Coordination Agreement and the Canadian Entitlement Allocation Agreements, two other agreements related to the Treaty. Under the proposed Canadian Entitlement Allocation Agreements, non-Federal dam owners with projects located downstream of Treaty storage will finance the $180 million Capacity Entitlement capacity buy down in satisfaction and settlement of their obligation to deliver Entitlement capacity to the United States Entity for delivery to Canada An evaluation of the environmental impacts of the delivery of the Entitlement, the Canadian Entitlement Allocation Agreements, and the Pacific Northwest Coordination Agreement are being conducted in accordance with the National Environmental Policy Act No final decisions respecting these agreement will be made until these processes have been concluded

Question Why are the Pacific Northwest Coordination Agreement and the Canadian Entitlement Allocation Agreements involved with our ability to implement the Treaty?

Answer The projects in the United States that benefit directly from the operation of Canadian Treaty storage, and thus have shared the obligation to deliver the Canadian Entitlement, are situated on the Columbia River downstream of Treaty storage There are eleven dams located on the Columbia River downstream of Treaty storage Six of the dams are Federally owned. The other five dams are owned by public utility districts in the State of Washington, and their output is divided among a host of publicly-owned and investor-owned Northwest utilities These non-Federal project owners generate approximately 25 to 30 percent of the Canadian Entitlement. The Canadian Entitlement Allocation Agreements are the agreements through which the non-Federal projects' shares of the Canadian Entitlement obligation are determined and delivered to the United States Entity

Because the Treaty assumes a coordinated United States operation of hydroelectric resources, the Pacific Northwest Coordination Agreement is an important vehicle to fully realize the benefits envisioned by the Treaty The non-Federal dam owners argue that they cannot realize the power benefits from the Treaty unless operation of the hydroelectric projects in the United States is coordinated through the Pacific Northwest Coordination Agreement or similar agreement Without such coordination, these project owners assert they will not agree to deliver approximately 30 per cent of the Canadian Entitlement that they generate and will not sign the Canadian Entitlement Allocation Agreements, which could increase the percentage of Canadian Entitlement which Bonneville must deliver to Canada to satisfy the total obligation

These contracts permit the harmonious and productive use of the Treaty benefits and they assure that the obligation of the United States to Canada is appropriately shared between Federal and non-Federal beneficiaries

Question We have heard that legal challenges have been made to the renegotiation of these proposed agreements Would you describe them please?

Answer On December 22, 1994, a coalition of environmental groups led by Idaho Rivers United, as well as the Yakima Indian Nation, served a 60 day Notice Of Intent to sue under the Endangered Species Act against Bonneville, the U S Army Corps of Engineers, the Bureau of Reclamation, and the National Marine Fisheries Service The Notice of Intent states that Bonneville and the other Federal agencies violated the Endangered Species Act by, among other things, failing to consult with the National Marine Fisheries Service over effects on the listed salmon of the delivery of the Canadian Entitlement, the renegotiation of the Canadian Entitlement Allocation Agreements, the renegotiation of the Pacific

Northwest Coordination Agreement, and the overall operation of Treaty storage water A similar Notice of Intent to sue was previously served by the State of Oregon. The 60 day notice has passed, and at this time, no lawsuits have been filed

However, on February 6, 1995, the same environmental coalition led by Idaho Rivers United, filed suit in the Ninth Circuit Court of Appeals alleging violations of the Northwest Power Act and the National Environmental Policy Act These parties allege that Bonneville failed to fully consider fish impacts of the return of the Canadian Entitlement, the Canadian Entitlement Allocation Agreements, and the Pacific Northwest Coordination Agreement during the course of negotiating these agreements There are no alleged violations of the Endangered Species Act Bonneville filed a motion to dismiss the petition for lack of jurisdiction because, among other things, these agreements are still being negotiated and Bonneville has not made any final decisions subject to judicial review

Question What is the impact of these lawsuits on your negotiation of these proposed agreements and on your ability to comply with the terms of the Treaty?

Answer: Notwithstanding the legal challenges involving these particular agreements, the United States Entity is expected to take action necessary to perform its Treaty obligation, including making arrangements for the delivery of the Canadian Entitlement If the obligation to Canada cannot be performed as currently being negotiated because of constraints due to United States law, the United States will consider alternative methods of satisfying the Treaty obligation

Although the United States' obligation to Canada would remain even after a failure to execute new Canadian Entitlement Allocation Agreements and Pacific Northwest Coordination Agreement, such a failure would increase the cost to Bonneville, and its ratepayers, of complying with the Treaty. For example, the non-Federal project owners have considered financing the $180 million in consideration for satisfaction of their obligation to return their share of the Canadian Entitlement capacity obligation The non-Federal project owners have advised Bonneville that they have been advised by legal counsel that the financing is not possible given the expectation of Endangered Species Act and other litigation which might challenge the validity of the agreements If Bonneville must proceed with other financing arrangements to make the $180 million payment to Canada because the non-Federal project owners are unable to obtain financing due to threatened Endangered Species Act litigation, Bonneville may have to arrange for alternative, third party financing or borrow the $180 million from the Treasury, or negotiate alternative arrangements for meeting the United States' Treaty obligation to Canada Bonneville would prefer to avoid these outcomes.

Question: Can the problems raised by these lawsuits be solved administratively?

Answer Bonneville will explore whether some arrangement can be identified which would enable the non-Federal project owners to finance the $180 million necessary for the capacity "buy down," notwithstanding the threat of Endangered Species Act and other potential litigation.

Question Would it be helpful for Congress to direct implementation of the Treaty, and negotiation of these related contracts and plans, notwithstanding the statutes relied upon in these lawsuits?

Answer Senator Hatfield, we believe it is premature for Congress to consider legislative mechanisms for implementation of the Treaty to insure that both Treaty and environmental responsibilities are satisfied

NONDEPARTMENTAL WITNESSES

NATURAL RESOURCES DEFENSE COUNCIL

STATEMENT OF RALPH CAVANAGH, DIRECTOR

Senator HATFIELD. I would like to now invite the third panel, Mr. Mark Crisson, the director of utilities at Tacoma Public Utilities; Mr. Richard E. Dyer, senior vice president, Portland General Electric Co.; Mr. Richard Holder, president and CEO of the Reynolds Metals Corp.; Mr. K.C. Golden, Northwest Conservation Act Coalition; and Mr. Ralph Cavanagh, Natural Resources Defense Council.

Let me also say that we have invited a gentleman from the fourth panel, Mr. Warren Seyler, who is the chairman of the Spokane Indian Tribe, in Washington, because both Mr. Seyler and Mr. Cavanagh have a 5 o'clock plane.

So we are going to let you gentlemen go first, so you can make your plane.

Mr. CAVANAGH. Thank you, Mr. Chairman.

Mr. Chairman, my name is Ralph Cavanagh, from the Natural Resources Defense Council. I think it is a good moment to inject one note of optimism in these proceedings, and I would like to do it.

I have worked for the last 16 years with utilities from every State in the region, Mr. Chairman, and I remember when I started we were in the same kind of a crisis, different context. Then it was over electric resource needs for the region.

We have done, I think, an extraordinary job in resolving those conflicts, in moving ahead together on solutions, and I know, Mr. Chairman, that you share our pride in the fact that last year was the best in the history of the region in energy efficiency achievement.

Bonneville and the investor-owned utilities, alone, scored over 130 average megawatts, just over 2 cents a kilowatt hour better than any of the other numbers on Administrator Hardy's chart. Those were good investments and good solutions. Our challenge is to do the same here.

In that spirit, I want to offer part of some of the new suggestions for solutions that you and your colleagues have been asking for, and I want to do it in the context of making Bonneville more competitive.

I believe, and it is my job to know something about the western power markets, that Bonneville is potentially the most formidable competitor in the wholesale power markets, bar none. I know it is the most feared south of the Oregon border.

The principal reason for the problem, and there is a problem, is that Bonneville enters that arena with both hands tied behind its back by a 30-year-old Federal statute that is no longer, in our view, appropriate.

Let me summarize very briefly what the Bonneville problem is. Administrator Hardy has laid out for you scenarios under which customers leave the system and abandon some part of the power that they have been purchasing from Bonneville.

The normal response in a competitive market is to try to find other customers, and as the marketplace opens up, Bonneville has more potential customers available to it. But Bonneville, because of that 30-year-old statute can only make short-term sales when it is finding a customer out of the region.

If it is selling in the region, anytime you buy from Bonneville, you become a kind of Typhoid Mary that is automatically subject to Federal statutory restrictions on your own resale out of the region.

This is if you are a Bonneville customer in the Northwest. And no matter who you are, Bonneville has to go through extraordinary paperwork requirements documenting the sale, and none of these restrictions are applicable to any of Bonneville's competitors.

Now, in an era generally hospitable to free trade it seems like somebody forgot about Bonneville, and we think it is time to do something about that.

We also acknowledge that that solution has to be respectful of the regional tradition of public preference, it has to be respectful of Bonneville's obligations to its existing customers, and, in general, the solution has to be one that works essentially for all of the major interests in this room.

What we put on the table, and I will just close on the proposal, and I want to emphasize it is only that, and we look forward to further discussion, is that in situations where a Bonneville customer abandons the system and signs a long-term contract with someone else, that Bonneville ought to be able to resell that power in the marketplace after giving all the public preference customers a chance to go ahead and step in and replace that departing buyer, if they want to.

Senator HATFIELD. Other than a spot market.

Mr. CAVANAGH. Absolutely, Senator. In other words, the problem we are dealing with is that when Bonneville has to go to the spot market, it loses a penny a kilowatt hour pretty much automatically, compared to what it could make in an open market.

And the difference that makes, just to summarize for Administrator Hardy, some of Bonneville's internal resource projections are looking at a possibility of 1,000 average megawatts of load leaving.

The difference between the spot market and the free market, in terms of those resales, is easily on the order of $100 million a year.

It seems to me, again, that if we can find a way to let Bonneville resell abandoned power in the free market, as opposed to this artificially constrained market, all Bonneville customers stand to benefit.

So that is what we would like to urge this committee and our colleagues at this hearing to work on as part, not all of, heaven knows, but part of the solution to making Bonneville more competitive and letting it find solutions to the fish problem comparable to those we found on the efficiency side.

PREPARED STATEMENT

We offer that for discussion. We offer it in recognition of the fact, Mr. Chairman, that all of us have a stake in a more productive and competitive Bonneville, and we hope to be able to bring those solutions forward with you in the months immediately ahead.

Senator HATFIELD. Thank you, Mr. Cavanagh.

[The statement follows:]

PREPARED STATEMENT OF RALPH CAVANAGH

This statement presents the views of the Natural Resources Defense Council (NRDC). NRDC is a national, nonprofit environmental organization with more than 6,500 members from the four Northwest states. Since 1979, I have directed NRDC's Northwest projects, and I have spent much of that time working with the Bonneville Power Administration (BPA) and many of its utility and industrial customers. My colleagues and I have focused particularly on the energy-efficiency, renewable energy and fish and wildlife provisions of the Pacific Northwest Electric Power Planning and Conservation Act ("the Regional Act").

I believe strongly in the Regional Act's mandates and will be glad to respond to questions about them, but my focus today is on a different set of statutory provisions. NRDC has concluded that outmoded federal restrictions are frustrating BPA's ability to compete in regional power markets, to the detriment of all within reach of the agency's generation system. Those restrictions mean escalating costs for current and prospective BPA customers and the millions of people whom they serve.

Let me begin by summarizing briefly the restrictions to which I refer, most of which can be found at 16 U.S.C. §837b. Assume that a BPA customer leaves the agency to sign a long-term contract with another supplier, as some apparently intend. BPA's capacity to find another buyer for the abandoned power is hobbled in at least three significant respects: (1) if the purchaser is located outside the Northwest, BPA must constrain the sale's term to five years for capacity and sixty days for energy; (2) if the purchaser is a Northwest customer, that customer's rights to make parallel sales outside the region are automatically restricted;[1] and (3) BPA must make complex and time-consuming demonstrations that the power sold is "surplus" and cannot be "conserved" for future use by Northwest buyers. In an increasingly fluid and open wholesale market, these are anachronistic and burdensome shackles. None of the numerous utilities and independent suppliers that compete with BPA face comparable restrictions.

What difference does this disparity make to BPA and the region? Consider the following market data: BPA's competitors are offering long-term contracts in the 3–3.5 cents per kilowatt-hour (kWh) range; the price of short-term "nonfirm" power recently has been at or below 1.8 cents/kWh;[2] BPA's average rates for its own long-term sales to industries and publicly owned utilities are now about 2.7 cents/kWh.

BPA now thinks it is at risk of losing about 1000 average megawatts (aMW) of load to other suppliers over the next two years; if so. then for every ½ cent per kilowatt-hour that BPA's resale prices are depressed by statutory restrictions, BPA and its remaining customers will lose about $44 million per year.[3] As the market figures show, the difference between short-term and long-term markets today is at least one cent per kilowatt-hour; yet whenever a BPA customer leaves, the agency is forced to seek replacement revenues solely from the least lucrative portion of the marketplace.

Almost everyone loses under this system. Customers outside the region are deprived of valuable products and services. Customers inside the region who stay on the BPA system pay higher rates, because BPA cannot fully replace lost income. BPA management, fearing a "death spiral," cuts back on all long-term investments, including many that are essential to meeting Regional Act goals and delivering regionwide benefits. At the top of that list are energy efficiency improvements, renewable energy resources, and fish and wildlife restoration.

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[1] The statute restrains BPA sales to Northwest customers that could be said to be using the BPA power as "replacement, directly or indirectly, within the Pacific Northwest for hydroelectricity delivered for use outside that region by a non-Federal utility." 16 U.S.C. §83b.

[2] For the week of February 27 to March 3, *Clearing Up* reports peak non-firm prices in the range of 1.35–1.8 cents per kilowatt-hour. Off-peak prices were in some instances below one cent per kilowatt-hour. *Clearing Up*, March 6, 1995, p. 2.

[3] Each average megawatt represents 8,766,000 kilowatt-hours.

I am here to outline a simple and nondisruptive response to this problem. Our proposal is respectful of the region's strong tradition of public preference, and of BPA's existing obligations to all its Northwest customers. We also recognize that all who care about the Regional Act's environmental goals have a stake in BPA's capacity to meet or exceed its revenue targets. And we acknowledge the inexorable trend toward increased competition in regional power markets. There is no inconsistency between the Regional Act and greater competition—unless BPA is denied a reasonable opportunity to compete.

I also emphasize that this proposal is not intended to preempt discussion of other options for replacing lost revenues from departing BPA customers, some of which almost certainly will surface at today's hearing. All these alternatives need a full airing, and the best solution may well involve elements of more than one. This hearing begins a process of negotiation among all affected interests, which should result in more open and productive power markets.

We offer for your consideration, and those of our regional colleagues, the following provisions of a new Northwest Power Act to Promote Wholesale Competition:

1. BPA would continue to provide first call on all available federal power from whatever source to public-preference customers in the Pacific Northwest to meet their firm power load requirements as defined by section 5(b) of the Regional Act and the Bonneville Project Act. BPA would also meet its obligations, if any, to provide requirements service to investor-owned utilities under section 5(b), and any service obligation to existing DSI customers up to their contract demand under section 5(d).

2. If BPA were left with surplus federal firm power because of abandonment of that service by a public-preference customer, it would offer first to sell the surplus firm power on a one-time basis through additional long-term sales to Northwest public preference customers. Any such customer who wished could make additional purchases up to the limit of the firm surplus, provided that it were willing to pay the price established for comparable BPA transactions with other public preference customers.

3. Any surplus federal firm power remaining could be sold without restrictions to any customer, subject to its ability to take delivery of and pay for the power. BPA would be authorized to negotiate flexible pricing and terms. Items 1 and 2 above would be deemed to satisfy the current statutory tests to determine whether power is needed to meet the "energy requirements" and "firm power load requirements" of Northwest customers, and deemed also to satisfy the current tests for "surplus power" under Regional Act § 9(c) and Public Law 88–552.

I reemphasize again that this is an initial proposal, offered in a constructive spirit for discussion with other participants. A remarkably wide range of otherwise disparate interests have a stake in a healthy and productive BPA. No one can or should guarantee competitive success for the agency, but we hope that its management and others can unite around creating a more open marketplace for BPA products and services.

SPOKANE TRIBE OF INDIANS

STATEMENT OF WARREN SEYLER, CHAIRMAN

Senator HATFIELD. Mr. Seyler.

Mr. SEYLER. Thank you, Mr. Chairman, and members of the subcommittee. It is an honor for me to appear before you today. My name is Warren Seyler, and I am chairman of the Spokane Tribe. I am also chairman of the Upper Columbia United Tribes.

The Spokane Tribe is historically a fishing tribe, and while we now rely primarily on timber for revenue, for tribal revenue, fishing is a primary concern, for both its cultural and economic value.

The Spokane Tribe is one of four tribes located on the headwaters of the Columbia River above Lake Roosevelt in the States of Washington and Idaho. Funding provided by Bonneville Power Administration has been helpful to the UCUT Tribes in establishing mitigation programs.

The BPA, as part of the Federal Government, has a trust responsibility to the Indian nations to preserve our natural resources, particularly the fisheries.

We have heard rumors of a possible privatization of BPA and would oppose such a move. In our view, a private power company could not be chartered with a trust mandate to Indian people that would have no incentive to participate in mitigation.

Beginning in 1939, the Grand Coulee Dam blocked salmon runs to the Spokane territory. The tribe received no mitigation for this loss until a hatchery was constructed on the reservation by BPA as partial mitigation for salmon losses.

The tribe is now stocking over 2 million salmon and 500,000 rainbow trout from the hatchery into Lake Roosevelt, and is also managing a wild population of walleye pike in the lake.

We are not at all sure whether our resident fish will survive the efforts to save the salmon, although we do not oppose such efforts.

Recent events threaten the habitat of our resident fish. Efforts to save the anadromous fish may lead to the destruction of the fish in Lake Roosevelt, because the Government is using a variety of untried and unproven methods to ensure that the smolts can return downriver.

The newest method is flushing at the dam sites with a release of large amounts of water. We are concerned that this method for insuring the migration of smolts will, in turn, endanger resident fish by reduction of the lake levels and by depletion of nutrients necessary for the survival of the fish.

Mr. Chairman, there are reports that the Northwest Power Planning Council's Fish and Wildlife Program is proposing to release 8.25 million acre feet of water from the upper Columbia River basin as part of its efforts to protect the anadromous fish populations.

The National Marine Fisheries Service, in its recently issued biological opinion concerning hydrosystem operations by BPA, Corps of Engineers, and Bureau of Reclamation proposed that these agencies release 10.2 million acre feet of water from the upper Columbia basin.

Our biologists inform us that water releases of this magnitude will cause resident fish in Lake Roosevelt to be flushed through Grand Coulee Dam and will reduce nutrient levels in the lake.

Nutrient levels are of critical concern, because the productivity of the reservoir is dependent upon nutrients. Lower nutrients mean lower plankton productivity, resulting in poor fish growth.

Either level of proposed water releases would be too high, in our view. We simply do not have sufficient information on the impact of such releases. Thus, while the Government, through NMFS, the Corps of Engineers, BPA, and BOR, is using untested methods to try to save anadromous fish, it may well be doing so at the expense of the resident fish.

The Spokane Tribe is dependent both on recreational and economic reasons to preserve the resident fish.

Even if the results for the lake fish are not as dire as we fear, any damage, if reversible, will certainly take years to correct.

The UCUT Tribes respectfully request funds to study the effects of recent mitigation efforts on the fish in Lake Roosevelt, as well as resident fish in the Box Canyon of the Pend Oreilles River, Lake Couer d'Alene, and the Idaho portion of the Kootenai River.

This kind of study will benefit not just the tribe, but all of the people living in the region. I also request for permission to submit additional information for the record of this hearing.

Senator HATFIELD. We will be very happy to receive it, Mr. Seyler.

[The statement follows:]

PREPARED STATEMENT OF WARREN SEYLER

Mr. Chairman and Members of the Subcommittee, it is an honor for me to appear before you today. My name is Warren Seyler and I am Chairman of the Spokane Tribe which is located in Eastern Washington. The Tribe has over 2,000 members and the Reservation is 156,000 acres. The Spokane was historically a fishing tribe and, while we now rely primarily on timber for tribal income, fishing is a primary concern, for both its cultural and economic value.

The Spokane Tribe is one of four Tribes located on the headwaters of the Columbia River above Lake Roosevelt in the States of Washington and Idaho. The Tribes make up the Upper Columbia United Tribes (UCUT) organization which in turn contracts with the Department of the Interior for many of the mitigation programs necessary to protect resident fish populations. As you know, Lake Roosevelt was created by the construction of the Grand Coulee Dam, one of the largest dams in the world. The Dam flooded many hydropower sites on the Spokane River, as well as tribal fisheries that had been in use by the Tribe for centuries.

Funding provided by the Bonneville Power Administration has been helpful to the UCUT tribes in establishing mitigation programs. The BPA, as part of the Federal government, has a trust responsibility to the Indian nations to preserve our natural resources, particularly the fisheries. We have heard rumors of a possible privatization of BPA and would oppose such a move. In our view, a private power company could not be chartered with a trust mandate to Indian people and would have no incentive to participate in mitigation.

Beginning in 1939, the Grand Coulee Dam blocked salmon runs into Spokane territory. The Tribe received no mitigation for this loss until a hatchery was constructed on the Reservation by BPA as partial mitigation for salmon losses under the Columbia River Basin Fish and Wildlife program, developed by the Northwest Power Planning Council under the auspices of the Northwest Power Planning and Conservation Act of 1980. The Tribe is now stocking kokanee salmon and rainbow trout from the hatchery into Lake Roosevelt and is also managing a wild population of walleye pike in the Lake. We are not at all sure whether our resident fish will survive the efforts to save endangered salmon.

Recent events threaten the habitat of our resident fish. In addition to blocking former spawning areas, hydroelectric dams kill juvenile salmon migrating towards the Ocean. Some of the fish are killed outright as they pass through turbines. Others have trouble finding their way through the dams and reservoirs which slows down their migration, reducing their survival once they reach the ocean. As a result, several stocks of the remaining salmon in the Snake River are listed as endangered. Efforts to save this anadromous fish may lead to the destruction of the fish in Lake Roosevelt because the government is using a variety of untried and unproven methods to ensure that the smolts can return downriver to the Pacific. The newest method is "flushing" at the dam sites with a release of large amounts of water. We are concerned that this method for insuring the migration of the smolts will in turn endanger resident fish by reduction of Lake levels and by depletion of nutrients necessary for the survival of the fish.

Mr. Chairman, there are reports that the Northwest Power Planning Council's Fish and Wildlife program is proposing a release of 8.25 million acre feet of water from the Upper Columbia basin as part of its effort to protect the anadromous fish populations. The National Marine Fisheries Service in its recently issued biological opinion concerning hydrosystem operations by BPA, Corps of Engineers and Bureau of Reclamation proposed that these agencies release 10.2 million acre feet of water from the Upper Columbia basin. Our biologists inform us that water releases of this magnitude will cause resident fish in Lake Roosevelt to be flushed through Grand Coulee Dam and will reduce nutrient levels in the Lake. Nutrient levels are of critical concern because the productivity of the Reservoir is dependent upon nutrients. Lower nutrients mean lower plankton productivity resulting in poor fish growth.

Either level of proposed water releases would be too high in our view. We simply do not have sufficient information on the impact such releases would have on exist-

ing fish populations to support the release of such quantities of water. Thus, while the government, through NMFS, the Corps of Engineers, BPA and BOR, is using untested methods to try to save anadromous fish, it may well be doing so at the expense of the resident fish of Lake Roosevelt upon which the Spokane Tribe is dependent both for recreational and economic reasons. Even if the results for the Lake fish are not as dire as we fear, any damage, if reversible, will certainly take years to correct. The UCUT tribes respectfully request funds to study the effects of recent mitigation efforts on the fish in Lake Roosevelt, as well resident fish in the Box Canyon of the Pend Oreilles River, Lake Couer d'Alene and the Idaho portion of the Kootenai River. This kind of study will benefit not just the Tribe but all of the people living in the region.

We have two additional requests. The first is that an appropriate Committee of the Congress hold hearings on this subject, preferably in Spokane, Washington, and the second is for permission to submit additional information for the record of this hearing.

Senator HATFIELD. Let me say to both of you, Mr. Cavanagh and Mr. Seyler, we will submit some questions to you that we would have used this time to ask, so you better get on your way and get out to the airport.

Mr. SEYLER. Thank you very much.

Senator HATFIELD. Thank you.

TACOMA PUBLIC UTILITIES

STATEMENT OF MARK CRISSON, DIRECTOR OF UTILITIES

Senator HATFIELD. Let us go back now to the panel as we had originally announced it. Mr. Mark Crisson, the director of utilities at Tacoma Public Utilities.

Mr. CRISSON. Yes; thank you, Mr. Chairman. Good afternoon. I would begin by requesting that my entire statement be entered into the record of this hearing. What I would like is to present an abbreviated version of that in my records this afternoon.

Senator HATFIELD. Thank you.

Mr. CRISSON. I am Mark Crisson, the director of utilities for the city of Tacoma. I am here today as a spokesman for both my utility, which is among Bonneville's 10 largest customers, as well as over 100 other consumer-owned utilities in the Northwest.

Public power has a huge stake in the outcome of your hearing on the costs of salmon recovery, and Bonneville Power Administration's future competitiveness.

Since the first Federal dams were built in the 1930's, the customers of consumer-owned utilities have relied on Bonneville as their major supplier of power.

Most public utilities receive all of their wholesale power from Bonneville, and even those of us with our own generation rely on Bonneville to supply a large share of our load. In our case, Mr. Chairman, we receive about 50 percent of our power requirements from Tacoma, about 300 megawatts annually.

This partnership between the Federal system and the public has been a cornerstone of our region's prosperity and growth.

Over the past months, a number of us have contributed our time and energy to working with Bonneville to try to sort out some of the issues that threaten its future competitiveness, and you have heard a lot about that from Administrator Hardy, but we keep coming back to one overriding concern, and that is the impacts of what we view to be radical salmon recovery measures, which are threatening to put Bonneville out of business.

Please do not misunderstand. We support environmentally responsible fish and wildlife protection. In the past, we participated in your salmon summit, enjoying your views, Senator Hatfield, and other Northwest leaders in support of the plan developed by the National Marine Fisheries Service's independent recovery team, led by Dr. Donald Bevan.

We ask you to urge the National Marine Fisheries Service to adopt this plan as a formal plan for salmon recovery. The recovery team's plan focuses on much more than just river passage.

Their plan is comprehensive, and if implemented, will work as a long-term solution for salmon over the entire Columbia River basin.

With respect to the fish survival at the dams, the recovery team's plan includes measures that provide for safe migration of both juvenile and adult salmon, without requiring the dismantling of the hydropower system and the attendant rate impacts.

We are calling on you to keep that from happening, because the Federal hydropower system is clearly among our region's foremost assets.

Public power continues to support salmon recovery programs that are based on good science, but salmon recovery must be both balanced and effective.

Current Federal mandates to drastically change river operations are threatening Bonneville's competitive position and the decades-long relationship the Government has with public power.

Ultimately, Bonneville's ability to fund fish recovery will be constrained by the competitive market price of power, and to remain competitive, Bonneville must control its costs.

I cannot overemphasize this last point. My past experience in the private sector and my more recent experience with my commercial and industrial customers confirms that in the competitive market, particularly a competitive commodity market, such as the wholesale power market, there is simply no substitute for controlling costs.

But Bonneville currently has no control over these fish measures that affect hydrogeneration and drive up its costs.

While public power has no desire to abandon Bonneville, some of us are being driven away due to uncertainty about Bonneville's future power rates. Moreover, we cannot commit to paying uncompetitive power rates, particularly when they are caused by these fish measures.

We are being forced by our own retail competitive pressures and direct feedback from many of our customers to look to the marketplace for our power supply, because of both concern about Bonneville's future and competitive offers from other suppliers.

Consequently, we urge the Federal Government to continue its commitment to public power and to the promise of an efficient, economic, affordable, and reliable power supply, without abandoning this commitment to the salmon.

Once a sustainable cost-effective salmon solution is adopted, we commit our support to its implementation and funding. However, this support is dependent on the Government's commitment to good science and a reasonable limit on fish recovery costs borne by the operators of the coordinated hydropower system.

Any limit on fish recovery costs must include all impacts on the operators of the coordinated system, including non-Federal parties.

In our view, Congress must address the level of statutory responsibility Bonneville has to fund salmon recovery directly. Bonneville simply does not have unlimited ability to absorb all costs being assigned it currently for salmon mitigation.

Further, we urge you to resist any proposals to transfer fish costs to transmission or other nonpower revenue sources. We do not support attempts to correct the funding problems by simply shifting the burden to other payment mechanisms such as exit fees or transmission rates.

On the last point, Mr. Chairman, what I would like to do is take this opportunity to enter into the record of this hearing a copy of this letter, which is addressed to President Clinton.

It is being hand delivered today to the White House. It is signed by all of the Northwest investor-owned utilities, several of the major publicly owned utilities, and the direct service industries.

What it stresses is with respect to the point on transmission that Bonneville should provide open access at rates that do not bear costs to subsidize a generation system.

Senator HATFIELD. We will include that in the record.

PREPARED STATEMENT

Mr. CRISSON. Thank you, sir. Let me just conclude by saying that I appreciate the opportunity today to discuss these vital issues with the committee, and public power extends its commitment to work with you to save the salmon, and assure the continued viability of the Bonneville Power Administration.

Thank you.

Senator HATFIELD. Thank you, Mr. Crisson.

[The statement follows:]

PREPARED STATEMENT OF MARK CRISSON

Thank you Senator Hatfield. I am Mark Crisson, Director of Utilities for the City of Tacoma. I am here today as a spokesman for my utility and over 100 other consumer-owned utilities in the Northwest. Public power has a huge stake in the outcome of your hearing on the costs of salmon recovery and Bonneville Power Administration's future competitiveness. We are concerned that because of run-away salmon costs, BPA will no longer be able to provide predictable and reliable supplies of power at stable and competitive rates.

Since the first federal dams were built in the 1930's, the customers of consumer-owned utilities have relied on the Bonneville Power Administration as their major supplies of electricity. Most public utilities receive all of their wholesale power from BPA, and even those of us with our own generation rely on Bonneville to supply a large share of our load. This partnership between the federal system and the public has been a cornerstone of our region's prosperity and growth.

Over the past months, a number of us have contributed our time and energy to helping Bonneville Power Administration sort out the issues that threaten its future competitiveness. We keep coming back to one overriding concern—the impacts of the radical salmon recovery measures are threatening to put BPA out of business.

Without certainty of electricity generation from the coordinated hydropower system, the Northwest's electricity supply is less reliable and more costly. The Columbia River system's hydro projects are operated in a coordinated manner that increases the overall benefits to Northwest citizens. In turn, we are all affected when massive operational changes are mandated in an ill-advised and unscientifically based attempt to restore the weak salmon runs.

Don't misunderstand, we support environmentally responsible fish and wildlife protection. In the past we participated in your Salmon Summit and joined with you, Senator Hatfield, and other Northwest leaders in support of the plan developed by

National Marine Fisheries Service's independent Recovery Team, led by Dr. Donald Bevan. We ask you to urge NMFS to adopt this plan as the formal plan for salmon recovery. The Recovery Team's plan focuses on much more than just river passage. Their plan is comprehensive; and, if implemented, will work as a long-term solution for salmon over the entire Columbia River Basin.

With respect to fish survival at the dams, the Recovery Team's plan includes measures that provide for safe migration of both juvenile and adult salmon—without requiring the dismantling of the hydropower system and the attendant rate impacts. We are calling on you to keep that from happening, because the federal hydropower system is clearly among our region's foremost assets.

Public power continues to support salmon recovery programs that are based on good science. But salmon recovery must be both balanced and effective. Current federal mandates to drastically change river operations are threatening BPA's competitive position and the decades-long relationship the government has with public power. Ultimately, Bonneville's ability to fund fish recovery will be constrained by the competitive market price of energy. To remain competitive, BPA must control its costs.

Bonneville now has no control over fish measures that effect hydro generation and drive up costs. While public power has no desire to abandon BPA, some of us are being driven away due to uncertainty about Bonneville's future power rates. Moreover we cannot commit to paying uncompetitive power rates particularly when they are caused by irresponsible and unwarranted fish protection schemes. We are being forced by our own retail competitive pressures to look to the marketplace for our power supply because of both our concern about BPA's future and the competitive offers from other suppliers.

We urge the federal government to continue its commitment to public power and to the promise of an economic, efficient, affordable and reliable power supply without abandoning its commitment to the salmon. Once a sustainable, cost-effective salmon solution is adopted, we commit our support to its implementation and finding. However, this support is dependent on the government's commitment to good science, and a reasonable limit on fish recovery costs borne by the operators of the coordinated hydropower system. Any limit on fish recovery costs must include all impacts on the operators of the coordinated system, including the non-federal parties.

Further, we urge you to resist any proposals to transfer fish costs to transmission or other non-power revenue sources. We do not support attempts to correct the finding problems by simply shifting the burden other payment mechanisms; such as, exit fees or transmission rates. Congress must address the level of statutory responsibility BPA has to find salmon recovery directly. BPA does not have unlimited ability to absorb all the costs being assigned it for salmon mitigation.

In conclusion, public power urges you to consider the following key points:

(1.) Congress must oppose radical river operation schemes and urge immediate adoption of the Recovery Team's plan.

(2.) BPA's competitiveness will be determined by the marketplace. BPA customers are not a bottomless deep-pocket for finding a fish program that is essentially an unfunded federal mandate. BPA's limited ability to fund fish recovery must be considered and accommodated.

(3.) The impact of salmon recovery is a region-wide issue, not just a problem for BPA. The region's salmon, economy and power supply are all at stake, and there must be a comprehensive, sustainable fix that balances all three.

(4.) Transferring costs to transmission or other non-power services is not an acceptable solution.

Thank you for the opportunity to discuss these vital issues with you today. Public power extends its commitment to work with you to save the salmon and assure the continued viability of the Bonneville Power Administration.

PORTLAND GENERAL ELECTRIC CO.

STATEMENT OF RICHARD E. DYER, SENIOR VICE PRESIDENT

Senator HATFIELD. Mr. Richard E. Dyer, senior vice president of Portland General Electric Co., who has stepped into this situation on very short notice.

Please convey to your president, Mr. Richard Reiten, not only our regrets of his inability to be here, but for the reasons, and that we are very sorry to hear about his father's health situation.

Mr. DYER. Thank you, Mr. Chairman. In fact, Mr. Reiten sends his regards and regrets that he cannot be here today.

For the record, I am Richard Dyer, a vice president of Portland General Electric Co. If I may submit for the record my written comments and just summarize a few points in the interest of time, I will do that.

Senator HATFIELD. We will be very happy to receive the full statement.

Mr. DYER. Let me note also for the record that my testimony is supported by the investor-owned utilities of Pacific Northwest.

PGE is Oregon's largest electric utility, providing service to a population base of over 1.3 million people and many of Oregon's largest employers.

Two years ago our company made a very tough decision, which was a decision to permanently close our largest generating resource, the Trojan Nuclear Power Plant. We did that because future operating costs of that plant were projected to exceed the cost of replacement power. Today we serve 40 percent more customers than we did a decade ago, and with 25 percent fewer employees.

Our utilities in the Northwest had to make equally difficult decisions, cutting back hundreds of employees, merging with competitors, selling off subsidiaries, and reducing dividends to shareholders, which I might note in political terms is our equivalent of Bonneville stiffing the Treasury.

Mr. Chairman, my first observation is that like the rest of us, BPA will continue to struggle and ultimately may falter if they cannot regain control of their costs. This is not a question of whether salmon recovery should be funded.

What I am saying is that fish costs are Bonneville's fastest growing expense, and must be addressed in some fashion.

We have a situation where their costs are growing almost unchecked, and at the same time, have biological opinions that reduce their output. In a competitive environment, that is not a winning equation.

My second observation is that what has catalyzed this need to control costs is emergence of new, rapidly constructed, low-cost, and highly efficient electric generation.

This new generation is being coupled with energy marketers who wheel that power long distances to end-use markets.

So what are we to do with Bonneville's escalating fish costs? Some of the questions are: Who should pay? How does Congress deal with Bonneville's competitiveness, when everyone, including our companies, are under the same competitive pressures?

First, I would like to offer a recommendation that imposing a fish tax on Bonneville's transmission system is unacceptable. It penalizes electric customers who must use BPA's transmission lines, even though they are not buying power from Bonneville.

It also reduces the economic efficiency of the transmission system, which is being used to benefit fish through power exchanges with California.

It also ignores our history under the Bonneville Transmission Act, whereby non-Federal parties have been encouraged to allow Bonneville to construct key transmission lines linking generating projects with non-Federal load centers.

Now, the point here is that Bonneville markets about 45 percent of the electric generation in the Northwest, but controls a near monopoly of 80 percent of the bulk transmission system.

My second point is that any legislation proposing a cap on fish costs should recognize that a cap for BPA raises complicated issues of equity for non-Federal parties who are similarly impacted a salmon recovery plan. Fish costs are a regional concern, and must be addressed with a regional solution.

I might just note quickly that all of the numbers you heard bandied about today only describe the affects on the BPA system, and there are significant affects on non-Federal operators as well. These are some of the unintended consequences.

I might point out that there are many non-Federal hydro projects in the Northwest located below Federal storage reservoirs.

When the water stored in these projects is released, primarily in the spring and summer to help migrating fish rather than throughout the year, the impacts to our hydro projects is staggering.

The situation, for example, in 1995 is that non-Federal hydro projects located in eastern Washington and western Montana, which are physically disconnected from the problems facing Snake River chinook and sockeye salmon in Idaho, will have realized a greater loss of seasonal hydro generation than all of the Federal projects located on the Snake River.

Mr. Chairman, we recognize the need to help Bonneville with its short-term financial problems, and, at the same time, assure that Federal and non-Federal electric customers benefit from falling electric prices.

Meeting our obligation to restore the Northwest's most important cultural heritage, healthy populations of wild salmon, is everyone's goal, but I also believe that nurturing the emerging competitive industry in electricity markets is a benefit to the whole region as well.

PREPARED STATEMENT

I am confident that in the end an appropriate balance can be achieved, and our utilities are committed to work with you to find that balance. Thank you.

Senator HATFIELD. Thank you very much, Mr. Dyer.

[The statement follows:]

PREPARED STATEMENT OF RICHARD E. DYER

Mr. Chairman, Portland General Electric is Oregon's largest electric utility, providing service to a population base of over 1.3 million people and many of Oregon's largest employers. We own and operate a diverse set of generating resources, but also have the largest non-federal ownership of the Pacific Northwest Intertie, which allows us to exchange significant quantities of electricity at the wholesale level with entities in California.

The reality of meeting a large payroll, servicing debt obligations, keeping customers satisfied, and meeting regulatory and environmental requirements is not unique to Bonneville. We are also dealing with the challenges of a competitive electric industry. The investor-owned utilities of the Pacific Northwest are positioning to compete in an environment of open transmission access and retail wheeling. So, we know what Randy Hardy is facing.

CHANGE IS HAPPENING TO ALL OF US

Mr. Chairman, there are two observations I would like to share with the Committee as we move forward with a discussion about Bonneville and the Northwest's energy future.

Two years ago, PGE made a tough decision to permanently close our largest generating resource—the Trojan nuclear power plant—because future operating costs were projected to exceed the cost of replacement power. Today we serve 40 percent more customers than we did a decade ago with 25 percent fewer employees. Other utilities have had to make equally difficult decisions—cutting back hundreds of employees, merging with competitors, selling off subsidiaries, and reducing dividends to shareholders, which in political terms is our equivalent of Bonneville's stiffing the Treasury. So why am I telling you this?

Mr. Chairman, my first observation is that like the rest of us, BPA will continue to struggle, and ultimately may falter, if they cannot regain control of their costs. This is not a question of whether salmon recovery should be funded. What I am saying is that fish costs are Bonneville's fastest growing expense, and this cost must be addressed in some fashion.

My second observation, Mr. Chairman, is that what has catalyzed this need to control costs in the utility industry is the emergence of new, rapidly constructed, low cost, and highly efficient electric generation. This new generation is being coupled with energy marketers who wheel that power long distances to end-use markets.

By way of illustration, in the 1980's we projected marginal energy costs (that is the next new unit of electricity) to fall between 60 and 70 mills by 1995. Increased competition and declining natural gas prices have instead dropped marginal costs to between 30 and 35 mills—nearly a 50-percent reduction. Mr. Chairman, as I mentioned earlier when discussing our decision to close the Trojan plant, the situation now facing Bonneville and all of us in the region, is the confluence of two forces—rising operating costs due to the cost of salmon restoration measures—juxtaposed against the declining costs of new generating resources available to Bonneville and its competitors.

FISH COSTS AND BONNEVILLE

What then are we to do with Bonneville's escalating fish costs? Who should pay? How does Congress deal with Bonneville's competitiveness when everyone is under the same pressures? I don't have the answers, but I would offer you two recommendations that I'd like to discuss briefly.

First, imposing a fish tax on BPA's transmission system is unacceptable. It penalizes electric customers who must use BPA's transmission lines even if they aren't buying power from Bonneville. It reduces the economic efficiency of the transmission system which is being used to benefit fish through power exchanges with California. It ignores our history under the BPA Transmission Act whereby non-federal parties have been encouraged to allow BPA to construct key transmission lines linking generating projects with non-federal load centers.

Mr. Chairman, BPA markets about 45 percent of the electrical generation in the Northwest, and it owns a near monopoly of 80 percent of the bulk transmission system. Many non-federal projects, including coal plants, natural gas plants, and hydroelectric plants, are located far from the areas being protected for salmon, but they use Bonneville transmission lines to move the power to the consumer. If the contention is that the federal hydro projects have contributed to the salmon problem, wouldn't we want to encourage the use of the other generating facilities that are not part of the ESA debate? Is this tax being proposed simply because there is no other transmission provider?

The Columbia Basin's hydroelectric system is now providing huge surpluses of energy during spring and summer months. Pushing fish costs on to the BPA transmission system reduces the attractiveness of using power exchanges with California as a mitigating tool to defray the costs of these seasonal shifts in hydroelectric generation.

Finally, a fish tax on transmission contradicts the Northwest Power Act and National Energy Act's stated goal of promoting fair and open access to transmission systems. Instead of encouraging willing utility buyers and sellers of wholesale power to maximize the use of the existing generating resources, I am afraid it would encourage building new electric generation for no other reason than to avoid the use of the transmission system altogether.

Mr. Chairman, my second recommendation is that, any legislation proposing a cap on fish costs should recognize that a cap for BPA raises complicated issues of equity

for non-federal parties who are similarly impacted by the Salmon Recovery Plan. Fish costs are a regional concern and must be addressed with a regional solution.

My concern about equity is one of unintended consequences. There are many non-federal hydro projects in the Northwest located below federal storage reservoirs. When the water stored in these projects is released, primarily in the spring and summer to help migrating fish rather than throughout the year, the impacts to our hydroelectric projects is staggering.

I am not a fisheries biologist, but think for a minute how you would deal with the equitable resolution of a situation where in 1995, non-federal hydroelectric projects located in eastern Washington and western Montana—which are physically disconnected from the problems facing Snake River chinook and sockeye salmon in Idaho—will have realized a greater loss of seasonal hydro generation than all the federal hydro projects located on the Snake River?

Our customers are going to ask, "Why does Congress consider compensation to offset BPA fish costs when we must bear the full brunt of those costs?" In pursuing a cap on BPA fish costs, the Senate should also quantify precisely what these non-federal impacts might be and develop a process whereby federal and non-federal parties receive the same protection. I am certain that the impacted utilities will assist you in this analysis.

CONCLUDING REMARKS

Mr. Chairman, we need to help Bonneville deal with its short-term financial problems and at the same time assure that federal and non-federal electric customers benefit from the falling energy prices I described earlier.

Meeting our obligation to restore the Northwest's most important cultural heritage—healthy populations of wild salmon—is everyone's goal, but I also believe that nurturing—this emerging competitive electricity market benefits the whole region as well. I am confident that in the end the appropriate balance can be achieved and both of these goals realized.

Mr. Chairman, you have never shied away from dealing with the region's most difficult problems. I commend and thank you for tackling this one. I appreciate the opportunity to share my views and would be happy to answer any questions.

REYNOLDS METALS CO.

STATEMENT OF RICHARD G. HOLDER, CHAIRMAN AND CHIEF EXECUTIVE OFFICER

Senator HATFIELD. Mr. Richard Holder, the president and CEO of Reynolds Metals Co.

Mr. HOLDER. Thank you, Chairman Hatfield.

For the record, I am Richard Holder, chairman and chief executive officer of Reynolds Metals Co. I thank you for the opportunity to discuss salmon protection, which, by the way, I support, and the impact on BPA and its customers.

Reynolds Metals Co. is one of 10 companies that produce aluminum, titanium, and other metals and chemicals in the Northwest.

We are collectively known as the Direct Service Industries, DSI, because we have historically been permitted to buy our power directly from BPA. As a group we contribute $2.3 billion to the region's economy, and employ 10,500 people.

We have been an economic force in the Northwest for over 50 years and we hope to remain strong regional contributors into the next century as well.

At full production, the 10 Northwest aluminum plants produce over 40 percent of all aluminum made in the United States. Aluminum producers are leaders in the Northwest in balancing both environmental and economic interests through recycling and energy conservation programs.

But our companies are facing tremendous competitive challenges from regulation and rising power costs which jeopardize the viability of the Northwest aluminum industry.

We provide about 30 percent or $560 million of BPA's power revenues. Our plants are the only customers who buy continuous blocks of power, both day and night, 365 days per year.

This unique characteristic of our power load avoids the need for shaping or other expensive aspects of tracking the ups and downs of a more typical customer group.

In addition, a quarter of our load may be dropped when BPA lacks sufficient power to serve everyone, allowing BPA to avoid building costly backup generation. Power costs are a significant factor in our total cost of producing aluminum.

Our continued economic contribution to the region depends on maintaining affordable, reasonably stable, and predictable power rates for our industry, since our survival is ultimately determined by the worldwide price for aluminum. And it is, indeed, a global business today, with one price for aluminum worldwide.

From the early 1940's to the early 1980's, BPA was an economic supplier of power to the aluminum industry. But today, BPA's rates are already one-third higher than the global average for our industry. Let me put that into perspective.

We are paying, on average, 18 mills worldwide in power costs, as supplied to the aluminum industry. So at 27 mills, the current rate today, it is already considerably above the world average, as far as our costs are concerned, and puts BPA in the upper quartile on a cost basis. So there is already pressure today on us from a cost standpoint.

The series of rate increases that began in the eighties have seriously eroded, as a result of the numbers I just quoted, BPA's competitive edge.

BPA has, indeed, been working hard to contain costs, but that constructive effort has more lately been imperiled by major cost burdens. BPA is being required, under the ESA, to provide fish protection measures that, if not in some way controlled, will end BPA's historically competitive position.

The aluminum industry recognizes BPA's duty to be environmentally responsible, and likewise, recognizes that this duty creates legitimate ratepayer burdens. But our fundamental concern is that these costs are now being incurred with little regard for economics or science.

We are deeply disappointed that the recommendations of the 2-year study by the highly respected scientists, commissioned by NMFS, and led by Professor Donald Bevan, have been set aside.

This recovery team study was released last year, and was the basis for the agency's formal recovery plan for salmon. But instead, far more drastic and costly measures that were rejected by the recovery team are largely being adopted by NMFS.

If the Federal agencies mandating fish recovery follows a more scientifically based salmon management plan, we could achieve the Northwest Power Act's vision of recovering salmon runs while retaining the advantage of the region's great hydropower resource.

We believe the plan developed by the recovery team is both balanced and effective. We urge you to support this plan as the plat-

form for salmon recovery. It will provide a long-term solution and can be achieved without endangering BPA and its customers.

In addition to the direct economic problems facing BPA and the region, there is a growing interest in shifting some of the economic burden to other revenue-gathering mechanisms, such as transmission or exit fees.

In no way will the DSI's support any schemes to shift unjustified fish costs to transmission access charges or other devices designed to preempt competition.

In conclusion, we fear there are painful consequences for the Northwest economy if the ESA regulatory agencies continue to look to BPA as the endless deep pocket for fish recovery, this, despite the fact that many factors have contributed to the salmon's decline.

But the power marketing agency and its customers plainly shall not have to offset other factors, such as overfishing, poor hatchery practices, spawning habitat destruction, and uncontrollable ocean conditions that have collectively depressed Northwest salmon runs even in coastal rivers where there are no Federal hydrosystems to blame.

Mr. Chairman, we appreciate your leadership that you are providing and the understanding you are bringing to finding a solution to this very emotional issue.

PREPARED STATEMENT

We certainly pledge our support to work with you toward a balanced and credible solution that serves both the environment and the economy. Thank you, sir.

Senator HATFIELD. Thank you, Mr. Holder.

[The statement follows:]

PREPARED STATEMENT OF RICHARD G. HOLDER

Thank you Senator Hatfield. I am Richard Holder, Chairman and Chief Executive Officer of Reynolds Metals Company. Thank you for the opportunity to discuss salmon protection—which I support—and the impact on the Bonneville Power Administration and its customers. Reynolds Metals Company is one of 10 companies that produce aluminum, titanium and other metals and chemicals in the Northwest. We are collectively known as the Direct Service Industries because we have historically been permitted to buy our power directly from the Bonneville Power Administration. As a group, we contribute $2.3 billion to the region's economy and employ 10,500 people.

We have been an economic force in the Northwest for over 50 years and we hope to remain strong regional contributors into the next century as well. At full production, the 10 Northwest aluminum plants produce over 40 percent of all aluminum made in the United States. Aluminum producers are leaders in the Northwest in balancing both environment and economic interests through recycling and energy conservation program. But our companies are facing tremendous competitive challenges from regulation and rising power costs which jeopardize the viability of the Northwest aluminum industry.

We provide about 30 percent or $560 million of BPA's power revenues. Our plants are the only customers who buy continuous blocks of power, both day and night, 365 days of the year. This unique characteristic of our power load avoids the need for shaping or other expensive aspects of tracking the ups and downs of a more typical customer group. In addition, a quarter of our load may be dropped when BPA lacks sufficient power to serve everyone, allowing BPA to avoid building costly backup generation. Power rates are a significant factor in the cost of producing aluminum. Our continued economic contribution to the region depends on maintaining affordable, reasonably stable and predictable power rates for our industry—since our survival is ultimately determined by the world-wide price of aluminum.

From the early 1940's to the early 1980's, BPA was an economical supplier of power to the aluminum industry. But today, BPA's rates are already one-third higher than the global average for our industry. The series of rate increases that began in the 1980's has severely eroded BPA's competitive edge.

BPA has been working harder to contain costs, but that constructive effort has more lately been imperiled by major new cost burdens. BPA is being required under the Endangered Species Act to provide fish protection measures that—if not in some way controlled—will end BPA's historically competitive position.

The aluminum industry recognizes BPA's duty to be environmentally responsible, and likewise recognizes that this duty creates legitimate ratepayer burdens. But our fundamental concern is that these costs are now being incurred with little regard for economics or science. We are deeply disappointed that the recommendations of a two-year study by highly respected scientists, commissioned by the National Marine Fisheries Service (NMFS) and led by Professor Donald Bevan, have been mostly cast aside. This Recovery Team's study was released last year and was to be the basis of the agency's formal Recovery Plan for salmon. But instead, far more drastic and costly measures that were rejected by the Recovery Team are largely being adopted by NMFS.

If the federal agencies mandating fish recovery followed a more scientifically based salmon management plan, we could achieve the Northwest Power Act's vision of recovering salmon runs while retaining the advantage of the region's great hydropower resource. We believe the plan developed by the Recovery team is both balanced and effective. We urge you to support their plan as the platform for salmon recovery. It will provide a long-term solution and can be achieved without endangering BPA and its customers.

In addition to the direct economic problems facing BPA and the region, there is a growing interest in shifting some of this economic burden to other revenue-gathering mechanisms, such as transmission or exit fees. In no way will the DSI's support any schemes to "shift" unjustified fish costs to transmission access charges or other devices designed to pre-empt competition.

In conclusion, we fear there are painful consequences ahead for the Northwest economy if the ESA regulatory agencies continue to look to BPA as the endless deep pocket for fish recovery—this despite the fact that many factors have contributed to the salmon's decline. But the power marketing agency and its customers plainly should not have to offset other factors—such as overfishing, poor hatchery practices, spawning habitat destruction and uncontrollable ocean conditions—that have collectively depressed Northwest salmon runs even in coastal rivers where there is no Federal hydro system to blame.

Senator, we appreciate the leadership you are providing and the understanding you are bringing to finding a solution to this emotional issue. We pledge our support to work with you toward a balanced and credible solution that serves both the environment and the economy.

NORTHWEST CONSERVATION ACT COALITION

STATEMENT OF K.C. GOLDEN, POLICY DIRECTOR

Senator HATFIELD. The last person on this panel is Mr. K.C. Golden, the Northwest Conservation Act Coalition. Welcome.

Mr. GOLDEN. Thank you, Mr. Chairman. My name is K.C. Golden. I am the policy director for the Northwest Conservation Act Coalition.

The coalition is a regional alliance of over 70 public interest groups and public utilities, including among our membership both some of BPA's customers and a broad cross-section of, to use Mr. Dyer's analogy, BPA shareholders, as it were, the public of the Northwest.

We want to be clear from the outset that we testify today as believers in Bonneville's mission under the regional act and in Bonneville's ability to accomplish that mission.

I think that skeptics both within the region and here are beginning to question whether Bonneville's mission is still appropriate, and whether Bonneville is capable of implementing that mission. We answer both those questions with an enthusiastic yes.

Mr. Chairman, you began this hearing, I believe, on a very auspicious note, by reminding us of something that is easy to forget in these times, we in the Northwest are the beneficiaries of an extraordinarily bountiful and productive Columbia River system.

And in the midst of allocating fish costs, I think there is a temptation to look at BPA as a heavily loaded financial camel, as it were, that is about to have one more straw added.

We believe it is time to step back from the financial issue of the moment and look at the system in historical perspective. This system was originally designed, if you will, to produce abundant anadromous fisheries. It is imminently well suited to that task.

It was subsequently engineered by human beings to become a renewable energy dynamo for the Northwest economy. It is imminently well suited to that task as well, and it can do both.

It also generates revenues that support prudent investments in maximizing the economic and biological productivity of that system over time. It can do that as well.

And it can also, while doing the aforementioned things, produce ample sustainable revenue that will allow BPA to fulfill its financial obligations reliably.

The good news here again is we do not need to pit these core Northwest values, these functions of the river system, against each other. The Columbia River system is bountiful enough to do them all.

What it cannot do, what it was never designed to do, is to act as the vehicle onto which the region unloads its staggering nuclear debt, and delivers that obligation back to the Federal Treasury.

This function, which BPA is, in effect, performing now, has absolutely nothing to do with Bonneville's mission, unlike the other functions that I mentioned, nor with the natural or human engineered capabilities of the river system.

We raise this issue not to divert attention from fish costs, but to focus attention on how we can put the costly WPPSS chapter of our energy history behind us, so that we can move on with a more promising mission for Bonneville.

We cannot put it behind us until we allocate these costs fairly. Presently, we are not doing so. We are allowing these costs to be shifted, on an ad hoc basis, from customers who have options to customers who do not, and ultimately we are exposing the Federal Treasury to those costs, because pretty soon the customers who do not have options, as they absorb larger proportions of these obligations, are going to work real hard to find options, and the only backup in the end is the Federal Treasury.

The consequences of this unfair allocation of these obligations are hard to overstate. I think two general forms of outcomes are possible if we continue in this way.

As some customers allude these financial obligations, others will follow suit, again, inevitably exposing the Federal Treasury to these costs.

In the unlikely event that we succeed in hoisting this responsibility on to the taxpayers, I find it highly improbable that we will continue to enjoy any legitimate claim to preferential access to the fruits of the system. We will, to put it bluntly, lose the system.

Alternatively, if BPA does succeed in jettisoning enough of its mission to make room to avoid everyone else's nuclear obligations, it will have eliminated most of the functions that distinguish it as a uniquely valuable public entity.

I would submit that this is singularly counterproductive behavior in an era where many are beginning to question whether BPA should continue to survive as a public entity.

This current ad hoc shifting of costs is not, I want to emphasize, competition. It forces BPA to operate at an unfair competitive disadvantage against competitors who are, when you think about it, offering the illusory service of immunity from WPPSS, immunity from the consequences of financial actions.

We will submit our preliminary thoughts to the committee today, and I would ask that they be entered into the record, on how to accomplish this equitable allocation——

Senator HATFIELD. They are accepted.

Mr. GOLDEN. Along with other recommendations as to how we might relieve financial pressure on Bonneville without undermining its mission.

We will also submit letters from the Washington Utilities and Transportation Commission, the Washington State Energy Office, the Washington members of the Power Planning Council, Oregon members of the Power Planning Council, and a handful of utilities in the Northwest who believe that solving this stranded investment problem is the single most important thing we can do to make Bonneville competitive for the long haul.

I would like to close by describing a little bit about how I think Bonneville must approach the challenges ahead, especially the long-term challenge of demonstrating why it continues to be a uniquely valuable public entity. BPA can only rise to this challenge by more decisively fulfilling its mission.

Reducing waste and bureaucracy is obviously an important first step in rising to that challenge, a step we all support, and a step that we applaud Bonneville for undertaking rather aggressively.

But Bonneville cannot rise to this challenge while abandoning those parts of its mission that serve the mission best.

Bonneville cannot rise to this challenge while it dismantles its only successful resource acquisition effort, an energy efficiency program that delivers saved energy to the regional grid at about one-half the long-term costs of constructing new generating resources.

It cannot rise to this challenge while reducing the reliability of its world-class integrated transmission system. It cannot rise to this challenge while, in order to prop up uneconomic nuclear operations, it scales back or abandons its renewable resource pilot projects, projects that are designed to help the Northwest keep the renewable edge that has made our power system the Nation's most reliable and economical one.

Nor can BPA rise to the occasion if it pits its own bottomline against the bottomline of consumers of the region, as it has, by eliminating funding for efficiency programs that keep our energy dollars where they belong, in consumers' pockets.

If Bonneville's survival depends on the proceeds of consumers' wasted energy dollars, then Bonneville's survival, I think, will become increasingly problematic.

And finally, it cannot rise to this challenge if it treats its statutory mission as a cost of doing business, or as an impediment of doing business.

Bonneville's mission under the regional act is the reason for Bonneville doing business, and the only plausible reason for Bonneville to continue to operate as a public entity.

PREPARED STATEMENT

It is what distinguishes Bonneville as a uniquely valuable regional institution that serves the Northwest with a great deal more than kilowatt hours, and we will do everything in our power to help it continue to fulfill that mission. Thank you very much.

Senator HATFIELD. Thank you, Mr. Golden.

[The information follows:]

PREPARED STATEMENT OF K.C. GOLDEN, POLICY DIRECTOR, THE NORTHWEST CONSERVATION ACT COALITION

April 28, 1995

Senator Mark O. Hatfield, Chairman
c/o Mark Walker, Staff Director
Committee on Appropriations
Senate Dirksen 131
United States Senate
Washington D.C. 20510

Dear Senator Hatfield:

NCAC is pleased to provide the following responses to your questions following the March 15 hearing of the Subcommittee on Energy and Water Development. Your continuing leadership on these issues gives us confidence that we can navigate this crossroads successfully and emerge with a healthy BPA that delivers lasting economic and environmental benefits to the people of the region.

1. *What is your view of Bonneville's competitive position?* Declining costs of wholesale power and growing competition have clearly narrowed the gap between BPA's rates and the market. This narrowing has not been caused by increased BPA costs. Drought, aluminum markets, and fish recovery notwithstanding, BPA's rates have stayed flat in real terms since 1984. The market, however, has clearly moved quite dramatically. Nonetheless, largely because of its virtual immunity to fuel price risk, BPA is well-positioned to be the lowest cost wholesale supplier in the long-term. Current offers below BPA rates are not an indication of the price of new resources on the market, as they largely represent temporary surpluses that are newly available on the western grid. When the Northwest and Southwest systems recently formed a westwide transmission group, a substantial quantity of reserve power was freed up due to synergies between the region's opposing seasonal peaks. This power is now being offered as "system sales" at firesale prices.

The price of a new, gas-fired resource, combined with the services that are presently bundled in the BPA preference rate, is still significantly higher and more volatile than BPA's rates. Attachment A, "Comparison of BPA and Independent Power Options," shows that the "equivalent delivered" cost of power from a public-utility financed combined cycle gas-fired power plant including all of the associated services that BPA provides is substantially higher than the BPA rate.

Although the market price for wholesale power has dropped, BPA's competitive challenges are political, not economic. BPA's raw, unfettered revenue-producing capability, constrained only by the laws of physics and economics, vastly exceeds its revenue requirements. However, we have made choices which both constrain BPA's revenue-producing ability and obligate those revenues toward certain purposes. These choices include both public and regional preference, other project uses which limit power production, postage stamp rates, below cost power for direct service industries, virtually free power for the Bureau of Reclamation, repayment of unproductive nuclear debt, above-market operating costs at WNP-2, the costs of protecting wild salmon, investments in efficiency and renewable resources, and a variety of others.

Without passing judgment upon any of these choices, we reiterate that it is these choices, not market or technological forces beyond our control, that dictate BPA's competitive position. If BPA is to remain competitive, we should re-examine these choices -- not one at a time, but systematically, so that we end up with a BPA that uses its financial wherewithal toward the combination of purposes that best serves the people of the region.

As we suggested in our original testimony, we believe that BPA can fulfill its most important statutory purposes and remain the most attractive wholesale power supplier in the region. In particular, it can: produce abundant, affordable power; operate the river so as to allow for successful salmon migration; make investments that preserve the Northwest's

"renewable edge" by maximizing the productivity of existing supplies and introducing new renewables into our resource mix; operate the high-voltage transmission grid in ways that encourage the achievement of the Regional Act's objectives; and meet its financial obligations reliably. These, we believe, are BPA's core functions.

BPA's most troubling financial problem, and the function that bears no relationship to either BPA's mission or the capabilities of the Columbia River System, is nuclear costs. We speak to this issue extensively in our original testimony. As we indicated there, we do not believe that BPA can (or should) survive if it abandons its core functions in order to assume its customers' bad debts, debts that were incurred on their behalf and at their behest. Neither can BPA survive if it allows itself to be used as the vehicle for transferring customers' nuclear debts to federal taxpayers. We reiterate that customers' attempts to elude these financial obligations are not "competition;" they are quite simply an effort to eat the meal without paying the bill. If customers wanted to exercise competitive choices to avoid nuclear costs, they should have done so before the costs were incurred. FERC's recently issued NOPR on stranded costs sets forth a national policy that supports a determined BPA effort to ensure fair allocation of these costs.

BPA can and should thrive financially if it fairly allocates these obligations and uses its unique abilities to implement the mission that Congress outlined in the Regional Act.

2. *What is your reaction to limiting BPA's fish and wildlife costs based on the success of BPA as a power supplier?*

As noted above, we do not believe that fish and wildlife costs are the most significant source of financial pressure on BPA. Furthermore, unlike nuclear debt, fish and wildlife recovery is a fundamental part of BPA's mission. So, our first reaction is that fish and wildlife costs are being given a priority beyond their significance with respect to BPA's entire financial picture.

Having said that, we believe that it may be appropriate to provide some certainty with respect to the fish and wildlife costs that BPA bears. Limiting direct, out-of-pocket expenses on salmon recovery measures may be acceptable and desirable, particularly if control of the associated program measures is transferred outside of BPA. However, we would not include either power purchases or foregone revenues as direct expenses. We believe that the Columbia River System's hydro-producing capability must be defined as consistent with river operations that support successful salmon migration. When asked about the costs to the power system associated with irrigation withdrawals, BPA said, "We've grown accustomed to those withdrawals." They are part of the baseline, so that it does not occur to BPA to calculate and publicize the cost of power purchases or lost revenues attributable to irrigation. The same should be true of river operations that allow for salmon survival.

Furthermore, limiting costs associated with power purchases and foregone revenues would send an inappropriate economic signal to BPA. The first priority should be to reduce these costs. Limiting these costs blunts BPA's incentive to reduce them. As NRDC's "Changing the Currents" study indicates, the opportunities to use western power markets, maintenance scheduling, voluntary water transactions, and interruptible contracts to reduce the costs of changing river operations are enormous, and largely untapped. These initiatives, which more closely align the river's power-producing capability with western energy needs, should be at the heart of the salmon recovery strategy. BPA controls the operational decisions that make these cost-reducing initiatives possible. Only if it bears the costs of these decisions is it likely to make them in a cost-minimizing manner.

A cap on fish costs would create enormous incentives for all parties to "spin" the costs to their advantage. Instead, we should be creating incentives that direct BPA's ingenuity toward minimizing the costs by using its marketing function to economically align power needs and river operations. In addition to more effective marketing, we might be able to lower these costs significantly by relieving BPA of much of the operational responsibility for salmon recovery. We would be sympathetic to proposals in which BPA gets greater cost certainty in exchange for less control of salmon recovery efforts. Recovery measures associated with out-of-pocket expenses, such as habitat restoration and dam modification,

can be orchestrated more efficiently by an entity with fewer conflicting interests than BPA. However, river operations are largely in BPA's control and are likely to remain that way. Costs that can be mitigated through operational and marketing changes should stay with BPA as long as BPA maintains control of operations and marketing.

Finally, we applaud the thinking behind the link between BPA's success and the resources available for salmon protection. We all have a stake in BPA's success, and this would give substance to that stake. However, salmon protection consistent with the Regional Act is part of BPA's core mission. We cannot accept a formulation in which BPA does its job after it "succeeds" financially. To us, BPA succeeds only by doing its job. If it can't do that and survive financially, then one has to question the rationale for its survival. Salmon protection, energy efficiency, and renewable resources are BPA's reason for doing business, not just a cost of doing business, and certainly not just a bonus when BPA does well financially. We do agree that superior financial performance ought to be reinvested in superior performance in pursuit of the Regional Act's goals. However, acceptable performance in reaching the Act's goals (including full and timely implementation of the Council's Power Plan and Fish and Wildlife program) is the standard that BPA must attain under all circumstances.

3. *Is there a cost too great to save a species?* Our organization takes no position with respect to how economic considerations are factored into species protection. While the question is an interesting one from the perspective of the Endangered Species Act debate, it is not critical for the Columbia River salmon debate.

Salmon are not snail darters. The ESA protects all species, on the grounds that biological systems are woven together in complex ways and all life forms serve purposes beyond their own survival. However, one need not subscribe to that logic in order to favor heroic efforts to save salmon. Salmon are much more than an "indicator species" or a link in a biological chain. They are of intrinsic and incalculable cultural, economic, and spiritual value to the region. That is why they are covered by a variety of laws and treaties designed to ensure their protection regardless of the fate of the ESA.

We should certainly not have a "sky's the limit" attitude to salmon protection that results in poor program design, wasted resources, and inadequate results. But neither should we balk at costs for effective programs that are well within the means a region that enjoys the nation's most affordable power system. Again, the resources devoted to "spinning" the costs and delaying the implementation of even the most basic and widely-supported recovery measures would be much better spent devising operations and marketing plans that minimize salmon recovery costs.

4. a)*Have you done an independent assessment of the market for renewable power?* NCAC's Renewable Northwest Project (RNP) estimates that, in addition to the projects underway today (a total of about 145 aMW), the market would have to grow by 50 to 75 aMW per year to provide a base for a sustainable and competitive renewable energy industry in the Northwest. This would translate into a cumulative total of 450 to 600 aMW of renewables by 2001 (again, including current projects).[1]

In its 1991 plan, the Northwest Power Planning Council did an assessment of the possible growth in the market for renewables (using strictly economic criteria) and concluded that 646 aMW of wind and geothermal energy would be built by the year 2010. Some of this comes on line as early as 1999, but the bulk of it doesn't materialize until after 2005.[2]

The US DOE has predicted that wind energy will provide 1% of the nation's electrical production by 2010, up from about 0.1% today. In the Northwest, that would translate into about 190 aMW, or roughly 580 MW of capacity. Barron's magazine wrote favorably about wind power's long-term growth potential for investors (7/15/94), and Shell Oil is finding that renewables fit very prominently in its draft planning scenarios (Scientific American, September 1994).

4. b)*What is the cost of power from wind and geothermal energy?* Costs depend on a variety of different factors including: project size, resource quality, location, ownership, tax status, financing (size, rate, source, length of loan), and project life. Project costs

cover a wide range and are very project specific. The numbers below are ranges for an initial, commercial-scale project of average resource quality and 20-year financing. A minimum commercial scale project is generally 25 MW for wind, and 30 MW for geothermal. The low range of costs for wind projects include the tax credits, while the high range value excludes the credits.

Resource	Costs (¢/kWh)	
	Average Lifetime (real 1995 $)	First Year (nominal)
Wind	3.1 - 4.2	5.0 - 6.5
Geothermal	3.9 - 5.1	5.0 - 8.0

4. c)*What are the best ways to promote development of renewable energy resources?* The following is a partial list of activities that could promote renewable energy development.

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[1]The analysis considered demand growth based on Council's medium projections, the need for replacement power for retired plants (e.g. Trojan), and developers' assessment of what defines a minimum critical mass for a competitive market.

[2]Source: 1991 Council Power Plan; Vol. II, Part 2, Chapter 10. Per a conversation with Jeff King, Senior Analyst at the Council, the most representative scenario for today's realities was the scenario that assumed no new coal or nuclear plants and considered medium high load growth. Referencing the medium high growth, in effect, takes into consideration the need for replacing Trojan's output.

- Build regional capability by implementing current renewable energy commitments and RFPs. This would include BPA's 4 pilot projects, PGE's green RFP, and the Columbia Hills wind project.
- A NPPC established regional, and utility-specific, renewable megawatt goal or assignment in order to build a broad base of experience and make sure all share in the effort. This set aside would be based on the environmental and portfolio benefits of renewables.
- Specifically account for environmental costs in the selection of resource options. Provide a required mechanism to internalize the unaccounted costs of pollution and lost habitat.
- Require the use of renewable RFPs by utilities in resource selection.
- Define renewables as clear and verifiable ways to obtain Clean Air Act credits.
- Continue to promote effective competition at the wholesale level making sure that utilities face the same rules as independent power producers.
- Continue to promote more open and fair transmission access, prioritizing access to renewables.
- Continue the IOU wind production tax credit, and establish a longer-term, stable appropriation for public utilities' production credit.
- Lower or eliminate the royalty tax on steam for geothermal energy. The payment is based on 10% of the value of the steam used in geothermal plants and contributes 5% in additional costs.
- Ensure that deregulation of the electrical market does not mean the loss of environmental protection. FERC should allow States to include environmental and consumer protection in their regulation of retail and wholesale utilities.
- Set a small (1 mill) wire charge for each unit (kWh) of electricity sold to establish a fund to renewable energy development. Developments would have to competitively bid for the financing to make sure that the most cost effective projects are built. This would be similar to the current British system to promote non-fossil alternatives.
- Have BPA do its four pilot projects as condition for corporation or debt restructuring legislation. This would retain the limited base in the Northwest and keep half of the current market alive.
- Encourage State regulators to work with utilities to overcome the local barriers to utilities. In particular, encourage the States to create clear recovery mechanisms for utilities that invest in renewables as the markets deregulate.

- Require all energy generators to include some percentage of renewable energy. The percentage could start low, and grow over time, and developers could by and sell credits toward the achievement of the appropriate percentage, much as pollution credits are marketed under the Clean Air Act.

5. *If regional utilities leave the BPA system, can we expect to regionalize conservation and renewable resources development costs through BPA rates?*

This question must be answered in its financial context, which includes the following additional questions: Can we expect to finance the above-market operating costs of WNP-2 through BPA rates? Can we expect to fund uneconomic fossil fuel development through BPA rates? Can we continue to allow BPA's customers to abandon their nuclear debts with impunity by paying for those debts through BPA rates? Can we continue to immunize the Bureau of Reclamation from the cost of power by failing to charge BPA rates? These questions are not meant to be argumentative or rhetorical; our ability to pay for things through wholesale rates is indeed limited. What are our priorities?

The first purpose of the Regional Act is "to encourage, *through the unique opportunity provided by the Federal Columbia River Power System*: conservation and efficiency in the use of electric power, and the development of renewable resources within Pacific Northwest" (emphasis added). This remains a vitally important purpose that will be impossible to achieve without BPA's active participation and commitment. The "unique opportunity" presumably refers to the ability of the FCRPS to generate revenues sufficient to repay its costs and support investments that maximize its long-term productivity. The choice before BPA is whether to seize that opportunity or squander it in favor of acting as the receptacle for the region's bad nuclear debt. If it chooses the latter, it will have relinquished the primary defense against privatization.

We believe that regional utilities will leave BPA only if, in contradiction to FERC's policy on stranded costs, those utilities can leave their bad debts behind when they go. Once again, it is only the illusory and counterproductive promise of immunity from nuclear debt that makes BPA's competitors possible. Even if some of BPA's customers pursue that phantom promise, the market for the output of the FCRPS remains strong. Gaining unfettered access to that market will probably entail forfeiting any claim to retaining the benefits of the FBS in the Northwest. That appears to be a logical and perhaps fair consequence of some customers' success in eluding nuclear debt, but it does not seem to us a happy outcome for the citizens of the Northwest.

We also believe that BPA can reduce its conservation costs through a variety of measures that we have proposed repeatedly in "conservation reinvention" discussions. However, we do not believe that regional conservation and renewable resources can or should be achieved as the result of the independent actions of 130 wholesale customers. Intelligent management of the FCRPS is fundamentally a regional enterprise, not the sum of what BPA's wholesale customers decide to do.

We support the proposition that regional conservation and renewable resource development would benefit from greater buy-in and commitment on the part of BPA's customers. That is why we've been staunch supporters of the CARES project and conservation program designs such as Energy Smart design that allow BPA's customers almost unlimited flexibility to tailor programs to meet local needs. We do not, however, believe that BPA can successfully pass the baton to customers simply by dropping its end.

We are particularly disturbed by BPA's apparent intention to abandon conservation funding this October, without having implemented any of the reforms (such as tiered rates and contract commitments) designed to encourage greater customer responsibility. This is in flagrant violation of BPA's FY 95 appropriations language on conservation reinvention. Worse, it virtually guarantees a precipitous decline in conservation performance starting this fall.

Recognizing the urgency of this imminent collapse in regional conservation potential, a number of utilities are proposing an interim, FY 96 conservation solution to BPA that would dramatically reduce BPA's costs while sustaining conservation momentum next

year. Although we feel that this proposal represents a dramatically-reduced and inadequate level of regional investment (given the Act and the Plan's directives to acquire all cost-effective conservation), we believe that a rapid compromise is necessary in order to avert long-lasting damage to the region's conservation infrastructure next year. Their proposal will be forwarded to the Committe within the week.

The first priority must be to ensure that the region's conservation and renewable resource efforts do not fall apart in FY 96. At a bare minimum, BPA should adopt the utilities' proposal for FY 96 and follow through on its commitment to implement the four renewable resource pilot projects.

In the next several years, BPA should work to implement a system for funding investments that produce important, system-wide benefits through an equitable charge on the distribution system. This would ensure that these investments, which benefit all end-users, are paid for equitably by all end- users. BPA should encourage this development not by mandating it, but by matching its customers' investment so that retail utilities can leverage regional investment through their own participation. Finally, BPA should play a very active role in funding regional programs with regional scope -- so-called "market transformation" programs that are either more costly or impossible for individual utilities to run.

We will submit more detailed recommendations on how BPA can maximize the effectiveness of its conservation and renewable resource investments in a more competitive environment within the next two months. In the mean time, it is imperative that we sustain regional momentum in FY 96. BPA can afford to do so, and the region can't afford not to.

6. *Your testimony supports WPPSS costs being paid directly by BPA customers. In what way would these costs be allocated? On the basis of the original net billing agreements? If on some other basis, please describe.*

To clarify, our testimony supports the proposition that BPA's customers should not be able to elude WPPSS costs by choosing an alternative power supplier, since these costs are not avoidable.

BPA customers pay for WPPSS costs now, through their wholesale rate. While we are still examining the recent FERC NOPR to assess the most promising ways to continue to recover those costs, the basic principle is to make that proportion of BPA's rates that represents unproductive nuclear investments (and possibly others, if appropriate) non-bypassable. We believe that the most equitable way to determine the allocation would be, at least roughly, as we do now. That is, allocation would be based on customers' load on BPA, as of some recent historical period but no later than September 30, 1995. In principle, we believe an explicit allocation should be as close as possible to the implicit allocation that exists now, to minimize the friction associated with dramatic shifts. Using the Tier 1 allocations that were calculated for tiered rates would seem an appropriate place to start.

7. *Your testimony supports the use of transmission charges to recover stranded investment from customers departing BPA. Mr. Hardy's testimony indicates that approximately half of BPA's customers are not served by BPA transmission. How do you propose to deal with this problem?*

Our testimony does not rule out the use of transmission charges to recover stranded investment, but neither does it single out transmission charges as the most appropriate vehicle. Again, we are evaluating alternative mechanisms in light of the recent FERC NOPR. We are inclined to think that contract charges may be the best vehicle, but they will require skillful negotiation on BPA's part, much as private utilities are negotiating to ensure recovery of their stranded costs. The unilateral waivers that BPA granted recently are a bold step in the opposite direction.

With respect to transmission, few if any BPA customers "are not served by BPA transmission." Some take their deliveries through an intermediary system, but in virtually

all cases, the power does travel over BPA lines at some point in the transaction. Most alternative suppliers will have to wheel over BPA lines to reach BPA customers.

8. *What is your reaction to placing a limit on BPA spending for fish and wildlife which is tied to BPA's annual operating revenues?*

See question 2.

Thank you again for the opportunity to offer these additional responses. We hope we can be of further assistance as you address these issues in the coming months.

Sincerely,

K.C. Golden
Policy Director

Senator HATFIELD. As you have noticed, we have members who have other obligations, who have been in and out to participate in this hearing.

I want to give them each an opportunity to submit questions to you gentlemen, and we will submit our questions to you in writing, and hope that you can respond within a relatively fast period of time, a couple of weeks maybe, and to thank you for your journey here, and for your contribution.

I will now then excuse this panel and ask the last panel to come to the table, Mr. Donald Sampson, chairman of the Umatilla Indian Tribe, the State of Oregon; Mr. Jim Baker, of the Sierra Club; Glenn Vanselow, Pacific Northwest Waterways Association; and DeWitt Moss, the North Side Canal Co., Jerome, ID.

I understand that Mr. Baker is also in the situation of catching a plane.

Mr. BAKER. I have rearranged my schedule, Mr. Chairman.

Senator HATFIELD. Thank you.

Mr. BAKER. I will go with the order that was set up in advance. Thank you.

Senator HATFIELD. Let me also, if I could, explain to you all a situation that has arisen. We have the first appropriations bill on the floor, and it now finds itself in certain jeopardy, so I am going to ask to be excused, and Senator Gorton of Washington State will complete the hearing, after I hear—at least I will get in perhaps two witnesses.

At this point, also, I would like to introduce into the record a letter from the Northwest Power Planning Council, in which the council has undertaken a review of the subject of this hearing.

Mr. Angus Duncan is the chairman of this Northwest Power Planning Council. I would like to have his statement on behalf of the council entered into the record. I would like to read two sentences.

> Bonneville is an integral part of the region's power supply and a critical tool for financing regional energy conservation and fish and wildlife initiatives. It is possible for these combined obligations to cause Bonneville's power supply to be no longer economical in relation to competing supplies. If a significant number of utilities decide to seek other supplies of electricity, Bonneville might no longer be able to collect sufficient revenue to meet those obligations.

I think that illustrates at least the position of our Northwest Power Planning Council.

COLUMBIA RIVER TREATY TRIBES

STATEMENT OF DONALD SAMPSON, CHAIRMAN, UMATILLA INDIAN TRIBE, STATE OF OREGON

Senator HATFIELD. Mr. Sampson, we have you listed as No. 1, Mr. Baker as No. 2. Since he has rearranged his schedule, we will let you proceed.

Mr. SAMPSON. Thank you, Mr. Chairman. It is good to see you again.

Senator HATFIELD. It is nice to see you.

Mr. SAMPSON. Members of the committee, Senator Gorton, I would like to summarize my written statement, and ask that you include the entire statement as part of the record.

Senator HATFIELD. It will be accepted.

Mr. SAMPSON. I come from Pendleton, OR. My Indian name is Pukt Ahowalaugh, and I come from Wallula, which is where the Columbia and Snake come together. It is an honor for me to be here to present testimony on behalf of the Umatilla, Warm Springs, Yakama, and Nez Perce Nations.

In the spring of 1855, these four tribes negotiated treaties with the United States, in which each tribe reserved and the United States guaranteed the tribe's right to take salmon.

I heard people say earlier that they are facing the biggest crisis of Bonneville Power in 54 years. Our tribes face the greatest challenge and crisis in the thousand upon thousand upon thousand years of our history in this country.

Our leaders who signed the treaties only 140 years ago believed that they signed a sacred, solemn contract between nations. This is the first and foremost contract with America. It is the supreme law of the land.

Through this contract the tribe reserved the lands and the resources upon which our economies were based and are based. Nobody here has talked about the devastation to our economy over the past 200 years.

Our ancestors believed in the United States' good faith pledge, and trusted that the terms of the treaties were secured to the Indian people for all time.

It is ironic that I am here today to testify about the uncertain financial well-being of the Bonneville Power Administration, which has generated billions of dollars of power revenues from the Columbia River, while the salmon runs dwindle to their lowest in history.

This year, for the first time in my peoples' history, there may be no salmon for our spring salmon ceremonies.

Senators, an emergency exists that penetrates to the core of tribal culture and religion. Our salmon are headed for extinction, unless serious measures are taken.

Shortly after our treaties were signed, over 1.5 million salmon returned to the Snake River. Last year, 800 returned. In about 2 weeks, juvenile salmon will begin their seaward migration. Approximately 7.5 million juvenile spring chinook will migrate in 1995. In 1996, it is projected only 1.5 million will migrate, and 1997 will be worse.

It is paramount to the salmon survival and to the Indian people that we protect the juvenile salmon to the fullest extent possible.

Senator Hatfield, because of the severity of the crisis this spring, our tribe sent a letter to President Clinton seeking a declaration of emergency. The tribes have restoration plans for the Snake River tributaries, but our efforts will be for naught if the salmon perish in the Federal hydroelectric system.

Our tribal governments have heard the many messages that we cannot fix the problems and save the salmon. I disagree with these messages. Senator Hatfield, you know the track record of the Umatilla Tribe on salmon recovery.

With your leadership and support, we successfully put water and salmon back into the Umatilla River. This is a river where the salmon have been gone for 70 years, where stream flows dry up for 6 months every year, and where the conflict was as contentious as any in the Northwest.

Today, spring chinook, fall chinook, coho, and steelhead return annually. This basin is a shining example in the Columbia that salmon and the economy can thrive side by side, and we thank you for your help.

Many are concerned about the costs, but salmon costs pale in comparison to the debt that BPA is saddled with due to failed nuclear plants, the WPPSS nuclear project. Now, BPA is burdened by a $7.1 billion debt, which is growing every day. And what did the BPA get in return, one nuclear plant that is too expensive to operate and too costly to shut down.

Bear in mind that the Columbia treaty tribes did not ask for WPPSS; the Northwest utilities did. BPA customers have enjoyed the cheapest power in the Nation at the expense of salmon.

All of BPA's major customer classes continue to enjoy huge subsidies that keep BPA at the risk of failing to meet its Treasury payments. The annual subsidy to the Direct Service Industries, primarily aluminum smelters, is estimated at $170 million, while revenues to aluminum companies have recently increased over 400 percent.

The annual subsidy to investor-owned utilities through residential exchange is estimated to be $210 million, and BPA is prevented from competing on the open market through restrictions in favor of the Northwest preference.

BPA's lost revenues due to water withdrawals for irrigation are approximately $300 million annually. All of these economic issues should be put on the table for an independent review.

Various interests have proposed auctioning BPA off to the highest bidder to pay off the debt. These are reckless proposals.

The solution is to reform BPA, not sell off BPA. And the solution must, consistent with the United States' promises to the tribes, provide fiscal resources to protect salmon.

Less than 2 weeks ago, Senate bill 481 was introduced. That bill would cap the fish and wildlife costs BPA may incur in any fiscal year. The bill would also prevent BPA from recovering fish and wildlife costs through transmission charges.

The bill puts BPA's WPPSS debt ahead of its fish and wildlife obligations. These priorities are not consistent with the spirit in which the tribes entered treaties, and the treaties were not made subject to WPPSS debt and wholesale power subsidies.

The Columbia River treaties were optimistic in 1980, when the Congress passed the Northwest Power Act. It calls for protecting the treaty rights of the tribe, improving salmon survival at hydroelectric projects, and providing flows of sufficient quality and quantity between dams, and to improve salmon production, migration, and survival.

Importantly, a section of the act provides that BPA shall use its funds and authority to mitigate, protect, and enhance fish and wildlife to the extent affected by the development.

BPA has not asked the tribes for the interpretation of the cost allocation provisions of the Northwest Power Act. I ask that the administration and Congress seek the tribes' views on cost allocation procedures before adopting any permanent changes.

For 1995, however, the matter is clear, Congress and the administration must do whatever is necessary to ensure the protection of this year's juvenile salmon migration.

Senator HATFIELD. Could you please summarize now your remaining testimony——

Mr. SAMPSON. Yes.

Senator HATFIELD [continuing]. Please, Mr. Sampson. You have gone over your time.

Mr. SAMPSON. I am sorry. The next months are critical to the salmon and my people. We must provide the water the salmon need this spring. Structural solutions like drawdowns and new surface bypass systems will not be available in 1995.

Regardless of which set of structural measures is chosen, all four tribes are deeply committed to the restoration of harvestable salmon runs to all of the tribes usual and accustomed fishing places.

In conclusion, I would like to again underscore the commitments of the United States in the 1855 treaties. As has often been essential in the past, the tribes will resort to litigation, if necessary, to defend our treaty fisheries. Numerous decisions of the Federal courts have confirmed our rights to take salmon and to have salmon to take.

These rights have existed since time immemorial, but they are now threatened, because there are so very few salmon. Please ensure that salmon are restored.

PREPARED STATEMENT

I thank you for the opportunity to present our tribe's views.

Senator HATFIELD. Thank you, Mr. Sampson.

[The statement follows:]

PREPARED STATEMENT OF THE COLUMBIA RIVER TREATY TRIBES

It is an honor for me to be here today to present testimony on behalf of the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes and Bands of the Yakama Indian Nation, and the Nez Perce Tribe. In the spring of 1855, these four tribes negotiated treaties with the United States, in which each tribe reserved, and the United States guaranteed, the tribes' rights to take salmon.

As a representative of the Indian people of the Columbia River, who since time immemorial have drawn their sustenance from the River and its salmon, I must impress upon you the importance of our treaties. Our leaders who signed the treaties only 140 years ago believed that they signed a sacred, solemn contract between nations. Through this contract, the tribes reserved the lands and resources upon which our economies were and are based. The treaties also preserved our sovereignty over these lands and resources. Our ancestors believed in the United States' good faith pledge and trusted that the terms of the treaties were secured to the Indian people for all time.

It is ironic that I am here today to testify about the uncertain financial well-being of the Bonneville Power Administration, which has generated billions of dollars of power revenues from the Columbia River, while the salmon runs dwindled to their lowest in history. This year for the first time in my peoples' history, there may be no salmon for our spring salmon ceremonies and root feasts. The treaties promised more to my people.

Senators, an emergency exists that penetrates to the core of tribal culture and religion. Our salmon are headed for extinction, unless serious measures are taken. Shortly after our treaties were signed, over 1.5 million salmon returned to the Snake River. Last year, less than 2,000 spring chinook salmon returned to the entire Snake River Basin. Worse still, the 1995 spring chinook run is expected to be 40 percent less than last year. The year that Bonneville Dam was completed, 72,000

fall chinook returned to the Snake River. Last year, 800 fall chinook returned to the Snake River.

In about two weeks, juvenile salmon will begin their seaward migration. From the Snake River, our scientists estimate that approximately 7.5 million juvenile spring chinook salmon will migrate downstream in 1995. These are the juvenile salmon produced from 1993's adult returns. Because the adult returns were so poor last year, the numbers of juvenile spring chinook salmon that will migrate downstream in 1996 is expected to be only 1.5 million. In 1997, the juvenile numbers are likely to be worse. It is paramount to the salmon's survival and to the Indian people that we protect the juvenile salmon to the fullest extent possible on their way to the ocean this year.

The tribes have restoration plans for the Snake River tributaries, but our efforts will be for naught if the salmon perish in the federal hydroelectric system. Our tribal governments have heard the many messages that we cannot fix the problems and save the salmon. I disagree with these messages.

Senator Hatfield, you know the track record of the Umatilla tribe on salmon recovery. With your leadership and support, we successfully put water and salmon back in the Umatilla River. This is a river where the salmon had been gone for 70 years, where streamflows dried up for six months every year, and where the conflict was as contentious as any in the Northwest. The federal investment in Umatilla salmon restoration is paying dividends to both Indian and non-Indian people. Spring chinook, fall chinook, coho, and steelhead now return annually.

Unfortunately, the measures necessary to protect the salmon are jeopardized by the mistakes of the past. The Columbia River hydropower system was not designed and built with juvenile salmon migrations in mind. Thus, remedial measures are costly and these costs are only beginning to be fully appreciated. Yet, these salmon costs pale in comparison to the debt that BPA is saddled with due to failed nuclear plants. By the time Congress enacted the Northwest Power Act in 1980, the region had already embarked on the disastrously expensive WPPSS nuclear projects. Now BPA is burdened by a $7.1 billion dollar WPPSS debt, which is growing every day. And what did BPA get in return, one nuclear plant that is too expensive to operate (37 mils) and too costly to shut down (14 mils).

When considering BPA's financial condition and its ability to pay for salmon mitigation, please bear in mind that the Columbia River treaty tribes did not ask for WPPSS; the Northwest utilities asked for WPPSS and were the intended beneficiaries of WPPSS. For decades, BPA's customers have enjoyed the cheapest power in the nation at the expense of the salmon. "Too cheap to meter" was the rallying cry for the WPPSS boosters. BPA's customers now want to abandon BPA, the WPPSS debt BPA incurred on their behalf, and the financial obligations to restore the Columbia River salmon. At the same time, all of BPA's major customer classes continue to enjoy huge subsidies that keep BPA at risk of failing to meet its treasury payments. The annual subsidy to the Direct Service Industries, primarily aluminum selters, is estimated at $170 million. Since the administration interceded and Russia decreased aluminum production, revenues to aluminum companies have recently increased 400 percent. The annual subsidy to the Investor Owned Utilities through residential exchange is estimated to be $210 million and BPA is prevented from competing on the open market through restrictions in favor of Northwest preference. BPA's lost revenues due to water withdrawals for irrigation are approximately $300 million annually. All of these economic issues should be put on the table for an independent review.

Recently, various interests have proposed auctioning BPA's assets to the highest bidder to pay off BPA's existing debt. These are reckless proposals that do not take into account the federal government's obligations to restore salmon to the Indian people of the Columbia River. The tribes often disagree with BPA's management, particularly on fish and wildlife issues. But the solution is to reform BPA, not sell off BPA. And, the solution must, consistent with the United States' solemn promises to the tribes, provide sufficient fiscal resources to fully protect and restore the salmon.

Less than two weeks ago, S. 481 was introduced. That bill would cap the fish and wildlife costs BPA may incur during any fiscal year to not more than 20 percent of the gross annual power revenues, exclusive of residential exchange revenues. The bill would also prevent BPA from recovering fish and wildlife costs through transmission charges. In effect, the bill puts BPA's WPPSS debt ahead of its fish and wildlife obligations. These priorities are not consistent with the spirit in which the tribes entered their treaties with the federal government. The treaties were not made subject to WPPSS debts and wholesale power subsidies.

The Columbia River treaty tribes were optimistic in 1980, when Congress passed the Northwest Power Act, that a means for restoring Columbia River salmon was

at hand. The Act contains sound provisions. It calls for protecting the treaty rights of the tribes, 4(h)(6)(C), improving salmon survival at hydroelectric projects 4(H)(6)(E)(i), and providing flows of sufficient quality and quantity between dams to improve salmon production, migration, and survival 4(h)(6)(E)(ii). The Act speaks directly to the issue of allocating costs. Consumers of electric power are intended to bear the costs of measures designed to deal with the adverse impacts caused by development and operation of electric power facilities, 4(H)(8)(B), monetary costs and power losses shall be allocated by the Administrator consistent with individual project impacts, 4(H)(8)(D), and amounts shall be allocated to project purposes in accordance with existing accounting procedures for the FCRPS, 4(h)(10)(C). Importantly, 4(h)(10)(A) provides that BPA shall use its fund and authorities to protect, mitigate and enhance fish and wildlife to the extent affected by the development and operation of any hydroelectric project of the basin.

BPA has not asked the tribes for their interpretation of the cost allocation provisions of the Northwest Power Act. Yet, a debate is ongoing within the administration on cost allocations and the outcome of this debate will significantly affect the salmon, the Indian people, and tribal salmon restoration programs undertaken pursuant to the Northwest Power Act. I ask that the administration and Congress seek the tribes' views on cost allocation procedures before adopting any permanent changes. For 1995, however, the matter is clear. Congress and the administration must do whatever is necessary to ensure the protection of this year's juvenile salmon migration.

While protecting the juvenile migration is vital, it is not the only salmon measure that must be taken in 1995. For years, the tribes have had salmon restoration projects ready for implementation throughout the watersheds of the Columbia River Basin above Bonneville Dam. Had these measures been implemented in a timely fashion, the consequences of the measures now needed to protect the salmon would not be so severe. The tribes have long advocated habitat protection, restoration, and the careful use of artificial propagation to restore salmon to our watersheds and usual and accustomed fishing places. As you know, we were successful in the Umatilla Basin, but much work remains to be done. In this regard, we were pleased with the addition of $5 million to the administration's budget in fiscal year 1995 that is allowing Snake River fall chinook supplementation to move forward. Timely completion of this measure will benefit interests from Alaska to Idaho. Yet, tribal projects in the Grande Ronde, Clearwater, Yakama, Hood River, and Klickitat, to mention a few, are languishing for lack of federal support.

Unfortunately, BPA management of fish and wildlife expenditures has hindered effective implementation of the many measures in the Council's program. For instance, the Nez Perce and Yakama tribal hatcheries are still on BPA's drawing boards. These measures were adopted in the Council's 1982 fish program. More money has been spent on planning these facilities than it would have cost to build them. As a result, BPA is pushing a "bow wave" of unfunded fish and wildlife measures that is roughly equal (approximately $80 million in fiscal year 1996) to its current fish and wildlife funding commitments (approximately $83 million in fiscal year 1996).

The tribes and the region must have accountability for the investment of taxpayer and ratepayer funds. The best accountability measures are completed projects and increased salmon runs. BPA's processes for moving the money "to the ground" must be simplified to reduce costly delays. For instance, we have learned that it takes significantly longer and costs nearly twice as much to use BPA administered funds to screen an irrigation diversion compared to using Mitchell Act funds to screen a similar diversion. Although Congress did not intend to make BPA a super fish and wildlife agency, BPA has acquired one of the largest staffs of fishery biologists in the Columbia Basin. In contrast, the success of the Dingle/Johnson, Pittman/Robertson programs administered by the U.S. Fish and Wildlife Service demonstrates efficient procedures are available for administering major funding programs. For several years we have questioned whether another federal agency, under the Economy in Government Act, might more efficiently administer BPA's fish and wildlife funding responsibilities consistent with the Northwest Power Act. We urge your support in this regard.

The next months are critical to the salmon and my people. Utmost care must be taken to protect the 1995 migration of juvenile salmon. This means the region and the nation cannot afford to quibble over costs of providing flows and spills in 1995. We must provide the water the salmon need this spring and summer. Structural solutions, like drawdown and new surface bypass systems will not be available in 1995. Regardless of which set of structural measures is chosen, all four tribes are deeply committed to the restoration of harvestable salmon runs to all of the tribes' usual and accustomed fishing places. The tribes' salmon restoration measures, in-

cluding supplementation and habitat actions in each of the tribes' ceded areas, can move forward immediately.

In conclusion, I would like to again underscore the commitments of the United States in the 1855 treaties of the four tribes. During the treaty negotiations, the tribes were told that the treaties secured our fish and asked to rely on the promises of the United States' treaty negotiators. As has often been essential in the past, the tribes will resort to litigation if necessary to defend their treaty fishing rights. Numerous decisions of the federal courts have confirmed our rights to take salmon and to have salmon to take. These rights have existed since time immemorial, but they are now threatened because there are so few salmon remaining. Please ensure that the salmon are restored. Thank you for the opportunity to present the tribes' views.

SIERRA CLUB

STATEMENT OF JIM BAKER, NORTHWEST SALMON CAMPAIGN COORDINATOR

Senator GORTON [presiding]. Mr. Baker.

Mr. BAKER. Thank you, Mr. Chairman and Senator Kempthorne. For the official record, my name is Jim Baker, and I serve as Northwest salmon campaign coordinator for the Sierra Club, staffing our Columbia basin field office in Pullman, WA.

As you know, Mr. Chairman, I was a CETA participant in the regional salmon summit that Senator Hatfield organized in the winter of 1990 and 1991. I have previously testified before you.

So it is my personal pleasure to appear today. The Sierra Club is deeply grateful for the opportunity to testify before the Senate today.

You have my fairly substantial written statement, which I would ask to——

Senator GORTON. It will be included in the record.

Mr. BAKER [continuing]. Be included in the record, and I will try to summarize it very briefly, indeed.

More than ever, the Sierra Club remains confident that the Columbia and Snake Rivers can produce both fish and power, can sustain both a strong salmon recovery, and a viable competitive Bonneville Power Administration. Our confidence is based upon four main reasons.

Reason No. 1, at $121 million annually to implement the strategy for salmon adopted by the Northwest Power Planning Council, the cost of salmon recovery, even if borne entirely by BPA, is workable and affordable.

Saving the salmon would result in an increase of just $2 per month for the average residential electricity consumer in the Northwest, hardly a bankbreaker.

BPA need only apply its business acumen and creativity to make salmon recovery so workable and affordable. In this regard, I want to praise Bonneville for seeking and signing seasonal energy exchange contracts with California and the Southwest.

Conservationists also welcome Administrator Hardy's announcement at a recent meeting that the EPA is actively considering diurnal and seasonal, in other words, flow-based pricing, which would be good both for the salmon and for Bonneville's business.

Reason No. 2, other costs, especially the WPPSS dead load are driving BPA's competitive prices, but Bonneville can ease its financial squeeze by holding its customers to their power sales contracts with the agency, charging an exit fee to cover the fair share of WPPSS debt from those who leave BPA service anyway, and/or in-

corporating WPPSS debt and other costs into BPA transmission rates.

Reason No. 3, there are other lost revenues to BPA over and above fish flows, such as irrigation withdrawals and navigation lockages, which, in fairness, and for BPA's competitiveness, need to be recovered or addressed. Exercise of Section 4(h)(10)(c) of the Northwest Power Planning Act, as in the administration's proposal today, is a good start.

Reason No. 4, the cost of salmon extinctions would run much, much higher. While I would like to talk at some length about all four points, I will devote the balance of my testimony this evening to this last one.

The debate in this hearing and in the public, generally, has concentrated on the cost of salmon recovery under the Endangered Species Act and the Northwest Power Planning Act.

The Northwest conducts such a narrow debate at great peril, because the stakes are much higher. Already, salmon declines have shut down harvest of chinook and coho off of Washington and northern Oregon, crippling the salmon fishing industry, sport, commercial, and tribal, that used to generate $1 billion annually, and used to maintain 60,000 jobs directly in the Northwest economy.

Commercial boats and sport anglers have headed north, either exporting income to Canada, or competing with Alaskan operators, and in any case, putting greater and greater pressure on North Pacific fisheries, due to the collapse of Northwest salmon runs, particularly in the critical Columbia/Snake watershed.

The Pacific Salmon Treaty with Canada has also collapsed, setting of an international fishing war with no end in sight. Last year, Canada charged those Northwest fishing boats bound for Alaska $2,000 per round trip through British Columbia waters. This year the fee will probably go up to $10,000.

Finally, salmon extinctions would cause the United States to abrogate its treaty signed in 1855 with the sovereign American Indian tribes.

In the still pending *United States* v. *Oregon* case, three consecutive judges, Bolt, Bellini, and Marsh, in three consecutive decades, have now ruled that by guaranteeing salmon fishing to the tribes in perpetuity, the 1855 treaties place an affirmative obligation on the United States to put actual fish in the river for the tribes to catch.

Now, Mr. Chairman, I cannot and I do not speak for the tribes; however, given the consistency of these rulings, it seems a fair and reasonable conclusion that following salmon extinctions, the courts would order reparations paid to the tribes in amounts that would be substantial, annual, and forever, because extinctions are forever.

How substantial? In a settlement last year with the BPA over hydropower rights, the Paulville tribe, in Washington State, received $50 million, lump sum, plus $15 million annually, indexed to BPA power rates, in perpetuity.

If that is the price for an out-of-court settlement over hydropower rights, then salmon extinctions and reparations for breaking the 1855 treaties would surely pull down a far heavier chunk of change.

Those who think that salmon recovery sounds too expensive should ponder the much higher cost of salmon extinction. Fortunately, Mr. Chairman, our region need not take the expensive path to salmon extinctions.

PREPARED STATEMENT

The Columbia can work for fish and power, applying its considerable creative challenge and business acumen, BPA can build an affordable road leading to salmon recovery for the Northwest, and a viable competitive future for itself. Thank you for the opportunity to testify before the committee today, and I welcome your questions in written or in verbal form.

Senator GORTON. Thank you, Mr. Baker.

[The statement follows:]

PREPARED STATEMENT OF JAMES M. BAKER

Good afternoon, Mr. Chairman and Senators. For the record, my name is Jim Baker, and I serve as Northwest Salmon Campaign Coordinator for the Sierra Club, staffing our Columbia Basin Field Office in Pullman, Washington. Over the past seven years, I have held similar positions with two other organizations, Friends of the Earth and Northwest Conservation Act Coalition, thereby receiving the opportunity to serve as a seated participant in the regional Salmon Summit which you organized, Mr. Chairman, in the winter of 1990-91.

Then and now I have remained confident that the Columbia River can produce both abundant salmon *and* low-cost electricity, sustain both the fishing *and* the hydropower industries of our region, meet our legal requirements to save salmon runs while keeping the Bonneville Power Administration viable and competitive, maintain a high standard of living *and* the high quality of life that salmon not only symbolize, but actually embody, in the Pacific Northwest. I remain confident that our region can enjoy both fish *and* power for four reasons.

1.) Salmon recovery costs are actually workable and affordable.

If BPA applies some creativity and business acumen, the agency's costs for salmon recovery will not become a fatal burden.

As this committee has heard again today, the majority of Bonneville's salmon costs are lost revenues due to shifting hydroelectric generation from the winter to the spring in order to provide fish flows. Every competent economist and realtor will tell you that the value of anything, whether a home or a kilowatt-hour, is what a willing buyer will pay for it. By definition, BPA's lost revenues for fish flows have not undergone this simple test of the marketplace. So any dollar value attributed to fish flows is guesswork, which depends entirely on the assumptions going into the estimate.

Last year the Sierra Club, Natural Resources Defense Council, and American Rivers published *Changing the Current* in which, among other topics, we reviewed Bonneville's estimates of its costs to meet power demands while implementing a salmon recovery similar to that adopted by the Northwest Power Planning Council. Attached to my testimony please find a copy of the executive summary of *Changing the Current*.

In our report, we specifically looked at three different estimates for power costs provided by BPA itself in the *Columbia River System Operation Review* (SOR). These three different methods are: the **CT Replacement** in which Bonneville builds and maintains combustion turbines (CTs) to fill any energy deficits, the **Power Purchase** in which the agency buys replacement power on the open market, and the **Power Market Decision Analysis Model (PMDAM)** in which BPA purposefully works with British Columbia and the U.S. Southwest to supply all power requirements with the lowest possible costs.

In the SOR, BPA gave the following estimates of power system costs in order to implement salmon recovery:

Estimate Method	**Total BPA Cost** (1993 $ million per year)
CT Replacement	160
Power Purchase	66-88
PMDAM	21

Mr. Chairman, this extremely wide range of cost estimates illustrates how easily BPA and the Northwest can view salmon recovery as a competitive disadvantage or a business opportunity. In this regard, it is important to note that the PMDAM computer projection showed a net *benefit* of some $50 million annually across the entire West Coast grid.

It is also important to note that, if BPA followed the CT Replacement method in the real world, the agency would pursue the ludicrous business strategy of constructing combustion turbines which would operate just 2.5 months during the next 50 years -- an average of 1.5 days in each year! Nonetheless, in the draft SOR, Bonneville uses cost estimates from the CT Replacement method.

Clearly by Bonneville's own reckoning, the agency can -- with some creative and astute business strategies such as those identified in the PMDAM -- make salmon recovery workable and affordable for the Pacific Northwest. In this regard, I would praise BPA for seeking and signing seasonal exchange contracts with California utilities over the past four years. And conservationists welcome announcements during recent meetings with BPA Administrator Hardy that the agency is actively considering diurnal and seasonal pricing for electricity. Such flow-based prices just make good business sense for Bonneville and for salmon recovery.

Turning to overall costs, our *Changing the Current* report concludes that implementation of a salmon recovery plan similar to the "Strategy for Salmon" adopted by the Northwest Power Planning Council would cost BPA less than $120 million annually, and the average residential consumer of Bonneville electricity less than $2 per month -- hardly the bank-breaking doomsday expense as claimed again in some testimony before this committee today. I must emphasize that we did not create the numbers in our report; they come from the multi-agency *Columbia River System Operation Review*, the *System Configuration Study* by the U.S. Army Corps of Engineers, and related agency documents.

So the Congress should maintain some healthy skepticism and request an explicit statement of the assumptions and justifications going into any and every estimate of salmon recovery costs. In point of fact, BPA by its own ledgers is actually writing checks for fish and wildlife expenses which total less than $100 million annually.

2.) Other costs are driving BPA's financial crisis.

Meanwhile, BPA each and every year is writing several fold larger checks to pay off its debt on WPPSS nuclear power plants that have never generated and will never generate one kilowatt-hour. Fish and wildlife costs compare very favorably indeed to this crushing debt load of $8 billion from WPPSS and other sources.

WPPSS debt has now become a financial crisis as customers threaten to leave BPA and shirk their repayment responsibilities onto the agency's remaining customers. BPA should close the exit door, or at least charge a fee to cover their fair share of WPPSS debt if and when customers decide to depart from Bonneville service. In addition, BPA should incorporate all its costs, especially debt repayment as well as fish and wildlife, into its transmission rates; wire charges create an insurmountable barrier to abandoning WPPSS debt.

In a similar vein, some BPA consumers, particularly the Direct Service Industries (DSIs), receive below-cost rates -- an expense borne by other customers at great competitive disadvantage to Bonneville. The DSI subsidy runs to $180 million annually. Either the DSIs should pay their fair share in

power rates, or BPA should charge an exit fee if and when the companies close their World War II era plants and thereby fail to provide the jobs and incomes for which the Northwest has paid this considerable subsidy.

In its *BPA at a Crossroads* report last year, the BPA Task Force of the House Natural Resources Committee identified $150 million in annual savings for the agency. I would respectfully refer this committee to the BPA Task Force report, and to the testimony of my colleagues, K. C. Golden of the Northwest Conservation Act Coalition and Ralph Cavanagh of the Natural Resources Defense Council, for detail on what really drives the current BPA financial crisis and how to turn the agency's fortunes around.

3.) There are other lost revenues to BPA.

For full fairness, those who would criticize the cost of fish flows must also acknowledge other lost revenues to BPA. According to one estimate, each acre-foot of water withdrawn in southern Idaho for irrigation deprives Bonneville of some 2000 kilowatt-hours of hydroelectric generation at a lost revenue in excess of $50. Running water through the navigation locks instead of the turbines at the four federal dams on the Lower Snake River waterway alone costs Bonneville some $25 million annually. I am not suggesting that BPA or the Congress shut down southern Idaho irrigation or the Columbia-Snake federal waterway -- or fish flows! -- in order to maximize hydroelectric production.

Quite the opposite, I conclude that it is unfair and unproductive to fixate exclusively on lost revenues for BPA to provide fish flows. Several Northwest industries -- not just fishing -- cause Bonneville to lose hydropower generation and revenues. At the minimum, those who live in glass houses should pay their fair freight before casting stones. A new allocation under section 4.(h)(10)(C) of the Northwest Power Planning Act would only go part way in charging that fair freight.

4.) The cost of salmon extinctions would run much, much higher.

Mr. Chairman, whatever the expense of salmon recovery, it pales in comparison to the staggering cost that the Pacific Northwest faces in the extinctions of wild salmon stocks. The debate in this hearing and before the public generally has focused on the costs of salmon recovery plans under the Endangered Species Act and the Northwest Power Planning Act. Our region conducts such a narrow debate at great peril; the stakes are much higher.

• **Losses in the Northwest and Alaska fishing industry.** First of all, artificial production in hatcheries can not and will not maintain our Northwest legacy of salmon for future generations. Unless hatchery operators infuse wild genes into each brood cycle (at a minimum rate of 2-3 percent), artificial production of salmon quickly collapses due to in-breeding and other ills. So no wild salmon, no hatchery salmon, no salmon at all.

That means inevitably the loss of a Northwest-based fishing industry, historically one of the pillars of our regional economy. According to one study, salmon fishing -- sport, commercial, and Tribal -- generated $1 billion annually and maintained 60,000 jobs directly in the Northwest economy. The fishing industry pumped these dollars-and-cents benefits into coastal communities and the entire region until regulators last year shut down chinook and coho harvest off the Washington and northern Oregon coasts.

As salmon disappear in Oregon, Idaho, and Washington, Northwest boats and sport anglers have reluctantly journeyed north to Alaska for opportunities to harvest and stay in business. The Magnuson Act keeps the oceans off of U.S.

shores open to all American fishing boats. So the number of, and the competition among, harvesters in Alaskan waters will only increase -- to the detriment of both the resource and the industry -- if Northwest salmon continue to decline.

• **Fishing war with Canada.** In 1985, the United States and Canada signed the Pacific Salmon Treaty for the good of both the fish and fishing in both nations. The treaty's premise is simple, fair, and effective: everytime a U.S. fisherman catches a Canadian salmon, a Canadian fisherman will catch a U.S. salmon, and vice versa.

Consequently the treaty works if and only if both nations produce enough salmon. As a result, Canada and the U.S. put mutual commitments into the Pacific Salmon Treaty to build up fish production. British Columbia, particularly on the Fraser River, has done so. But after signing and ratifying the treaty, the U.S. has allowed salmon numbers in Northwest watersheds, particularly in the critical Columbia/Snake Basin, to slide even further downward. The Canadians routinely point out that, while they left the Fraser River free-flowing for fish, the Americans had built 13 hydroelectric dams on the mainstems of the Columbia and Snake Rivers -- dams which are grinding salmon runs inevitably into extinction.

As a direct result, bilateral talks to re-negotiate the Pacific Salmon Treaty broke down in 1994. Last summer Canada charged a $2000 fee on U.S. fishing boats for round-trip passage passed through British Columbia waters bound for Alaska. The Canadians have threatened to raise the fee to $10,000 in 1995.

No end to this international salmon fishing war is in sight. To reach a new Pacific Salmon Treaty with Canada, the U.S. must offer either substantial cash compensation, or a credible plan to restore salmon runs in the Northwest. The latter would benefit both nations.

• **Abrogation of 1855 Treaties.** Finally, in 1855, the wars with the sovereign American Indian Tribes ended in the Pacific Northwest with the signing of several treaties. So central were salmon in the Tribes' culture, religion, and way of life that the 1855 Treaties guaranteed to the Native Americans the right to salmon fishing at "accustomed sites" in perpetuity.

With salmon numbers already slipping in the 1960s, Tribes began testing their 1855 Treaty rights with lawsuits which were consolidated in the federal courts as *U.S. v. Oregon* -- still pending to this day. In each of the next three decades (1974, 1985, and 1994), three different U.S. District Judges (Boldt, Belloni, and Marsh) who successively held jurisdiction over the case ruled that the 1855 Treaties legally obligate the United States to put actual salmon in the rivers for the Tribes to catch.

In other words, salmon extinctions would abrogate the 1855 Treaties. Given three consecutive rulings in three consecutive decades, the court would order reparations paid to the Tribes. These costs of salmon extinctions would be substantial, annual, and forever -- because extinctions are forever.

How substantial? Mr. Chairman, I can not and do not speak for the Tribes. But in a 1994 out-of-court settlement of hydropower rights associated with Grand Coulee Dam, the Colville Tribe of north central Washington State received a lump sum of $50 million -- plus $15 million annually from BPA indexed upward with the price of electricity in perpetuity. It seems a fair and safe conclusions that for all the Tribes, salmon are far more sacred than hydropower rights.

Conclusion

So those who think salmon recovery is too expensive should ponder the much higher cost of extinctions. The decline of salmon in the Pacific Northwest means dollar-and-cents losses in our commercial and sport fishing industry, environmental degradation, bad faith in our treaty obligations to Canada and to the region's sovereign Tribes -- possibly leading to staggering reparations. The stakes around salmon extinction are very high indeed.

From this perspective, the greater danger to Bonneville's competitiveness as a viable business enterprise comes from looming extinctions -- not from salmon recovery costs. The top priority for BPA should become saving the Columbia/Snake salmon runs. The worst uncertainty for the agency and its customers flows from a Biological Opinion for federal hydropower operations recently released by the National Marine Fisheries Service -- computer modeling of which shows a continued decline of the endangered salmon. The best hope for BPA and the Northwest lies with fulfilling at long last the promise of a Columbia hydroelectric system re-built to work for both power *and* salmon.

Thank you very much, Mr. Chairman, for the opportunity to testify before the committee today. And I welcome your and your colleagues' questions.

CHANGING THE CURRENT REPORT

Good news for wild salmon and Northwest ratepayers

Energy and construction costs to modify hydropower dams—and give wild salmon a fighting chance to survive naturally in the Columbia and Snake Rivers—are far lower than originally thought.

Ever since Snake River sockeye and chinook were listed under the Endangered Species Act in 1991, the debate over what actions to take to lessen the huge toll taken on these runs by the hydropower system has hinged largely on the issue of cost. For regional decision-makers this issue is a significant one. They must weigh the political liability of higher utility rates to cover the costs of change in the hydrosystem versus the legal and political liability of additional wild salmon extinctions, "on our watch."

Although ratepayers and regional decision-makers have a legitimate concern that a restoration program be affordable, we must be able to fairly evaluate what the costs of salmon recovery measures are likely to be. Thus far, the agencies operating the dams have estimated how much salmon measures would cost the region *if imposed on an otherwise unchanged energy and water system.*

The federal hydropower agencies have ignored the great inefficiencies in the current system. They have not sought to identify ways that current electricity marketing and water management could, and would, be modified to create the most cost-effective match between the needs of migrating salmon and other uses of the river. As a result, they have greatly over-estimated the costs of modifying Columbia and Snake River hydrosystem operations. They have presented decision-makers with flawed information that could rob this region of cost-effective solutions to a highly-charged public policy issue.

Key Findings of Report

- Cost increases for average Northwest ratepayers would be about $1.20 to $2 a month—far lower than initial estimates, and in line with what ratepayers have said they would be willing to pay to save endangered salmon runs from extinction.
- Shifting BPA hydrogeneration away from winter months into spring and summer for the sake of water flows for salmon is an affordable energy strategy—one that matches the water needs of migrating fish with opportunities for BPA to market excess summer capacity when power demand is highest throughout the western power grid.

The fact is that human use of water and energy in the Columbia River system can be shaped to better match the spring and summer flows that wild salmon need. This report identifies affordable strategies for accomplishing this.

Scope of Report

This report looks at real-world strategies for modifying electricity marketing, water management, and construction

- Reducing hydropower subsidies for special interests such as aluminum manufacturers ($179 million), and power subsidies to pump water for irrigated agriculture ($50 million), could help pay for salmon restoration measures—and reduce wasteful water and energy use that the subsidies promote
- The region can afford to rebuild Columbia Basin salmon runs!

costs to lessen the cost of measures to improve wild salmon survival. The report looks specifically at ways the federal hydropower agencies can accommodate a combination of reservoir drawdowns, increased river flows, and adequate water to safely pass juvenile migrants over dams' spillways. These are the measures that state and tribal fisheries professionals believe will provide the greatest improvement in survival for salmon. They are also the measures that some utilities and commercial river users have sought to portray as "too expensive" to Northwest ratepayers.

This report is not an attempt to quantify all costs associated with salmon recovery, nor to imply that the specific regime of drawdowns, flow, and spill analyzed here is the exact right combination of these elements, or that alone these measures will solve the impending crisis for Northwest salmon. But the report is intended to illustrate an important point often missing in the debate over salmon recovery, that there are affordable strategies for minimizing the costs of these key measures.

Specific salmon recovery measures examined in this report (see below for details) is the "spillway-crest drawdown" option analyzed by BPA in its 1994 System Operation Review, with added cost analysis for increased levels of "spill" recommended by fisheries agencies. The choice of this scenario was based primarily on the availability of data, and because it generally reflects actions recommended by state and tribal fish agencies.

This report analyzes the following salmon measures

- Annual drawdown of the four lower Snake reservoirs to "spillway crest," approximately 30 feet lower than current water levels, or roughly one-third of the way down the dam, from April 16 through June 15 each year.
- Operation of the John Day reservoir in the Columbia River at minimum operating pool, the lowest level that all functions of the dam (including navigation and power production) are designed to be fully operational, or about 5-8 feet below current levels during spring and summer each year.
- Snake River "flow augmentation" of one million acre feet per year
- In addition, this report considers the costs of sufficient "spill" at the Snake River dams to move at least 80 percent of migrating smolts safely over the spillway, around the turbines for a period of four months each year, and sufficient "spill" at the Columbia River dams to send the highest percentage possible of migrating smolts safely over the spillway without exposing fish to unacceptably high risk of nitrogen "gas bubble disease," also for four months out of the year.

Real-World Scenarios to Minimize Electricity Costs

Implementing the spillway-crest drawdown scenario would shift hydropower generation from the winter, when it is most valuable in the Northwest to the spring and summer, when it is less so. The cost of replacing this lost winter hydropower generation must therefore be considered part of the cost to the region of implementing salmon recovery measures.

In the System Operation Review, BPA unrealistically overestimates this cost. BPA's estimate of annual electrical system costs of $160 million presumes that all lost hydropower capacity is replaced by building new natural gas-fired turbines, even though this results in building entire power plants that would be needed only two and a half months(!) out of every *50 years*. This is obviously not a realistic assumption.

Taking Full Advantage of the Western Power Grid

BPA also analyzes a more realistic scenario which assumes that lost hydropower will be replaced by purchasing excess power from other generating sources as needed, which is in fact an established practice and one that a cost-conscious utility would pursue. This scenario carries an annual price tag of $66-88 million, half the cost of BPA's highest estimate.

But even this much more realistic cost figure does not fully take into account the opportunities available to BPA to off-set the costs of replacing power lost at certain times of the year, with power *sales* to other western regions at other times of the year.

The demand for electricity in California and the Southwest is highest in the summer for air conditioning, whereas demand for power in the Northwest is highest in the winter for home heating. The spillway-crest drawdown scenario has the effect of reducing Northwest hydropower generating capacity in the fall and winter, but it would increase power generation in the spring and summer as flows for salmon add fuel to the hydropower system. Increased generating capacity during the spring and summer creates an opportunity for BPA power sales, or exchanges, via the interconnected western power grid to regions of the west where demand peaks in summer.

The potential market for sales of excess electricity to California are modest at this time, but are projected to be substantial in future years. In the short term, BPA has a significant opportunity to offset losses of fall and winter generation by increased power sales in spring and summer to WAPA, the Western Area Power Authority that serves much of the Southwest. As a result of the recently negotiated settlement of mitigation for Glen Canyon dam, required changes in water flow regimes in

the Colorado River will leave WAPA with a seasonal capacity shortfall just when measures to improve salmon survival in the Columbia and Snake will create excess capacity for BPA.

When the real-world potential for power sales to California and the Southwest are factored in, the annual cost of lost hydropower as a result of actions to help salmon is as little as $21 million, a far cry from BPA's high estimate of $160 million and significantly lower even than BPA's more realistic estimate of $66-88 million.

Reducing the Costs of 'Spill'

Water "spilled" over dams' spillways, to divert small fish away from deadly turbines and mechanical bypasses, also creates some reduction of hydropower generation. Water that goes over the spillway and not through turbines is lost "fuel" from a hydropower standpoint.

The costs of spill can be minimized, however, with a water management device called a "surface collector." These facilities work well at Wells Dam in the mid-Columbia. Juvenile salmon migrate very near the surface of the water, and a surface collector takes advantage of this natural behavior. The device diverts only the top layer of water over the spillway, which minimizes the amount of water that bypasses the turbines, yet still sends most of the fish safely over the spillway. By reducing the amount of water that bypasses the turbines as spill, surface collectors can significantly reduce spill costs, and the risk of gas bubble disease for fish.

Buying Surplus Water for Salmon Flows

There is a significant opportunity to offset some of the water that is lost to hydropower generation as a result of spill with water buy-backs at market value from farmers irrigating low value, surplus crops. Paying farmers not to produce has a long history in the U.S. as a means to bolster chronic low crop prices, stem over-production, and reduce environmental damage. A water acquisition program for the sake of salmon could accomplish a similar purpose by paying farmers the net profit from the irrigated crop in order to leave their water in the river.

Purchasing an additional million acre-feet of water to retain it in the Snake River system will cost about $28 million per year (based on the value of irrigated crops). However, buying water to increase flows for salmon also has the effect of increasing water available in the river for hydropower generation and it reduces the need for other generating resources.

BPA estimates the current value to the hydrosystem of an additional million acre-feet of water to be about $40 million per year in increased power revenues. Thus if power generators pay farmers to stop irrigating surplus crops by guaranteeing farmers the same profits the crops could be expected to earn, power generators could reap a net benefit of $12 million in increased hydropower sales while fish reap the benefits of added flows.

Recalculating the Cost of Construction

The cost of physically modifying dams in order to accommodate annual drawdowns is a large part of the expense of these measures. The reported construction costs, as estimated by the U.S. Army Corps of Engineers, have been significantly exaggerated, however—from a computation error that overstated the annualized costs of construction by a whopping $62 million, to design, engineering, and construction plans that private contractors say can be reduced by $39 million.

Other engineering firms commissioned to review the Corps' plans identified changes in design, scheduling, and contingencies proposed by the Corps that both reduce costs and put salmon-saving measures into place in 7.5 years instead of 15 years as proposed by the Corps.

Adding Up Costs

When all the costs and cost savings are added up (see chart), the net annualized increase to Northwest residents is $116 million. This realistic estimate of the costs associated with spillway-crest drawdown, flows, and spill is good news for Northwest utility customers and wild salmon because it demonstrates to regional decision-makers that saving salmon can be affordable when real-world cost saving strategies are employed.

		How It All Adds Up
Energy Costs		
■ Unrealistic estimate of cost for building all new power plants to replace lost winter hydropower, even though some would be projected to operate only two and a half months out of every *50 years*	$ 160 million	
■ Cost adjustment for real-world energy marketing strategies that would off-set replacement energy purchases with high-value energy sales via the western power grid	-$139 million	
	$21 million	$21 million
Construction Costs		
■ Exaggerated U.S Army Corps ofEngineers construction cost estimate	$ 130 million	
■ Adjustment for Corps' mathmatical error	- $62 million	
■ Adjustment for shorter construction schedule and design modifications worked out by private contractors	- $39 million	
	$29 million	$29 million
Other Costs & Benefits (that offset costs)		
■ Cost of "spill" including replacement value of lost hydropower and construction of "collectors" to efficiently send 80% of migrants safely over spillways using a minimum of water	$ 69 million	
■ Costs to assist businesses, ports, irrigators, recreation facilities, and communities adjust to changed river operations	$17 million	
■ Lowered cost due to net energy benefit from purchasing surplus water at fair market value	- $12 million	
■ Costs offset by conservation savings to hydrosystem (price elasticity)	- $8 million	
	$66 million	$66 million
Added annualized cost to BPA to implement spillway-crest drawdown, flows, and spill.		**$116 million**

Putting Costs In Context

Adding annual costs of $116 million to BPA's current cost of producing hydropower would translate to an increase of 5.9 percent in the wholesale rate that most of BPA's customers pay. This does not mean, however, that electricity rates for residential customers would rise by 5.9 percent because the cost of generating hydropower is only one portion of a residential customer's total utility bill.

Other costs that are part of electric utility rates include transmission, distribution, and power generation from sources other than the hydrosystem. These other components of electricity rates would not be affected by increased costs for hydropower. Accounting for all factors that contribute to an individual household's utility bill, implementing a spillway-crest drawdown, flows, and spill scenario at an added annual cost to BPA of $116 million would raise residential rates by about 1¢ per kilowatt hour, or about $1.20 for an average ratepayer experiencing a 2.3 percent rate increase. For some public utility customers the added monthly cost would be closer to $2 because public utilities tend to rely more heavily on BPA hydropower.

Adding Salmon Costs Still Leaves Growing Gap Between Northwest Rates and Rates Nationwide

Even with this rate increase, Northwest ratepayers would have the lowest electricity rates in the nation by a sizeable margin. The average rate Northwesterners now pay for electricity is less than 4.8¢ per kilowatt hour, compared to an average rate in the rest of the country of 8.4¢ per kilowatt hour. The difference between what Northwesterners pay and average rates for other parts of the country has actually grown larger since 1987. BPA rates would continue to be competitive.

Other Potential BPA Cost-Savings Outweigh Added Costs for Salmon

Added annual costs of $116 million can also be compared to other potential cost-savings that have been identified but not yet implemented. Rep. Peter DeFazio of Oregon chaired a congressional task force that identified $150 million in potential budget savings to BPA from reductions in out-dated subsidies and increased administrative efficiency. Implementing even some of the potential savings identified by the BPA task force would make the cost of salmon measures imperceptible to ratepayers.

Special Subsidies for Commercial River Users Outweigh Salmon Costs

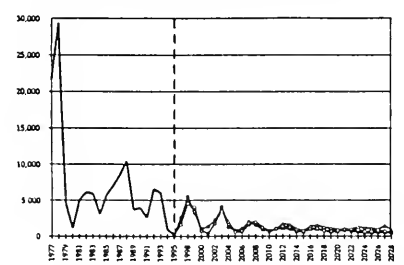
Some special interest industries in the Northwest (most notably aluminum manufacturers) draw power directly from the Bonneville Power Administration at subsidized rates. The rates paid by these "direct service industries" now fall $179 million short of covering BPA's costs for providing the power. This cost is passed on to Northwest utility customers along with an additional $50 million in subsidized hydropower to pump water for irrigated agriculture. Reducing the extent of these subsidies can help pay for measures to restore wild salmon—whose decline toward extinction has been one result of the wasteful power and water use that the subsidies promote.

The Time for Action is Now!

There is significant scientific consensus and supporting data to conclude that current efforts to save wild salmon by collecting, barging, and trucking migrants past the dams, does not offer hope of recovery. Even the Northwest Power Planning Council's most optimistic assumptions about the success rate of the transportation program leave endangered runs with only the barest margin of survival, no margin of safety, and no likelihood of restoration (see chart). Science has finally caught up to common sense—salmon belong in the river, not in the hold of a barge or tank truck.

The region's fisheries professionals, using their knowledge of salmon biology, physiology, and life cycles, plus knowledge of the conditions under which wild salmon thrived in incredible abundance, say that a combination of drawdowns, flows and spill will give salmon the fighting chance they need to survive naturally in the Columbia and Snake Rivers—even while Northwesterners continue to benefit from the hydropower system. Implementing measures that will give the 1995 out-migration of juvenile salmon the best possible chance of survival is critical—because by 1996 the numbers of juveniles will drop precipitously, reflecting the huge drop in returning adults this year.

Even Most Optimistic Assumptions About Barging Program's Effectiveness Does Not Recover Snake River Wild Salmon



Northwest Power Planning Council analyses of Snake River spring chinook productivity under Option 1A (maximum transportation of juveniles) 1994 Fish and Wildlife Amendments, Oct 1994

To the extent that cost to the hydropower system has been a significant barrier to regional consensus on action for salmon, this report identifies ways to more realistically estimate costs based on real-world strategies for minimizing them. The result shows the way for regional decision-makers to end reliance on the failed salmon barging program and implement a combination of drawdowns, flows, and spill at modest cost to ratepayers.

All this is good news for wild salmon in the Columbia and Snake Rivers, good news for regional decision-makers, and good news for Northwest ratepayers. It is good news for everyone who values wild salmon in our rivers, on our grills, in the claws of an eagle, on the end of a line, and as part of our heritage: We can afford the changes to the hydrosystem that will save wild salmon from extinction!

Key Recommendations

- Bonneville Power Administration should aggressively pursue Westwide electricity marketing and exchange opportunities and water purchases from agriculture, and should implement the recommendations of the DeFazio task force. It should adopt rate structures and sales contracts that encourage greater compatibility between energy use and salmon flow needs.
- The Army Corps of Engineers should revise its construction designs for drawdown-related dam modifications to make them more cost-effective, and should eliminate unnecessary delay from its design and construction schedules.
- The Bureau of Reclamation should pursue and facilitate voluntary transfers of water for streamflows, and work with states to establish markets.
- The Northwest Power Planning Council should promote the above actions through its salmon and power plans, and should estimate the cost of salmon restoration plans taking full account of the cost-minimizing opportunities identified in this report.

PACIFIC NORTHWEST WATERWAYS ASSOCIATION

STATEMENT OF GLENN VANSELOW, PH.D., EXECUTIVE DIRECTOR

Senator GORTON. Dr. Vanselow.

Dr. VANSELOW. Mr. Chairman, the 140 members of the Pacific Northwest Waterways Association appreciate the opportunity to testify at this committee today.

You, Senator Hatfield, and your colleagues in the Senate have played important roles in bringing the parties together to solve both biological and economic issues surrounding salmon recovery, and we are hopeful that the results of today's committee hearing will help add to that progress.

PNWA represents a wide range of economic interests throughout the Northwest. Our membership includes both public and private industries on and off the Bonneville system as well as the Direct Service Industries.

They were well represented here today. You have heard their testimony, and we support the testimony that they have given.

So I will speak today on behalf of the other river users that are PNWA, the public ports, tug and barge operators, steamship operators, river and deep draft grain elevators, the grain growers, forest products manufacturers, and others involved with economic development in Oregon, Washington, and Idaho.

These are the entities that translate the river into economic and recreational benefits for our region. Our members help keep American products competitive in overseas markets by using the river as the lowest cost, most environmentally benign transportation system.

Let me say that these commodities do not just come from the three Northwest States. They assist exports from more than 40 States throughout the United States.

My written testimony includes comments on the biological effectiveness of NMFS biological opinion, and I have submitted that to staff earlier, and assume that will be included in the record. I would like to focus my remarks on how to manage the costs associated with salmon recovery.

The Bonneville Power Administration and the region's ratepayers will see the cost of salmon recovery measures grow from $30 million in 1981, to over $500 million in 1995, if the NMFS biological opinion is implemented.

Randy Hardy and BPA has a right to seek relief, but I want to be clear that the answer cannot be found by shifting costs to other Northwest entities. The National Marine Fisheries Service, OMB, or other seeking a new set of deep pockets to supplement BPA funding must understand that the region simply is tapped out.

To discuss this situation of some of those other entities, the ports are public bodies, and nearly all of them are supported by local taxpayers.

For the tug and barge industry, we estimate the gross revenues, not profits, but gross revenues from the tug and barge operations above Bonneville are less than what the OMB is offering in annual relief through 4(h)(10)(c) of the Power Act.

The grain elevators operate on very, very small margins of less than a penny a bushel in their trades, and the grain growers com-

pete on an international market. They cannot pass along additional costs to their customers.

The money to make up the non-Bonneville share from the Power Act, let alone the increased costs in the 1995 to 1998 biological opinion, simply is not available in the region. It will be self-defeating to think that other regional interests can absorb more fish recovery costs.

If more dollars are needed to fund the Endangered Species Act and the Northwest Power Act implementation, there is really only one place to turn, and that is the Federal Government. And by that, I mean, federally appropriated funds.

This makes sense to us for two reasons. The first, the region is already paying more than any other region in the world for endangered species protection. We cannot pay more to implement these Federal programs.

We believe that in this case the Endangered Species Act has resulted in unaffordable Federal mandate. It is only right that the Federal Government should share in the cost of implementing Federal legislation.

Second, and perhaps even more importantly, the way we are operating today, there are no checks and balances on the Federal agencies or the power planning council. They simply demand more each year.

Without biological monitoring and without scientific justification, the region's costs have increased at an explosive rate. You saw the chart that Randy Hardy described, and the growth is truly the fastest growing cost in the region.

One way to ensure that the Federal agencies employ biologically sound and cost-effective measures is to make them responsible for a significant portion of the cost. Federal Government participation and paying for recovery measures would bring far greater accountability to the agencies.

The benefits would increase and the costs would go down. The administration and the Congress would have far greater opportunity to make sure that the agencies provide maximum benefit at the lowest possible cost.

We believe that with such accountability and oversight that the region would already have a recovery plan in place for less than was spent in 1994.

The regions could increase the number of barges, improve the smolt transportation program, install surface collectors, improve bypass at the dams, reduce harvest of wild stocks, improve hatchery practices, improve rearing habitat, and increase survival of the salmon.

Randy Hardy described three tools available to solve his financial problems. Implementing a more cost-effective recovery program, such as this, should be added as a fourth tool.

We believe there are scientific support for these actions from the recovery team, from National Marine Fisheries Service, and University of Washington scientists, from Harza Northwest, and others. Those actions will contribute to recovery.

The alternatives of massive flows and drawdowns not only cost the region hundreds of millions of dollars, but they offer little hope

for increased survival. One University of Washington researcher says the flows and spills will decrease survival.

The appropriate source of relief from high salmon cost recovery is a biologically sound, cost-effective recovery plan, not more dollars from river users.

The best way to ensure that this will occur is to require accountability on the part of Federal agencies. That accountability will only come if Federal agencies are responsible for a significant portion of the costs of their measures.

This will provide accountability, improve the process, and help solve Bonneville's and the region's financial problems.

PREPARED STATEMENT

Again, Mr. Chairman, thank you for providing the opportunity for us to be present today and present our views to the committee.

[The statement follows:]

PREPARED STATEMENT OF GLENN VANSELOW

Mr. Chairman, the 140 members of the Pacific Northwest Waterways Association appreciate the opportunity to testify before this committee today. You and your colleagues have played important roles in bringing parties together to solve both the biological and economic issues surrounding salmon recovery. We hope more progress is made today.

As you know, PNWA represents a wide range of economic interests in the Pacific Northwest. Our membership includes public and private utilities, both on and off the Bonneville system, and the Direct Service Industries. They are well represented here today, so, while we support their concerns, I will be speaking on behalf of the other river users in PNWA: the public ports, tug and barge operators, steamship operators, river and deep-draft elevators, grain growers, forest products manufacturers and others involved with economic development in Oregon, Washington and Idaho.

I will focus on two major concerns: the biological effectiveness of NMFS' Biological Opinion and how to manage the costs associated with salmon recovery.

NMFS BIOLOGICAL OPINION IS BOLD, BUT NOT PRUDENT

The National Marine Fisheries Service, with its Biological Opinion for 1995–98 river operations, takes the opposite tact from the Recovery Team they appointed to guide them. The Recovery Team, when faced with doubt, recommended alternatives that have been shown to increase survival, such as smolt transportation. They call for studying the flow hypothesis and where mortality occurs before implementing more radical proposals such as drawdowns.

NMFS, on the other hand, appears to favor taking bold action now and checking the consequences later. The NMFS opinion drains nearly all available U.S. water storage in the Basin, risks nitrogen supersaturation with massive spills at dams and calls for a January 1998 deadline for a decision on drawdowns to natural river level.

It is little consolation that NMFS finally calls for the basic studies that will answer the long-asked questions of where mortality occurs and what is the relationship between flows and survival. The answers will come after they implement radical flow and spill programs and after they are scheduled to make decisions on drawdowns.

NMFS' "reasonable and prudent alternatives" to jeopardy appear to disregard the scientific evidence now emerging in studies conducted by its own staff and the University of Washington. They appear to put the fish at increased risk from gas bubble disease. They also run the risk of not being able to refill the storage reservoirs to assist with migration in subsequent years.

NMFS, the courts and Congress should use the same standard used by the Recovery Team. Recovery measures should be based on biological science, not philosophy or political science.

THE REGION'S ABILITY TO PAY HAS REACHED ITS LIMIT

The Bonneville Power Administration and the region's rate payers will see the cost of salmon recovery measures grow from $30 million in 1981 to over $500 million in 1995 if the NMFS draft Biological Opinion is implemented.

These increasing salmon costs are not only driving up Bonneville's power rates, they are forcing utility customers to look elsewhere for their power. Public utilities in Washington's Clark and Snohomish Counties have already contracted with independent producers to provide energy at rates competitive to BPA's. The Canby Utility Board and Western Electric Cooperative are looking to do the same.

While Bonneville's costs are increasing, the cost of alternative power production is declining. Further increases in BPA rates will drive more customers off the Bonneville system. More rate hikes will diminish, not increase, the capability of BPA to fund the fish programs. Bonneville is at the limit in terms of its ability to pay.

Randy Hardy, BPA administrator, has been to Washington, DC seeking assistance for $250 million in past expenses and about $70 million per year in current fish costs, as provided by the Northwest Power Act. He is right to seek relief.

Neither the Bonneville ratepayers nor others in the region have the ability to pay more for continually growing salmon programs. The majority of the ports are supported, in part, by local taxpayers. We estimate the gross revenues, not profits, from tug and barge operations above Bonneville to be less than Bonneville is seeking in annual relief through the Power Act. The grain elevators operate on profit margins of less than a penny a bushel. The grain growers compete on an international market and cannot pass along additional costs to their customers. And, we should not forget that their prices are already supported by the federal taxpayer. The money to make up the non-Bonneville share from the Power Act, let alone the increased costs of the 1995–98 Biological Opinion, simply is not available in the region.

If more dollars are needed to fund the federal Endangered Species Act and the Northwest Power Act, there is only one place to turn—the federal government. This makes sense to us for two reasons. The first is that the region is already paying more than any other region in the world for endangered species protection. We cannot pay more to implement these federal programs. We believe that, in this case, the Endangered Species Act has resulted in an unaffordable federal mandate. It is only right that the federal government should share in the cost of implementing federal legislation.

Secondly, there are no checks and balances on the federal agencies or the Power Planning Council. They simply demand more each year. Without biological monitoring and without scientific justification, the region's costs have increased at an explosive rate. One way to ensure that the federal agencies employ biologically sound and cost-effective measures is to make them responsible for a significant portion of the cost. Federal government participation in paying for recovery measures would bring far greater accountability to the agencies. The benefits would increase and the costs would go down. The Administration and Congress would have a far greater opportunity to make sure that the agencies provide maximum benefit at the lowest possible cost.

COST-EFFECTIVE RECOVERY PLAN IS A BETTER ALTERNATIVE

We believe that with such accountability and oversight, the region would already have an effective recovery plan in place. For less than was spent in 1994, the agencies could increase the number of barges, improve the smolt transportation program, install surface collectors, improve bypass at the dams, reduce the harvest of wild stocks, improve hatchery practices, improve rearing habitat and increase survival of the salmon.

There is scientific support for these actions from the Recovery Team, NMS and University of Washington scientists, Harza Northwest and others. They will contribute to recovery. The alternatives of massive flows and drawdowns not only cost the region hundreds of millions of dollars, but they offer little hope for increasing survival. One University of Washington researcher says the flows and spills will decrease survival.

The appropriate source of relief from high salmon recovery costs is a biologically sound, cost-effective recovery plan, not more dollars from river users. The best way to ensure that will occur is to require accountability on the part of the federal agencies. That accountability will only come if the agencies are responsible for a significant portion of the cost of their measures.

NORTH SIDE CANAL CO., JEROME, ID

STATEMENT OF DeWITT MOSS, DIRECTOR

Senator GORTON. Our final witness will be Mr. Moss.

Mr. MOSS. Mr. Chairman, I thank you, and Senator Kempthorne. My name is DeWitt Moss. I am a farmer, and I reside in Jerome, ID. I do have engineering education as a background.

I currently serve as a director in the North Side Canal Co., a surface water delivery organization serving 165,000 acres, and the holder of 869,000 acre feet of storage in the upper Snake River basin. I want to thank you for inviting me to testify today, and I would like to provide my written comments for the record.

Senator GORTON. Without objection.

Mr. MOSS. The Columbia River and Snake River salmon have declined to less than one-half of 1 percent of the historical abundance, and this is the issue.

The purpose of this presentation is to summarize my views on the potential impact to Idaho of the current salmon recovery plan, specifically, the recently released biological opinion.

You have heard about the costs estimated to the BPA. What you have not heard is any costs related to water purchase, dry year lease, or idling of land estimated costs.

The biological opinion requires the upper Snake River to provide 427,000 acre-feet of flow augmentation annually, with, I quote "a high probability" of assurance by 1998.

And again I quote, "and another quantity additional water" is to be secured from Idaho and Oregon, consistent with applicable State laws and from willing sellers.

If significant progress on securing the above waters is not accomplished, formal consultation will be initiated. The additional water sought may be as high as 2 million acre-feet, and, in some cases, it could be 3.5 million acre-feet from the upper Snake River.

In addition, Dworshak Reservoir, in northern Idaho, is expected to provide between 1 and 2 million acre-feet of water annually.

The above-described willing seller stipulation came about only after our Idaho U.S. Senators confronted Secretary Babbitt about the opinion of John D. Leshy, Office of the Solicitor, Department of the Interior, instructing the Bureau of Reclamation to consider, releasing water covered by existing spaceholder contracts as one of four options to obtain water in 1993.

Mr. Fred Disheroon, U.S. Department of Justice, met with the Idaho water users in Pocatello and informed us that if the U.S. Government determined that a need exists for flow augmentation from Idaho, the U.S. Government would take the water and the Idaho water users' sole recourse would be through the courts for compensation and damages.

Secretary Babbitt's pledge that the water will be sought only on a willing seller basis is presently Idaho's only protection from a take. Our concern is over future court directions and mandated consultations, and we have other Federal claims for flows from this same reservoir system.

The taking of Idaho water could significantly impact Idaho irrigated farms and communities. Agriculture is Idaho's largest commodity.

In the upper Snake River we irrigate 2.8 million acres, with an annual rainfall of about 8 inches. This irrigated agriculture is possible, because we have 6.5 million acre-feet of storage reservoirs available.

However, more than 99 percent of that reservoir space is contracted and under Idaho water rights, and, therefore, large quantities of unappropriated water are not available.

Irrigated farm land in the upper Snake River is valued at about $1,200 to $2,000 per acre. Farm land without a source of water is valued at $50 to $100 an acre.

Whether an assured and adequate water supply exists for the next irrigation season is the question most often asked of me by lending institutions in our region. Without reliable water and financing resources, agriculture will be devastated.

Let me describe to you one scenario. If 427,000 acre-feet of storage was required to reliably, and that is 95 percent of the time, meet the flow augmentation requirements annually, as proposed by the biological opinion, the Bureau would need to secure 1.7 million acre-feet of upper Snake River storage at an estimated cost of $294 million, and about 400,000 acres of irrigated land would concurrently be removed from production.

Indirect economic impacts are estimated at $44 million annually for this specific case. Lost recreation values have yet to be calculated. Other scenarios requiring more water have higher costs. Less reliability of water supplies results in significantly less costs.

We have supplied flow augmentation to the upper Snake River of about 1.5 million acre-feet since 1991, and in my opinion, we will work with the Bureau to meet the 1995 flow augmentation requirement of 427,000 acre-feet.

However, there is no surplus in the upper Snake River. This flow augmentation simply drains our reservoirs so that the likelihood of providing any carryover storage for drought protection in subsequent years is significantly reduced.

The salmon decline is not from lack of Idaho water, and using Idaho's precious resource will not facilitate the return.

The affects of eight Federal dams on the lower Snake River and Columbia River, over harvesting, ocean and stream conditions, predation, poor quality hatchery smolt production, unscreened versions must be recognized as primary cause.

It boggles one's mind that we cannot eliminate predators, stop harvesting, eliminate gill nets, procure additional fish-friendly barges, and screen diversions, all of which would help readily.

Idaho normally discharges about 38 million acre-feet of water annually to the lower Granite Dam, with about 28 million acre-feet arriving during April to August salmon migration period.

This produces typical average flows ranging between 40,000 and 90,000 cubic feet per second. Assuming an average flow of 50,000, velocity improvements from this 427,000 acre-feet of flow augmentation is on the order of one-half percent.

At an average flow of 80,000 cfs, water particle travel time in the four lower Snake River reservoirs would be decreased from 256 hours to 247 hours, a decrease of 9 hours. Neither are very significant, and I submit a very poor and expensive choice of alternates to save the salmon.

Fish live very well in river flows of 40,000 to 80,000 cfs. We have spent an estimated $2 billion on the salmon issue, and one salmon returned to Red Fish Lake in 1994, two returnees are estimated in 1995.

The continuation of flow augmentation with upper Snake River water through the four lower Snake River reservoirs and dams must rank high as potentially expensive, speculative, and ineffective to save the salmon.

Lack of Idaho water did not cause their near extinction that we are witnessing, nor in my judgment, will more water from Idaho significantly alter their further decline.

PREPARED STATEMENT

If flow augmentation is a political choice for sharing the burden, then firm scientific data, supported by independent peer review, must support this endeavor. The economic impact of long-term flow augmentation would be horrendous to the State of Idaho.

Again, thank you for letting me present my views.

Senator KEMPTHORNE. Mr. Moss, thank you very much.

[The statement follows:]

PREPARED STATEMENT OF DEWITT A. MOSS

My name is DeWitt Moss. I am a farmer, a greenhouse owner and reside in Jerome, Idaho. I have degrees in Chemical and Nuclear engineering from schools in Colorado and Tennessee. I have spent the past 21 years on our family farm and spent the previous 15 years as project engineer and manager of nuclear reactor and fuel development in DOE's civilian power reactor development program. I currently serve as a director for the North Side Canal Company, a surface water delivery organization serving 165,000 acres, and holder of 869,000 acre feet of storage in the upper Snake River (SR) basin. I also serve on the Boards of Directors of the Idaho Water Users Association and the National Water Resources Association.

I want to thank you for inviting me to testify today and providing me with the opportunity to share with you my views on the salmon issue.

There is a saying in my part of the country that goes along this line * * * "if a little will do some good—a lot will do better." Usually this phrase applies to acquisition of money to allow one to keep farming. However, I am becoming increasingly concerned that the phrase has been inappropriately coined by the National Marine Fisheries Service (NMFS) biologists when looking to my irrigation water for the solution to their salmon recovery plans.

The Columbia River (CR) and SR salmon have declined to less than one-half of one percent (0.5 percent) of their historic abundance—this is the issue.

The purpose of this presentation is to summarize my views on the potential impact to Idaho of the current salmon recovery plan and, specifically, the recently released 1995–1998 Biological Opinion, dated March 2, 1995.

The estimated annual cost for BPA's fish and wildlife mitigation is $350 million with the majority of this allocated to salmon. The requirements of the newly revised and recently released 1995–1998 Biological Opinion are projected to add an additional $148 to $228 million to the annual costs. With these projected increases, 17 percent of an REA's total cost of power purchase and distribution goes to fish. BPA serves 15 percent of the Idaho population. This power burden is a liability to the market value of served land and communities and affects taxes, real estate values and crop value returns. The above numbers differ significantly from the environmental groups' estimated effects of $1 to $3 per month, per northwest household, for power rate increases to accomplish the proposed solutions for salmon recoveries. This does not include any water purchase, dry year lease or idling of land estimated costs.

In our area, the Biological Opinion requires the upper SR to provide 427,000 acre feet of flow augmentation annually, with a "high probability" of assurance by 1998. "Additional water" is to be secured from Idaho and Oregon. Securing this water for augmented flows is to be consistent with applicable state laws and from willing sellers. If significant progress on securing the above, ill-defined volumes of water is not accomplished, formal consultation will be initiated. Based on proposals considered over the past two years, the "additional water" sought may result in flow augmentation requirements as high as 2.0 million acre feet from the upper SR. In addition, Dworshak Reservoir in northern Idaho is expected to provide between one and two million acre feet of water annually.

The above-described willing seller stipulation came about only after Idaho U.S. Senators confronted Secretary of Interior, Bruce Babbitt, about an opinion of John D. Leshy, Office of the Solicitor, Department of Interior, dated June 14, 1993, instructing the Bureau of Reclamation (BOR) to consider "releasing water covered by existing spaceholder contracts" as one of four options to obtain water in 1993. In June, 1994, Mr. Fred Disheroon, U.S. Department of Justice, met with Idaho water users in Pocatello, Idaho, and informed us that if the U.S. Government determined that a need exists for flow augmentation from Idaho, above that already available to the government from willing sellers, the U.S. Government would take the water and Idaho water users' sole recourse would be with the courts for compensation and damages. Secretary Babbitt's and Commissioner Beard's pledge that water will be sought only on a willing seller basis is presently Idaho's only protection from a take. Our concern is over future court directions and mandated consultations. We are also deeply concerned about other federal claims for flows from this same reservoir system. There are suggested water requirements for 5 microscopic Middle Snake River listed snails. There are also downstream reserved water right claims in the Snake River Basin Adjudication by the U.S. and the Nez Perce Tribes for the flood flows of record in the basin for fish and wildlife habitat.

Simply put, the ESA and possible U.S. Government actions on the taking of Idaho water could significantly impact Idaho irrigated farms and those communities dependent on farm incomes and local taxes. Agriculture is Idaho's largest commodity, and I live in an area where agriculture is responsible for about 80 percent of the gross income produced.

Historically, we have never had salmon in this region above Shoshone Falls. The falls are 212 feet high. Since 1905, when Milner Dam was built 25 miles upstream from Shoshone Falls, flows over Milner have been zero in July and August. In the upper SR area of Idaho, we irrigate 2.8 million acres because average annual rainfall is only about 8 inches. Irrigated agriculture is possible because there is 6.5 million acre feet of water in storage reservoirs available. More than 99 percent of that reservoir space is contracted, and under Idaho water rights, therefore, large quantities of unappropriated water are not available.

Irrigated farm land in the upper SR is valued at $1,200–2,000 per acre. Farm land without a source of water is valued at $50–100 per acre. Whether an assured and adequate water supply exists for the next irrigation season is the question most often asked by lending institutions in our region. Without reliable water and financing resources, agriculture will be devastated. The Idaho Power Company, the principal and investor owned utility in our area, will be impacted by the drafts to the 1.0 million acre feet Brownlee Reservoir of 210,000–240,000 acre feet during the spring and summer period. Brownlee is Idaho Power's main load following reservoir and the company has yet to determine the impact of the newly established drafting criteria. In addition, Idaho Power relies on BPA power exchanges to meet customer demands.

I hope I have not confused this Committee with numbers, but let me describe one set of flow augmentation requirements and the estimated economic impacts of those flows. The numbers are taken from the Supplemental Biological Assessment for 1994–1998, dated December 15, 1994, prepared by BOR, BPA and the U.S. Corps of Engineers, and the Final Report of the NMFS Actions Work Group, released on November 22, 1994. If 427,000 acre feet of storage was required to reliably (95 percent of the time) meet flow augmentation requirements annually, as proposed in the current Biological Opinion, BOR would need to secure 1.7 million acre feet of upper SR storage at an estimated cost of $294 million and about 400,000 acres of irrigated land would concurrently be removed from production. Indirect economic impacts are estimated at $44 million annually for this specific case. Lost recreation values have yet to be calculated. Other scenarios requiring more water have higher costs: up to 3.7 million acre feet of storage would be required to provide 1.927 million acre feet of flow augmentation with a 95 percent reliability of refill; 925,000 acres would be removed from production; the government would spend more than one billion dollars acquiring the requested reservoir space; and the indirect economic impacts would total $151 million annually. Less reliability of water supplies results in significantly less costs and economic impacts.

We have supplied flow augmentation from the upper SR of 1.5 million acre feet since 1991 and, in my opinion, we shall work with the BOR to meet the 1995 flow augmentation requirement of 427,000 acre feet. The Idaho Power Company is being directed to provide another 210,000 acre feet from Brownlee. However, there is concern that the soon-to-be-released Recovery Plan, or the courts, could require additional flow augmentation. In 1994, my canal company decreased water deliveries by 20 percent and shortened the irrigation season. Although this was done primarily to guard against the possibility of the reservoirs not refilling this year, it will no

doubt help BOR meet its 1995 flow augmentation requirements. Some junior appropriators in the upper SR were unable to procure water in 1994 and some of those, who had junior rights were turned-off as early at July 1994—with no further turnons. There is no surplus of water in the upper SR. The flow augmentation of 427,000 acre feet annually simply helps drain our reservoirs so that the likelihood of providing carry over storage for drought protection is significantly reduced.

Let me assure you that I am not against the noble goal of saving the salmon, and I, too, want that species back in our streams, in abundance. What I vigorously oppose is the proposed methods of solution and, in fact, dispute that these will be the most effective ones, or even effective at all. The salmon decline is not from lack of Idaho water and using Idaho's precious resource will not facilitate their return. The effects of the 8 federal dams on the lower SR and CR, over-harvesting, ocean and stream conditions, predation, poor quality hatchery smolt production, and unscreened diversions must be recognized as the primary causes. It boggles one's mind that we cannot eliminate predators, stop harvesting, eliminate gill nets, procure additional fish-friendly barges, and screen diversions—all easily within our immediate capabilities and technologies. Based on the studies available, effective implementation of just these items could reduce mortalities by over 50 percent. If for no other reason, we must do these things to reduce the mortality variables in the system, so that we can determine the extent of any flow-survival relationship.

Idaho normally discharges about 38 million acre feet of water annually to Lower Granite Dam with about 20 million acre feet arriving during the April 15 to August salmon migration period. This produces typical average flows ranging between 40,000 and 90,000 cubic feet per second (cfs). Assuming an average flow of 50,000 cfs, river flow velocity improvements from 427,000 acre feet of flow augmentation is about 1 percent. At an average flow of 80,000 cfs, water particle travel time through the lower 4 SR reservoirs would be decreased from 256 hours to 247 hours—neither are very significant, and I submit a very poor and expensive choice of alternatives to save the salmon. In contrast, minimum operating pool (MOP) operation of the 4 lower SR reservoirs will increase flow velocities by 6 percent. Fish live very well in river flows of 40–80,000 cfs—and for your reference, your nearby Potomac River has mean flows of 21,000 and 15,000 cfs during the months of April and May, respectively.

The efforts of the past 14 years to save the salmon have lacked commitment and strong management direction. The modifications necessary to make the federal dams fish-friendly have proceeded at a snail's pace, if at all. We have spent an estimated $2.0 billion on the salmon issue and one salmon returned to Redfish Lake in 1994. Two returnees are estimated for 1995. Someone needs to ask the questions: Are we doing it right? And are there adequate resources to timely commit to this endeavor for a successful conclusion?

For the written portion of my testimony, I have included a brief list of salmon mortality causes that have been gleaned from the multitude of documents on this salmon issue. The continuation of flow augmentation with upper SR water through the 4 lower SR reservoirs and dams must rank high as potentially expensive, speculative and ineffective to save the salmon. Lack of Idaho water did not cause the near extinction of the salmon that we are witnessing. Nor, in my judgment, will more water from Idaho significantly alter their further decline. Other major actions must be accomplished. If flow augmentation is a political choice for "sharing the burden", firm scientific data, supported by independent peer review, must support this endeavor. Solutions and corrective actions must focus on the primary relevant causes of salmon mortality—not on more Idaho water. The economic impact of long-term flow augmentation would be horrendous for the State of Idaho.

The attached mortality list does illustrate the very complex nature of the problem and the complex solutions that must evolve for us to be successful in saving this species in the man-altered-Columbia and Snake River systems.

Again, thank you for allowing me to present my views on this important salmon issue.

KNOWN VARIABLES EFFECTING SALMON LOSSES

(1.) Turbines—outright kill, injure, stun, delayed mortality, predator susceptibility, and disease susceptibility.

(2.) Size and age of smolts: (*a*) Migration smoltification stage; (*b*) Date of initiation of migration; (*c*) Physiological conditioning of smolts for transition from fresh to salt water; (*d*) Photoperiod during migration; (*e*) Physical condition at onset of migration and ocean entry.

(3.) Travel time in the river and reservoir system and miles of migration.

(4.) Water temperature: (*a*) Migration initiation; (*b*) Disease susceptibility; (*c*) Predator concentration and metabolic rate of predators; (*d*) Controls smolt and adult migration.
(5.) Predators: (*a*) Squaw Fish; (*b*) Sea Lions; (*c*) Harbor Seals; (*d*) Chad; (*e*) Catfish; (*f*) Bass; (*g*) Trout; (*h*) Walleye; (*i*) Steelhead; (*j*) Birds; (*k*) Ocean predators.
(6.) Gas bubble trauma and spill volume flip-lip effects: (*a*) Water temperature; (*b*) Flow volumes; (*c*) Spill channel designs.
(7.) River and estuary turbidity—water toxicity and quality.
(8.) Hatchery vs wild fish survival: (*a*) Diseased hatchery smolts and disease transmittal during barging, migration and breeding; (*b*) Survival savvy; (*c*) Interbreeding—weakening wild stock strains.
(9.) Fish stress (susceptible to disease, predators and delayed mortality): (*a*) Hatchery handling; (*b*) PIT tagging; (*c*) Barging and/or trucking (collection methods, transportation and dispersal); (*d*) Turbines; (*e*) Spill; (*f*) Descaling—debris at dams.
(10.) Climate: (*a*) River flows—droughts; (*b*) Temperatures—river and reservoirs; (*c*) El-Niño Ocean effects; (*d*) Predator concentrations and locations; (*e*) Food supply in migration corridor and ocean.
(11.) Food supply for SR salmon: (*a*) Number of smolts migrating at a given time; (*b*) River conditions; (*c*) Reservoir conditions (−400 miles); (*d*) Estuary (−150 miles); (*e*) Ocean.
(12.) Barging: (*a*) Stress; (*b*) Disease susceptibility and transmittal; (*c*) Delayed mortality; (*d*) Release methods and locations.
(13.) Unscreened diversions—surface streams and pumps.
(14.) Adult Fall-Back: (*a*) Turbine mortality; (*b*) Lost in system; (*c*) Injury and delayed mortality; (*d*) Depleted energy—can't make it or too poor condition to reproduce.
(15.) Fishing—harvesting in CR, SR and Oceans: (*a*) Sport; (*b*) Commercial; (*c*) Tribes; (*d*) Illegal—ocean, estuary and rivers; (*e*) Accidental takes; (*f*) Gill netting.
(16.) Dam passage delays—configurations, flows and temperatures: (*a*) Smolts; (*b*) Adults.
(17.) Ocean Environment: (*a*) Predators, food supply, harvesting and other unknowns.
(18.) Spawning stream conditions—habitat.
(19.) Recreation.

Senator KEMPTHORNE [presiding]. To all members of the panel; I want to express on behalf of all Senators that were here earlier this afternoon our great appreciation. You have traveled many miles to provide us with your good insight.

I have some questions that I would like to ask each member of the panel. Then, too, I know that other Senators have questions that they had hoped to ask you, which we may submit to you in writing, but being sensitive to the fact that perhaps not all of you have staff, so we do not want to put an undue burden on you. So we will make you aware of those questions, and to the extent you can provide us with some responses, it would be appreciated.

With that, Mr. Sampson, let me start with you, if I may. Earlier in the hearing, Senator Murkowski raised the issue of the Snake River fall chinook and the concept of genetic purity. What is your perspective on the stringency to which we should apply genetics to salmon production?

Mr. SAMPSON. Well, as you know, the tribes, for the past 20 years, have gone on record in supporting the use of hatcheries for what we call supplementation, and the concept is that we actually use those fish, which all of these fish have come from wild stock that are now reared in the hatchery programs. Over 75 percent of the fish produced in the Columbia basin have been reared in hatcheries.

We believe, particularly on the Snake River, with fall chinook, that as the Senator was saying, is that it is time that we put those fish that are reared in the Lion's Ferry Hatchery back into the river.

As you know, the fish that are reared in the hatchery right now are not considered part of the population. We believe that they must be returned to the river so that they can spawn and continue to produce naturally, thereby increasing the population.

So supplementation is a very important tool that we must use for restoration. And it has worked in the Umatilla basin, as I stated, as well as the Tocantins and the Imnaha, we are seeing increased returns of salmon there. Those are tributaries of the Snake River.

Senator KEMPTHORNE. All right. Is it Dr. Vanselow? Did I pronounce that correctly?

Dr. VANSELOW. Yes.

Senator KEMPTHORNE. This afternoon I had some comments and some questions that I had directed to Mr. Hardy about the BPA biologist's view of the NMPF's biological opinion. My question to you is: What do your biologists, what are their thoughts about the NMPF's biological opinion with regard to flow augmentation and spill policies?

Dr. VANSELOW. To some degree that was covered in the testimony that I did not cover today and is in the written testimony. What our scientists are telling us is that the spill programs are very likely to be detrimental to fish.

We just had a situation where we had super saturation in the Wolamet River to a level that is actually less than what NMFS is proposing on the Snake, and it ended up with a kill of a significant number of fish on the Wolamet. So there is very much concern about the biological affects of the spill program.

The tests that were run on the spill program from last year showed nearly all of the salmon tests. It had identified gas saturation or gas bubble disease, and we saw that as potentially fatal to the fish. So there is very much concern about the spill program.

With respect to flows, the scientists that we are working with have indicated that they believe that some flow augmentation is necessary, but that like the power council and the NMFS' recovery team, lower volumes of spill than are being called for the biological opinion are sufficient for salmon recovery.

Senator KEMPTHORNE. Do you have any suggestions for what kind of technological innovations we should be pursuing?

Dr. VANSELOW. Well, there are a number, and, again, I think I probably should state for the record that I am not a fisheries biologist, and I am relying on biologists that we do work with. There are a number, and you heard about a number of those today, improving barge transportation, increasing the number of barges, so you have lower density, improving the release, and the holding of the juveniles when they reach the estuary can be a benefit, surface collectors, fish-friendly turbines, a number of other programs that have already been proposed or discussed at some point during the day today, we see as making sense.

We think that some of the other proposals, again, some of these massive spills and drawdowns, what we see in the NMFS program is decisions being made before some of the tests that they finally agreed to being completed.

Senator KEMPTHORNE. All right. Mr. Baker, I appreciated your comments today, and I would like to give you the opportunity to respond also to this, the concept of the technological innovations

and those that you think we should actively pursue. Again, just your thoughts.

Mr. BAKER. The first comment I should make to you, Senator, is that the Sierra Club and environmental organizations have been the first to disarm in the war over biology. We have no staff biologists. We even put together our wild salmon forever plan, which we brought to Capitol Hill 2 months ago—we even compiled our salmon recovery plan with the help of volunteer biologists.

We feel it is scientifically credible, but we are not eager to engage in the war of Ph.D.'s that has broken out in the Northwest.

We have consulted biologists from the States and tribes from the Northwest Power Planning Council, from folks who have no other interest than the protection of the fish and their restoration.

In consulting with them, we find a great need to relieve the blockage created by eight consecutive reservoirs of slack water, 320 miles in length, that delay migration to the point of very large mortalities.

And for that reason, we have proposed a program both of reservoir drawdowns within the salmon corridor as well as flow augmentation.

We were disappointed by the final biological opinion which came from them recently, because it relied solely upon flow augmentation, and put the kind of burden that we have heard from Mr. Moss.

And many of the numbers, if not all of the numbers that he gave you, we are in agreement with. The fact of the matter is when you consult with these biologists at the States, at the tribes, at the Northwest Power Planning Council, the only way you can get an upward sloping line, based upon the best available scientific information, the only way you can get an upward sloping line of salmon numbers, is through a program of drawdowns, flow augmentation, and spill.

In that regard, I would point out to you, Senator, that the Sierra Club and other environmental organizations which we work with on the recovery have been in the forefront of pushing for the Corps of Engineers to install baffle spill gates, to install surface-oriented collectors, and to install bolt turbines.

The kind of technological innovations that you called for earlier today, that we also heard from Administrator Hardy, these are important measures, they need to be installed, they make the system work, but all of these technological advances are only targeted on increasing the survival of the fish as they pass through the dam itself, through the concrete.

These measures provide little or no benefit in moving the fish through the slack water reservoirs that are delaying the migration such that we get these devastating mortalities.

Senator KEMPTHORNE. Mr. Baker, thank you.

Mr. Moss, let me then turn to you with a final question. In your judgment, does a 1-percent increase in river velocity, from flow augmentation, justify the kind of costs that we have talked about today, concerning BPA and irrigated agriculture, and do you believe that a water-based solution is the answer for the recovery of the salmon.

Mr. MOSS. Senator, no I do not. I guess being a practical individual, not a fish biologist—but somebody needs to prove to me that a 1-percent change in the improvement in flow velocity or a 9-hour decrease in particle travel time to those four lower Snake River reservoirs can serve any good.

I mean we are talking about 40,000 to 90,000 cfs. That is six times the volume of what is running out here in the Potomac River today. Just rationally, you cannot conclude that.

The State of Idaho sends out 38 million acre feet down that river each year, and 20 million of it goes during this migration period. The fish lived very well.

They did tremendous, evidently, until we had some dams, and we provided an environment in those reservoirs that have allowed, not only below the reservoir of Bonneville, but the marine mammal predation, which the recovery plan says may be responsible for 50 percent of the adult mortality.

We have 40 percent dam adult fallback, as we are going up the river. It just boggles one's mind that we are not addressing the big salmon mortality causes, and we are looking to farfetched solutions out there, of which there is not a scientific basis.

Now, the biological opinion says that we want to try this, but, Senator, I can find you an equal number of biologists out there, but they do not work for NMFS, that say that is not the solution. It is very difficult.

In fact, that is why I am here. We have been unable to get to the table to talk about these issues and the affect on Idaho, because we are not biologists, and the system does not allow it. The only way we can get to the table is through the court system.

And as I noted in my testimony, Disheroon says, "Come get me, and just sue me for compensation and damages."

It is a poor society or system that we cannot, in fact, talk about these things openly. But the answer to your question is no.

Senator KEMPTHORNE. Mr. Moss, we are happy that you are at the table here today and giving us the benefits of your thoughts.

Mr. SAMPSON. Mr. Chairman, if I could respond very briefly. I am a fish biologist, and I have been a biologist in the Columbia River for over 15 years, working with the States of Idaho, Montana, Washington, and Oregon, as well as all 13 tribes, and the two Federal agencies, and we have concluded, from the tribes' position, that the actions that are necessary—and we look at main stem as habitat. It is not a corridor to pass fish through. It is habitat, and it always has been.

What is necessary is action to decrease travel time and to improve water quality sufficiently to prevent extinction must be implemented immediately, structural modifications at the dams, including better juvenile bypass systems, adult fishways, immediate improvements in river velocity, increased spill when necessary, implementation of drawdowns on the lower four Snake River dams and John Day to minimum operating levels, and the release of stored water from the upper Snake and upper Columbia reservoirs to augment in-stream flow.

We must remove juveniles from the artificial means of transportation as well. It is not working. It has been proven, it has not worked; otherwise, these salmon would be here right now.

Senator KEMPTHORNE. Mr. Sampson, if I may, excuse me, I will come back and allow you to finish, but Senator Craig, unfortunately, again, has to run to another meeting.

So let me turn to Senator Craig, who has a question.

Senator CRAIG. Thank you very much, Senator Kempthorne, and to the panel, I apologize that I could not be here for your extemporaneous comments. I will read the record, and I appreciate your presence.

As I mentioned in my opening comments today, I am extremely pleased that Senator Hatfield has generated this hearing.

This will be one of many, and you all will be at the table, because I think that the consequence of what we do is so great here that if it cannot be resolved in a balanced fashion for the region, then we will attempt to legislate a solution.

Obviously, we are now at the extremes of that test. We will not let the Bonneville power system go down, and we will not allow the dewatering of hundreds of thousands of acres of irrigated agriculture in the basin. That is not an acceptable proposition.

Somehow we ought to be able to find our way through our tremendous ability technologically to save salmon, and to build a viable population base. But I was also very blunt earlier when I said I am going to ask at what cost.

I do believe the region has a right to make that decision. I do not believe it can be at any cost. And tragically enough, that is where the act takes us.

Senator Kempthorne has the responsibility in this new Congress of reviewing that act, and we will, as a Congress, take it very seriously and see if we cannot bring some balance to it.

But let me also say, DeWitt, I am pleased you are here representing some of Idaho's critical interests. I was looking through your testimony while Senator Kempthorne was asking questions.

I had broached the subject some time ago when we saw the original or we saw some of the estimations of the original biological opinion, and I had made the proposal, or I had suggested that one of the conclusions could be drawn in the dewatering of 400,000 to 500,000 acres of current Idaho agriculture, and I see that you are referencing 1.7 million acre-feet, and 400,000 acres.

You have come to the conclusion of about a $44 million annual cost. From what basis did you draw that conclusion?

Mr. MOSS. Senator Craig, those were numbers provided recently, in a December document, produced by BPA, Corps of Engineers, and Bureau of Reclamation. I simply paraphrased and took some of those numbers out.

They get horrendous as you move up into the 2 million acre-feet of water that was being proposed, and I just simply pulled out the 427,000, because that is the biological opinion number that says we are mandated to meet this year.

I want you to know that the key to that is that 95 percent reliability. Those are not my numbers. Those are NMFS's. That is what they want, 95 percent of the years that they can have that.

And their problem out there is that the first time those reservoirs do not refill, then where do they get that water? That is the 400,000 acres—yes.

Senator CRAIG. Thank you. Gentlemen, all of you, thank you very much.

Senator KEMPTHORNE. Senator Craig, thank you.

Mr. Sampson, let me please allow you to conclude your——

Mr. SAMPSON. I agree with Senator Craig that we can put together a workable solution. As I stated earlier, in the Umatilla basin, with the support of Senator Hatfield, we had irrigation interests, and there are two representatives from the State who are here that we have worked with over the past 10 years to restore salmon there.

We have crafted win-win solutions, and we believe that if the tribes are involved, that we can do that.

What I would like to ask is that the committee consider a request to provide an additional 2 to 3 weeks so that we can provide an analysis of the benefits and the costs of implementing the NMFS' restoration plan versus the travel restoration plan being prepared by the Columbia River Intertravel Fish Commission.

It would be accompanied with a power system and economic analysis for the committee to look at. But, I believe, we can come together with a positive solution, where it is a win-win solution. It has been done before right in the midst of the Columbia River.

Senator KEMPTHORNE. Well, I appreciate that expression of philosophy, and I think that is what we all want to be part of, because this is absolutely critical. We must find the solution.

So I thank all of you who just gave us your excellent testimony. I thank all of those who participated today as members of the panel. I want to again thank Senator Hatfield for convening this.

[The information follows:]

PREPARED STATEMENT OF THE SIERRA CLUB

The Northwest Must Fix Columbia and Snake River Dams to Save the Salmon

Sierra Club
PACIFIC NORTHWEST
WILD SALMON CAMPAIGN

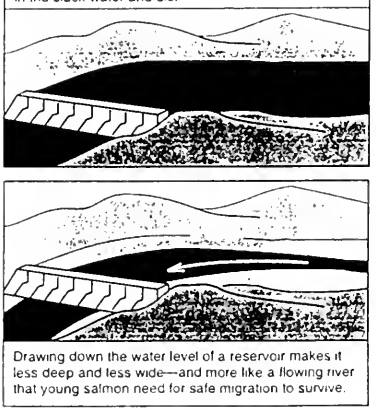
Northwest Office
1516 Melrose Ave.
Seattle WA 98122
(206) 621-1696

Columbia Basin Branch Office
Route 2, Box 303-A
Pullman WA 99163
(509) 332-5173

EIGHT huge, hydropower dams across the Columbia and Snake Rivers have brought many benefits to the people and communities of the Northwest. But these eight concrete barriers, and the slackwater reservoirs behind them, have also taken a devastating toll on wild salmon. Biologists estimate that these dams inflict at least 90% of the human-caused mortalities to the endangered Snake River runs.

And as the wild salmon have been decimated, so have the Pacific Northwest economies and ecosystems that depend upon them.

Sierra Club along with other conservationists and state and Tribal fisheries agencies, believe that it is completely feasible to recover healthy populations of wild salmon — but only by modifying the dams and their operations.



Reservoirs created by Columbia and Snake River dams are much deeper, wider, and slower moving than the original rivers. Migrating juvenile salmon drift aimlessly in the slack water and die.

Drawing down the water level of a reservoir makes it less deep and less wide—and more like a flowing river that young salmon need for safe migration to survive.

BECAUSE THE dams account for so much of the damage, conservationists and fisheries biologists want to fix this single biggest threat to wild salmon in the Columbia and Snake Rivers, and have advocated a program of reservoir "drawdowns" and enhanced water "flows" to make the hydropower system work for *both* salmon and people.

A faster moving river is the key to saving wild salmon

The dams have proven so deadly to wild salmon in large measure because the dams have changed the flowing waters of the Columbia and Snake Rivers into a 320-mile chain of big, deep, slow-moving reservoirs. Before construction of the dams, juvenile salmon were swept by strong river flows down the Snake and Columbia all the way from the Idaho border to Portland in a week or less. (Small, young salmon don't actually swim to the ocean from the streams and headwaters where they are spawned; they depend on swiftly flowing river currents to "flush" them out to sea.) Today due to the dams, the journey takes a month, sometimes 45 days or even more.

The delay exposes the migrating juvenile salmon, called "smolts," to more predators, a higher incidence of disease, and greater physical stress. Those few fish that do finally reach the ocean enter the sea physically weakened and very unlikely to survive.

All available scientific evidence points to this important factor — "travel-time" to the ocean — as the key problem that must be corrected if we are to save wild salmon in the Columbia and Snake Rivers. Compiled over a two decade time span, study after study after study points to the same scientific conclusion: Faster river speeds for migrating smolts mean more returning adult salmon.

For this reason, the Columbia Basin Fish and Wildlife Authority (CBFWA), unanimously recommended in 1991 that, to restore wild salmon in

The Sierra Club Wild Salmon Campaign seeks to protect and restore wild salmon runs throughout the Pacific Northwest. **The Northwest Must Fix Columbia and Snake River Dams to Save the Salmon** is one of a series of Sierra Club discussion papers on restoration of wild salmon. Written by Jim Baker, Sierra Club Columbia Basin Branch Offic, and Julia Reitan, Sierra Club Northwest Office. DRAFT, January 1995. Printed on recycled paper.

the Columbia and Snake Rivers, dam operators must speed up water movement in the hydroelectric reservoirs. CBFWA recommended water flows during spring migration of 140,000 cubic feet per second (cfs) in the Lower Snake and 300,000 cfs in the Lower Columbia which would effectively reduce juvenile salmon travel-time to 15 days — a compromise still roughly double the historic travel-times.

The CBFWA recommendation is especially important because it represents a unanimous consensus of the region's biologists at federal, state, and Tribal fisheries agencies. And it establishes a clear, measurable, biologically-based goal for modifying Columbia and Snake River hydropower dams and operations in order to give migrating smolts the necessary safe passage.

How do you make 'a river run through it'—faster?

THERE ARE only two ways to speed up water and migrating fish through the complex hydropower system that has been built on the Columbia and Snake Rivers.

First, hydropower operators can release water from upstream storage reservoirs. This greater volume of water speeds up the flow through the downstream reservoirs that pose such a obstacle for migrating juvenile salmon. The technical term for these storage releases in order to make the river and the fish go faster is "flow augmentation."

THE SECOND WAY to move water and fish through slack reservoirs is to lower the water level and the vertical elevation of those pools — in other words, draw them down. Dam operators accomplish these reservoir "drawdowns" by simply letting water drain out so that the pools become less deep, less wide, and more like a river again.

Drawing down a reservoir increases river speed *without releasing water from upstream storage* because the natural run-off and river flow travel more quickly in the narrower, shallower channel. In effect, the drawdown "squeezes" the flow to move much faster.

In 1992, a test drawdown of the Lower Granite reservoir proved the value of this technique: Water moved five times faster through the reservoir during the drawdown of approximately 35 vertical feet.

BOTH TECHNIQUES SPEED UP WATER movement and fish migration. By analogy, you can make the water run faster out of the end of a gardenhose in two ways. You can turn up the tap — flow augmentation. Or you can put your thumb over the hose's end — reservoir drawdown.

Restoring healthy populations of wild salmon to the Columbia and Snake Rivers will require *both* flow augmentation and reservoir drawdowns. Hydrological studies by the U.S. Army Corps of Engineers and others prove that flow augmentation alone can not provide the water speeds and fish travel-times recommended by the electric utility industry much less the CBFWA biologists. The tap is turned up all the way.

'Go with the flow' will help salmon in the Columbia

IN THE UPPER reaches of the Columbia River watershed, Grand Coulee dam and other huge storage projects

Action Agenda

FOR COLUMBIA AND SNAKE RIVER WILD SALMON

- KEEP THE FISH IN THE WATER!— We must get juvenile salmon past the dams, power turbines, and slackwater reservoirs safely—without barging or trucking them down to the sea.
- RUN THE RIVER MORE LIKE A 'RIVER'— At peak spring migration times we must manage the dams and reservoirs so that young salmon are carried quickly to the sea. Increasing water speed during juvenile migration will greatly reduce the death toll on fingerlings that now drift slowly in the slack water of the reservoirs, falling victim to predators, disease, and disorientation.
- SMART ENERGY AND WATER USE PLANNING ARE 'BEST BUYS'— There are workable, cost-effective ways to make the Columbia and Snake Rivers work for salmon and for us. Energy efficiency, fuel switching, seasonal exchanges on the regional power grid, and improved water conservation for irrigators are all smart investments and will help bring back once teeming numbers of wild salmon.
- SAVE OUR *WILD* SALMON!— Hatchery fish are no substitute for wild salmon. Healthy populations of wild salmon are essential to maintain the genetic diversity and survival instincts that will assure long-term success of salmon in the Northwest. Maintaining and restoring fish habitat and watersheds are clearly essential.

shared by the U S. and Canada, hold millions of acre-feet of water. Hydropower operators currently use these upstream storage dams to store up water for release during the winter to maximize electricity generation.

By releasing just some of this vast stored water in the upper Columbia River, dam operators can provide almost enough flow augmentation each spring to meet the water speeds recommended by the CBFWA biologists for the Lower Columbia portion of the salmon migration corridor. To meet the travel-time goal requires only one drawdown at the John Day reservoir.

Because this is the longest, fattest, and slowest reservoir in the Lower Columbia, even a modest drawdown significantly improves water speed and fish travel through the pool, and makes the most efficient use of increased flow augmentation from upstream storage.

Biologists and conservationists propose that the John Day reservoir operate at "minimum operating pool" — approximately 10 vertical feet below its normal elevation. At "minimum operating pool," the dam is fully functional for hydroelectric generation and for barge navigation.

Drawdowns are a must to save salmon in the Snake

IN THE DRIER SNAKE RIVER, flow augmentation alone would drain all the stored water in the watershed, and still fail to provide the water speed that migrating juvenile salmon need!

That is why conservationists along with the State of Idaho have advocated drawdowns for the four Snake River reservoirs. Furthermore, stored water in the arid Snake Basin is vital for irrigation and hydropower production.

To meet the CBFWA travel-time goal in the Snake portion of the migration corridor requires drawdowns of all four Lower Snake reservoirs below their minimum operating pools by approximately 40 vertical feet. As proposed by conservationists and biologists, the drawdowns would last for the 10-week period of peak juvenile salmon migration — beginning April 1 with reservoir re-fill on or before June 15 each year.

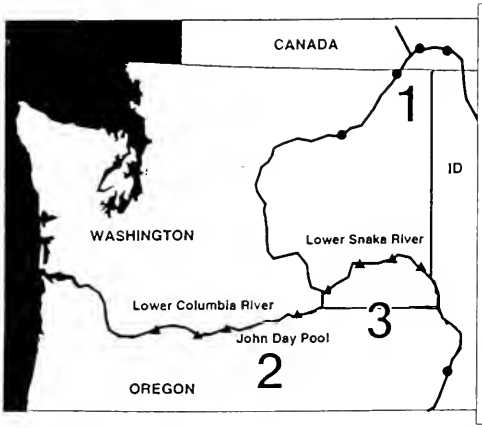
According to the U.S. Army Corps of Engineers and the Northwest Power Planning Council, such drawdowns would meet or exceed the CBFWA goal for water and fish migration speed in the Snake River, and would do so 96 percent of the time without any additional flow augmentation.

Changes that work for people and for salmon

FIXING THE HYDROPOWER SYSTEM in the Columbia and Snake Rivers for wild salmon through flow augmentation and drawdowns does require changes in ways of doing business. But these changes are both workable and affordable. Tragically entrenched commercial users of the river have resisted any change whatsoever, plunging the Northwest into a bitter crisis around salmon recovery.

Impact: Releasing water from upstream storage dams in order to provide flow augmentation for salmon shifts hydropower generation to the spring and summer when demand for power is low in the Northwest.

Change: The Bonneville Power Administration has existing contracts to sell surplus power in the spring and summer to California (via the regional power grid) in exchange for electricity shipments back to the Northwest in the



How to Fix the Columbia and Snake Hydropower System for Salmon

1 Increase flow augmentation, especially in the Columbia River. This requires the spring and summer release of water from upstream dams in order to speed up water movement — and migrating juvenile salmon — through the four Lower Columbia River reservoirs.

2 Lower the vertical elevation of the John Day reservoir by 10 feet to 'minimum operating pool.' At this level the dam remains fully functional, but the reservoir moves faster, and becomes less lethal to young salmon.

3 Drawdown the four Lower Snake River reservoirs by 40 vertical feet below minimum operating pool for 10-weeks from April 1 to June15 each year. This provides the faster river speeds that migrating fish need, and without draining very limited upstream water storage in the Snake Basin.

winter. According to BPA's own computer models, such regional exchanges can control costs from flow augmentation, yielding a net *benefit* from salmon recovery across the West Coast grid

Impact: Lowering the John Day reservoir to minimum operating pool leaves irrigation pumps and other facilities high and dry.

Change: Farmers can extend or replace their irrigation pumps, and other impacts mitigated effectively — at a *one-time capital cost* of $100 million. To attain the same water speeds as the John Day drawdown through flow augmentation would require the release of an additional 3.1 million acre-feet — roughly entire storage behind Hungry Horse Dam in Montana — at an *annual expense* to BPA of $40-70 million. Clearly operation of John Day reservoir at minimum operating pool is a "best buy."

Impact: The Snake River drawdowns interrupt fish passage at the dams, and damage reservoir facilities.

Change: The U.S. Army Corps of Engineers can modify adult fish ladders and juvenile salmon by-pass as well as rebuild irrigation pumps, roads, docks, marinas, and other impacted structures so that the four Lower Snake reservoir can operate in drawdowns. Even at the Corps' exaggerated estimate of $1.3 billion to fix these dams, this one-time capital investment would translate to rate hike for the average residential electricity consumer of less than $1.50 per month. Furthermore, the Corps of Engineers estimates that nearly half of the budget — $520 million —would go into construction labor, creating thousands of new jobs in the Lower Snake valley.

Impact: The Snake River drawdowns would interrupt barge navigation and shipping.

Change: Three expert economists have concluded that a 10-week outage of barge traffic would have little impact on shippers or the local economy. Market-driven adjustments such as increased storage and more competitive rail service would allow shippers to choose alternatives, or to move goods before or after the drawdown window.

Impact: Hydropower generation drops during reservoir drawdowns.

Change: During the 1992 test drawdown at Lower Granite Dam, hydropower generation was somewhat reduced, but did not stop even at the lowest reservoir elevation. BPA now estimates the loss of firm hydropower generation from Snake River drawdowns at just 150 megawatts — an insignificant amount of power in a regional hydroelectric system that produces in excess of 12,000 megawatts each year.

We must begin the rocky path to salmon recovery!

THE NORTHWEST POWER PLANNING COUNCIL in its *Strategy for Salmon* has called for a package of flow augmentation and reservoir drawdowns in order to fix the dams. So have the region's fisheries biologists in the CBFWA *Detailed Fishery Operating Plan*.

Short-sighted critics of fish flows and reservoir drawdowns — chiefly the Bonneville Power Administration, U.S. Army Corps of Engineers, and the entrenched river users in the Columbia River Alliance — have done all they can to resist progress, question motivations, create fear, and instill doubt.

And for no good reason. If history is any guide, business-as-usual will push wild salmon over the brink into extinction. By unanimous consensus, federal, state, and Tribal biologists in the Pacific Northwest have determined how to fix the dams. This program of flow augmentation and reservoir drawdowns is both workable and affordable. Fixing the dams can secure a legacy of salmon into the 21st century. It's high time to get started!

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What Columbia and Snake River Wild Salmon Really Need

Sierra Club
PACIFIC NORTHWEST
WILD SALMON CAMPAIGN

Northwest Office
1516 Melrose Ave.
Seattle WA 98122
(206) 621-1696

Columbia Basin Field Office
Route 2, Box 303-A
Pullman WA 99163
(509) 332-5173

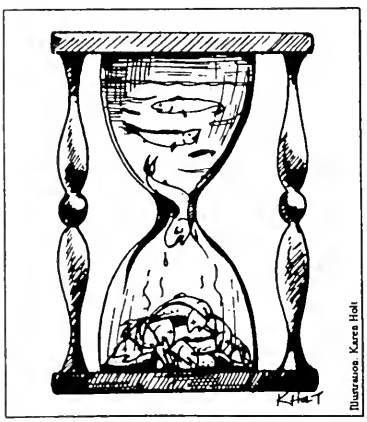

Illustration Karen Holt

WHAT THE BALD EAGLE is to the nation, wild salmon are to the Pacific Northwest. But tragically this noble symbol of our region is slipping to the brink of extinction. The American Fisheries Society counts more than 200 stocks of wild salmon, steelhead and ocean-migrating trout as endangered, threatened, or at risk in the Northwest.

Before the era of big hydropower development began in the Depression with the erection of Bonneville Dam, the greatest salmon watershed on the entire Pacific Ocean—the Columbia River Basin— annually saw 16 million adults enter the river headed for spawning beds as far upstream as Canada and central Idaho. Today the number has slipped to some 2 million fish. Of these, at best 300,000 are wild salmon; the rest are hatchery stocks.

With the decline of salmon, we lose more than a regional symbol and suffer more than another erosion of environmental quality. The demise of salmon runs is a dollars-and-cents loss as well when an entire regional fishing industry is at risk, including commercial operations which, in many cases, have been passed down for generations. Even with the severe declines, salmon net the regional economy some 60,000 jobs directly and $1 billion annually in income. This is a vital economic base for many communities throughout the Northwest, and could be a much stronger one if salmon runs are healthy and productive.

Wild salmon populations have fallen especially sharply in the Snake River Basin. Starting in December 1991, the National Marine Fisheries Service (NMFS) listed wild Snake River sockeye, spring, summer, and fall chinook salmon for protection under the Endangered Species Act. In 1991, only four adult sockeye salmon returned to spawn in Idaho; only one came back in 1992. Coho salmon in the Snake were officially declared extinct in 1986.

Why are wild salmon vanishing? Wild fish die from a number of causes: blockage of river migration, over-harvesting, loss of habitat, excessive reliance on hatcheries, and more. However, in the Snake and Columbia Rivers, the number one killer is hydroelectric development.

Dams fatally alter journey to sea for tiny salmon fingerlings

BETWEEN 1931 AND 1974, the U.S. Army Corps of Engineers built eight huge mainstem dams —four on the lower Snake River and four on the lower Columbia —without any way to provide safe passage for migrating juvenile salmon. Ladders were installed

The Sierra Club Wild Salmon Campaign seeks to protect and restore wild salmon runs throughout the Pacific Northwest. **What Columbia and Snake River Wild Salmon Really Need** is one of a series of Sierra Club discussion papers on restoration of wild salmon. Written by Jim Baker, Sierra Club Columbia Basin Field Office and Julia Reitan, Sierra Club Northwest Office; with editorial assistance by Lorri Bodi and Katherine Ransell, American Rivers Northwest; Tim Stearns and Pat Ford, S.O.S. Save Our *Wild* Salmon; with funding from the Bullitt Foundation. Printed on recycled paper.

at the dams for adult passage upstream, but no accommodation was made for smolts going downstream. According to the Oregon Department of Fish and Wildlife, more than 95% of man-caused mortalities of the threatened and endangered salmon in the Snake River Basin are due to this blockage by these dams.

Dams slow the river to a deadly crawl

THE DAMS on the Columbia and Snake Rivers have effectively turned the rushing waters of once-mighty rivers into a string of slack lakes. This has greatly lengthened the time it takes juvenile salmon to migrate to the sea. Before the dams were built, juvenile fish from central Idaho, for example, were flushed to the ocean in a week or less. Now it takes forty days – or even longer in drought years.

Increased travel time harms migrating smolts in multiple ways. First, they are undergoing the biological changes that transform them from freshwater to saltwater fish. Once these changes begin, there is only so long that the smolts can be in the river before their changing physiology becomes a death trap rather than a survival mechanism.

Second, slow travel time increases juvenile fish mortality because it makes them more vulnerable to disease and predators, especially squawfish, which thrive in the still waters of the reservoirs. Because of the dams, there are more predators than ever before, and it is easier for them to prey on slowly drifting smolts.

Using barges to ship small salmon out to sea has only served to delay real solutions

THE CORPS OF ENGINEERS and other federal agencies have engaged for the last 15 years in a massive program to capture smolts at upstream dams and transport them by barge and truck to the sea. Collecting the small fish inflicts injuries and severe physical stress that leads to high mortality when combined with crowded, unnatural, disease-breeding conditions in the barges and tank trucks.

Furthermore, fish taken out of the river do not experience the same "imprinting" process that

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FOR COLUMBIA AND SNAKE RIVER WILD SALMON

- KEEP THE FISH IN THE WATER!— We must get juvenile salmon past the dams, power turbines, and slackwater reservoirs safely—without barging or trucking them down to the sea. Sending fingerling salmon downstream by loading them onto boats is outrageous, and besides, it doesn't work.

- RUN THE RIVER MORE LIKE A 'RIVER'— At peak spring migration times we must manage the dams and reservoirs so that young salmon are carried quickly to the sea. This means temporarily drawing down the Lower Snake River reservoirs and sending more water downstream through the Columbia in order to achieve biologically necessary smolt travel time. Increasing water speed during juvenile migration will greatly reduce the death toll on fingerlings that now drift slowly in the slack water of the reservoirs, falling victim to predators, disease, and disorientation.

- SMART ENERGY AND WATER USE PLANNING ARE 'BEST BUYS'— Lowering the Snake River reservoirs during the peak juvenile migration and sending more water down the Columbia will require some modifications from business-as-usual. But there are workable, cost-effective ways to accomplish these vitally necessary changes. Energy efficiency, fuel switching, seasonal exchanges on the regional power grid, and improved water conservation for irrigators are all smart investments and will help bring back once teeming numbers of wild salmon.

- SAVE OUR *WILD* SALMON!— Hatchery fish are no substitute for wild salmon. Healthy populations of wild salmon are essential to maintain the genetic diversity and survival instincts that will assure long-term success of salmon in the Northwest. Maintaining and restoring fish habitat and watersheds are clearly essential.

helps them find their way back as adults. Although the Corps relies heavily on barging juvenile fish, some biologists have reported that barging may have a negative impact on the numbers of wild salmon that return to spawn. And, of course, despite the Corps' best and expensive efforts at barging, wild salmon stocks in the Snake River and elsewhere have continued to decline toward extinction.

We *can* fix the dams and make the river work—for salmon *and* for us

CONSERVATIONISTS and fish advocates have called upon the Corps of Engineer to stop the barging and fix the dams — to provide once and for all a safe in-river migration for juvenile fish. Pivotal to this goal is a minimum travel time from spawning bed to the sea.

All the federal agency, state agency, and tribal fish biologists in the region who have banded together in the Columbia Basin Fish and Wildlife Authority, have unanimously stated that travel time (as measured from Lower Granite to Bonneville Dams) must be reduced to 15 days at most.

One way to achieve the travel time goal is simply to flush more water down the Snake and Columbia Rivers during the peak juvenile fish migration in April-June. There is adequate stored water in the Columbia River system to augment flows as needed. However, in the Snake, even draining all existing storage in the basin simply would not reliably meet the biologists' target for smolt travel time.

That is why conservationists have turned to the other way to achieve the travel time goal: drawdowns — lowering the elevations of the reservoirs behind the four Lower Snake dams (and the John Day project on the Lower Columbia) during the juvenile fish migration. As the man-made lakes become narrower and shallower, the same amount of water flow in the river system runs faster and faster.

In a 1992 Environmental Impact Statement, the Army Corps of Engineers concluded that a drawdown of the four Lower Snake reservoirs, as environmentalists have proposed, would meet the federal, state, and tribal biologists' travel time objective—what the fish really need—every year, regardless of droughts or any other adverse conditions.

Changing the dams will create problems—but they are solvable

DRAWDOWNS and greater water flows do pose some problems, but none without *affordable* solutions.

- As currently configured, adult fish ladders and juvenile bypass screens on the Lower Snake dams would become inoperable at lower water levels. But the dams can be modified so that facilities operate at lower reservoir levels.
- Drawdowns would leave irrigation pumps high and dry. But the in-takes can be extended so that the pumps continue to work.
- The overall salmon "hit" on the hydropower system can be easily made up through already existing programs in energy efficiency, fuel-switching, seasonal renewable resources such as wind power, and seasonal electricity exchanges between the Northwest and California. Hydroelectric generation decreases—but does not stop—during reservoir drawdowns.
- Investments in improved efficiency for irrigation, conservation, and water bank leasing offer good options to make more water available when needed most for salmon.
- Barge navigation in the Lower Snake from Pasco, Washington to Lewiston, Idaho would temporarily shut down during the drawdowns. However, an analysis by agricultural economists at several regional universities has concluded that market forces coupled with increased storage capacity, could accommodate a temporary interruption to river navigation with little or no impact on prices or jobs.

The structures and operations of the Corps' fish-killing dams *can* be changed—and at a cost that is modest. According to a blue-ribbon economics panel for the National Marine Fisheries Service, the cost would translate to a small hike on current electricity rates of just 2–4 percent.

Drawdowns of the four Lower Snake reservoirs combined with flow augmentation in the Lower Columbia can reliably meet the travel time objective set by the region's biologists—and we can end the failed practice of loading small salmon into barges. Unless and until we give young migrating fish a safe, in-the-river passage to the sea, other efforts such as improvements in fish habitat, will not be effective and will not recover these endangered and declining wild fish runs.

Fishing plays a role, but not the key role in salmon decline

WITHOUT QUESTION, over-fishing took place in the past. Today,

however, there is effectively no legal in-river catch on three of the four Snake River salmon species now listed under the Endangered Species Act. And over this century, there has been significant, and steadily increased, regulation of commercial fishing in the Columbia and Snake Rivers.

For mixed-stock runs, where wild and hatchery fish swim upstream together, harvest practices must change so that hatchery-bred fish are caught and wild salmon continue safely to their spawning grounds. There are ways to reach this goal including marking all hatchery fish, re-allocating harveats under the U.S./Canada fisheries treaty, and converting to new harvest methods.

Instead, the utility industry has argued vehemently for a steep reduction, or even moratorium, on commercial fishing, diverting attention from the role that hydropower dams have played in wiping out salmon.

Hatcheries create more problems than they solve

SINCE WORLD WAR II as the dams have taken a greater and greater toll on salmon runs, hatcheries were built to supply fish for harvest. However, hatcheries too often produce weak, diseased fish which are genetically inferior to their wild ancestors. Hatchery production narrows genetic diversity, which greatly impairs the ability of a species to survive over time. Inter-breeding of native and hatchery salmon degrades the wild runs.

While hatcheries can play a role in producing fish for harvest, they are no substitute for the long-term assurance of healthy wild salmon runs.

Habitat protection is key—but must go hand in hand with fixing the dams

EROSION from clearcutting in prime watersheds has muddied rivers and silted-in salmon spawning gravel beds throughout the Northwest. Heavy cattle grazing of streamside range areas has trampled the life out of salmon habitat in the Columbia Basin.

Any regional salmon recovery effort must include significant reductions in short-sighted natural resource uses that destroy productive fish habitat. However, making the Columbia and Snake Rivers safe for salmon must underpin all efforts to preserve and restore high-quality fish habitat.

We can and must modify the dams and their operation before it is too late

THE DRAMATIC decline of wild salmon runs in the Pacific Northwest has reached a crisis. It ia high time for action to save this vital part of our Northwest heritage, environment, and economy.

For the past thirty years, the federal hydropower agencies and the utility industry have tried everything but making the river work for fish. They have failed.

That is why fish advocates and conservationists have proposed physical and operational modifications to the Snake and Columbia mainstem dams in order to provide a safe, in-the-river migration for juvenile salmon.

We can have a river system that works for fish, energy, and our other needs. But it calls for commitment to change the currently destructive operation of the Columbia and Snake River dams. With businesslike investments we can make these rivers work for wild salmon and for us all!

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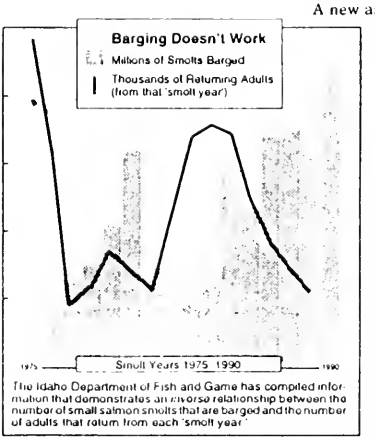
Young Salmon Need To Migrate In Rivers—Not In Trucks and Barges!

Sierra Club
PACIFIC NORTHWEST
WILD SALMON CAMPAIGN

Northwest Office
1516 Melrose Ave.
Seattle WA 98122
(206) 621-1696

Columbia Basin Branch Office
Route 2, Box 303-A
Pullman WA 99163
(509) 332-5173



The Idaho Department of Fish and Game has compiled information that demonstrates an inverse relationship between the number of small salmon smolts that are barged and the number of adults that return from each 'smolt year.'

For the last 15 years the U.S Army Corps of Engineers has collected tiny, migrating juvenile salmon and physically hauled them downstream in tank trucks or barges around the eight huge federal dams that span the lower Columbia and Snake Rivers. Yes, they have "taken fish out of water" and put them on trucks and barges rather than undertake changes to the dams and their operation to make the hydropower system less deadly for fish.

Not only is it a ridiculous "solution" to transport fish in barges, but it simply has not worked—it has not reversed the march to extinction of wild salmon in the Columbia and Snake Rivers.

A new analysis indicates that the barging and trucking program may actually be *more* detrimental to wild salmon than negotiating the lethal corridor of dams and reservoirs. And, the data that the Army Corps of Engineers has always used to justify the barging program has been shown by a team of fish biologists to be seriously flawed.

This new information, plus fifteen years of barging experience while salmon populations have continued to collapse toward extinction, has now led fisheries agencies to question the effectiveness of the barging program they once supported.

SALMON ADVOCATES and conservationists have long believed that to save threatened and endangered wild salmon in the Columbia and Snake River basin, fish barging must end. Instead of using the fish barging program to create the illusion of fish "protection," the Army Corps of Engineers must begin modifications to the mainstem dams and their operation in order to provide safe, in-the-river migration for fingerling salmon.

Why hauling salmon downstream doesn't work—and will never work

Under the Corps' fish barging program, migrating juveniles are captured at upstream dams — Lower Granite and Little Goose in the Snake River—and loaded into trucks and barges for the one- or two-day trip to below Bonneville Dam. This creates serious problems, especially from a fish's point of view:

Physical Stress—At each dam, the fish are sucked into the powerhouse intakes where about half of them are diverted into a bypass channel inside the dam. Then the fish are shunted at high pressure through a 1/4-mile long pipeline to a facility where they are "de-watered" so that they can be sorted by size. They are then placed in holding tanks and finally are crowded into trucks or

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barges for the trip downstream.

It takes only common sense to predict the outcome: Capturing and handling tiny fish in this way inflicts injuries and puts them under severe physical stress that makes them much more susceptible to predators, disease, and the natural risks of life in the ocean.

The impact appears to be especially severe on wild salmon because they are totally unaccustomed to man-made environments, crowded holding tanks, and physical handling.

Disease—In the truck tanks or barge holds, the juveniles are faced with a crowded, alien world. In these closely confined conditions, disease can spread much more efficiently. (Anyone with small children in day-care will understand this principle.)

Hatchery fish almost always carry diseases such as BKD (bacterial kidney disease) and the holding tanks in the barges create a prime opportunity for disease to spread. Studies by the National Fisheries Research Center [Elliot and Pascho] have documented that BKD infections can occur during collection and barging, and that this disease is especially deadly to threatened and endangered wild chinook and sockeye.

Imprinting—Furthermore, fish taken out of the river and loaded onto a barge do not experience the same "imprinting" process that helps them find their way back as adults. Scientists don't fully understand how a tiny salmon "maps" its route downstream so that it can return to the exact same place years later to spawn and die. But there can be little doubt that being transported for hundreds of miles in the "black box" of a barge or tank truck is a huge interruption of this awe inspiring natural ability.

WHAT MATTERS MOST is the bottom line: Fifteen years of capturing and transporting smolts has not reversed the precipitous de-

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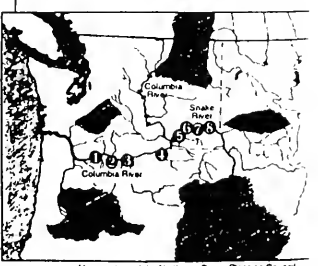
- SMART ENERGY AND WATER USE PLANNING ARE 'BEST BUYS'— Lowering the Snake River reservoirs during the peak juvenile migration and sending more water down the Columbia will require some modifications from business-as-usual. But there are workable, cost-effective ways to accomplish these vitally necessary changes. Energy efficiency, fuel switching, seasonal exchanges on the regional power grid, and improved water conservation for irrigators are all smart investments and will help bring back once teeming numbers of wild salmon.
- SAVE OUR *WILD* SALMON! — Hatchery fish are no substitute for wild salmon. Healthy populations of wild salmon are essential to maintain the genetic diversity and survival instincts that will assure long-term success of salmon in the Northwest. Maintaining and restoring fish habitat and watersheds are clearly essential.



Map courtesy of the Northwest Power Planning Council

clime of wild salmon. The barging program has created just another unnatural, technological ordeal for tiny salmon already struggling to survive in greatly altered river conditions.

If barging has failed to help salmon, why continue?!?

Because continuing the Corps' fish "mass transportation" program—if it worked—would require fewer changes to business-as-usual, various river users who benefit from the status quo have continued to promote the program. Most notably these proponents include the direct service industries (DSIs), mainly aluminum smelters drawing cheap federal electricity directly from the Bonneville Power Administration, many of the region's utilities, and the Pioneer Ports River Alliance, a coalition of the Snake River seaports of Lewiston, Clarkston, and Whitman County.

They promote three fish barging "myths".

MYTH #1
Barging is good for fish!

■ The Corps of Engineers has long claimed that the barging program helps salmon in the Columbia and Snake Rivers. They support the claim with two "life-cycle" studies conducted in 1986 and 1989 on spring chinook. These studies showed, according to the Corps, positive "transportation benefit ratios" of 1.6.1 and 2.5.1. This means, they say, that for every naturally migrating fish that returned as an adult, 1.6–2.5 barged fish returned.

However in December 1992, a panel of fisheries experts from the U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, Washington Department of Fisheries, Columbia Basin Fish and Wildlife Authority, and Fish Passage Center re-evaluated the data in the life-cycle studies and identified serious flaws in the Corps' conclusion of positive benefit from barging.

Chaired by Fred Olney of the U.S. Fish and Wildlife Service, the panel found gross miscounting of fish, tagging smolts and counting adults at the dams not at spawning grounds (which is the relevant indicator of a successful return), and data that were mishandled or so limited that they are statistically invalid.

A significant problem cited by the Olney panel was the Corps' failure to differentiate between wild salmon and hatchery fish. This is *the* critical issue because *wild* salmon are the threatened and endangered creatures. And the physical stresses from handling and crowding appear to be severe on wild fish.

The Olney panel pointed out that most of the fish counted in the Corps' two studies were in fact hatchery fish. Where the panel was able to differentiate between wild and hatchery stocks, the data indicated a *negative* transportation benefit ratio for wild salmon!

The final report of the Olney panel concluded,

> It is apparent that [fish] transportation is not a substitute for provision of good in-river migration conditions for many of the salmon stocks evaluated in the [Corps'] studies. For some stocks it appears that transportation may have been detrimental to fish survival.

MYTH #2
Fish are 'safe' in a barge.

■ The Corps of Engineers' asserts that 95% or more of their transported smolts are released alive. Barging proponents use this as proof, they say, that salmon are fine in a barge so it must be something else that threatens them, "ocean conditions," for example.

However, the 95% survival statistic completely ignores the delayed effects of barging. Salmon smolts may indeed survive the 1–2 day ordeal and "swim away," only to die in the Columbia estuary or the ocean from injuries and physical stress inflicted by capture, crowding, handling, and exposure to disease. To blame "ocean conditions" is deliberately misleading.

It is especially foolish because both barged and non-barged fish must face the same ocean conditions. Yet it appears that barged fish return from the ocean at a much lower rate than fish that successfully make the downstream journey in the river. The Idaho Department of Fish and Game has compiled data indicating that when greater numbers of fish are barged, fewer adults from those "smolt years" return to spawn (see chart on front).

Another delayed effect of barging and trucking may be that adult salmon are unable to successfully find their way back upstream. The Corps of Engineers' "life-cycle" studies did not even track whether barged fish could

THE DAMS
1 Bonneville, 1938
2 The Dalles, 1957
3 John Day, 1968
4 McNary, 1953
5 Ice Harbor, 1961
6 Lower Monumental, 1969
7 Little Goose, 1970
8 Lower Granite, 1975

The eight federal main-stem dams take the greatest toll on threatened and endangered Snake River salmon. Other dams have permanently blocked vast areas of salmon habitat (dark shading)

successfully make their way back to their natal stream

THE 95% SURVIVAL statistic is both deceptive and irrelevant The law, and common sense, tell us that *natural conditions*—not artificially engineered environments—are needed to assure species survival.

MYTH #3
We'll build a better fish trap.

■ Proponents of barging argue that all we need to do is make it work better. Yet just to replace the adults which spawn in central Idaho, to bring the population curve up to level from its current downward trend, the transportation benefit ratios would have to rise to 7:1 or 10:1—a three- or four-fold improvement over the "best" results in the Corps' two studies And to achieve salmon restorations in the Snake Basin, biologists would want to see the ratio between 20:1 and 30:1.

In a program that the Corps has already been working to improve for fifteen years, such huge leaps forward are little more than a fantasy. Nevertheless, schemes such as net-pen barges and new smolt capture devices have been proposed.

Two decades ago the Washington Department of Wildlife tried a net-pen barge to transport steelhead smolts (far less fragile than salmon) on the Chehalis River. They cancelled the experiment when the nets tore scales off the fingerlings in massive numbers. Net-pen barging in the Snake and Columbia would prove an expensive disaster too

A new smolt collector above the eight mainstem dams and reservoirs should also be rejected Even if intractable engineering obstacles could be overcome, it would still not solve the key problems. It would not capture all migrating fingerlings It would not help smolts coming out of downstream tributaries. It would not separate wild from hatchery fish, and it would not eliminate injuries or stress from capture.

Stop barging and make the rivers safe for salmon.

The cockeyed notion of taking fish out of rivers and loading them onto barges was instituted as a desperate, temporary measure fifteen years ago when it became clear that the Columbia and Snake River hydropower system was deadly for small salmon: The huge reservoirs fatally slowed migration to the sea and passage through the massive power turbines was lethal.

The barging program was designed to avoid these problems, but not solve them. In doing so, the Army Corps of Engineers created a whole new set of obstacles that have proven equally, perhaps more deadly for wild salmon Now that fisheries agencies that once supported the barging program are challenging its effectiveness, it's time to end this unnatural charade.

Common sense and a millennia of evolution tell us that fish belong *in* the river. The Endangered Species Act requires that threatened and endangered species be protected in their natural habitats. And the Northwest Power Planning Act specifically calls for river "flows as necessary" for the survival of salmon in the Snake and Columbia Rivers. It's time to modify the dams and their operation so that we recreate a semblance of the natural conditions that salmon need for survival.

This can best be done by increasing river velocity with a package of flow augmentation and reservoir drawdowns Only a solution that provides what salmon really need—a safe and swift migration in the river—will recover this Northwest legacy

The stakes are high. What were once some of the world's most magnificent salmon runs are now on a barge to extinction.

It's time to dock the barges and fix the river!

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CONCLUSION OF HEARING

Senator KEMPTHORNE. That concludes the hearing. The subcommittee will recess and reconvene subject to the call of the Chair.

[Whereupon, at 5:30 p.m., Wednesday, March 15, the hearing was concluded, and the subcommittee was recessed, to reconvene subject to the call of the Chair.]

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