

N O R T H W E S T ENERGY NEWS

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Northwest Power Planning Council

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Idaho

Northwest Power Planning Council
Statehouse Mail
Towers Building
450 West State
Boise, Idaho 83720

Telephone: 208-334-2956

Council Members:

W. Larry Mills
Robert Saxvik, chairman

Montana

Northwest Power Planning Council
Capitol Station
Helena, Montana 59620

Telephone: 406-444-3952

Council Members:

Morris Brusett
Gerald Mueller

Oregon

Northwest Power Planning Council
505C State Office Building
1400 S.W. Fifth Avenue
Portland, Oregon 97201

Telephone: 503-229-5171

Council Members:

Donald Godard
Roy Hemmingway

Washington

Northwest Power Planning Council
Olympic Tower Bldg., Suite 700
217 Pine Street
Seattle, Washington 98101

Telephone: 206-464-6519

Council Members:

Charles Collins
Kai Lee, vice chairman

Central

Northwest Power Planning Council
850 S.W. Broadway, Suite 1100
Portland, Oregon 97205

Telephone: 503-222-5161

Toll Free: 1-800-222-3355

(1-800-452-2324 in Oregon)

Executive Director: Edward Sheets
Information Director: Dulcy Mahar

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The Northwest Power Planning Council is required to develop a
program to restore the Columbia fisheries and a regional electric
energy plan, to be carried out by the Bonneville Power Adminis-
tration, emphasizing cost-effective conservation and renewable
resources.

Executive Editor: Carlotta Collette

Graphic Design: Linda Sullivan

Assistant Editor: Steve Engel

Special Departments Editor: Ruth Curtis

EDITOR'S NOTES

This is one of those "passing the baton" editor's messages.

A long time ago, on my very first job out of college, I got two bits of advice from the chief copywriter. One was "always be training your successor," and the other was "good managers always hire people better than themselves."

Consequently, I tried to take that advice and went out and hired two fine writers, Carlotta Collette and Steve Engel, both of whose work has frequently appeared in this magazine. Now they will do more than write.

I am extremely pleased to announce that, with this issue, Carlotta is taking over as editor-in-chief of *Energy News*. Steve will be special projects editor (special projects being such things as the Council's power plan and fish and wildlife program).

While Carlotta and Steve will take the lead in their areas, all of us in the public information division will continue to write for all of the various publications. The individual state public information directors will also continue as contributors.

The change will allow me more time to work with the region's media and in the public involvement area. Ruth Curtis and Jim Nybo will play important roles in expanding these services.

—Dulcy Mahar

Editor's notes, too...

In this issue of *Energy News* we introduce a new section to help keep our readers up to date on the Council's long and complex fish and wildlife program goals study. Two additional stories — one on the question of how many fish were lost, and one resident fish substitutions for those areas where hydroelectric dams block passage for salmon and steelhead — accompany the new column.

As we went to press, the Council was considering a staff proposal of ways to achieve the model conservation standards regionwide. The proposal, open for public comment through October 23, incorporates new information brought forward during an earlier comment period on a previous set of recommendations. The current proposal wouldn't alter the standards themselves, but it would change the Council's strategy and schedule for attaining them. We'll carry a summary of the Council's decided course in our next issue.

Our cover illustration, *Cycle*, is by Dennis Cunningham.

—Carlotta Collette

CALENDAR

October 30-31 — Northwest Power Planning Council meeting in Boise, Idaho.

November 6-7 — Northwest Power Planning Council meeting in Portland, Oregon.

November 13-14 — Northwest Power Planning Council meeting in Portland, Oregon.

November 20-21 — Northwest Power Planning Council meeting in Portland, Oregon.

November 20-21 — "Super Good Cents Utility Training: Selling Energy Efficiency" workshop in Spokane, Washington. Sponsored by the Northwest Public Power Association. For information: Northwest Public Power Association, P.O. Box 1307, Vancouver, Washington 98666 (206) 694-6553.

November 22-23 — "Department of Energy/National Bureau of Standards Energy-Related Inventions Program" seminar in Salt Lake City, Utah. For information: Office of Energy-Related Inventions, National Bureau of Standards, Building 202, Room 209, Gaithersburg, Maryland 20899 (301) 921-3694.

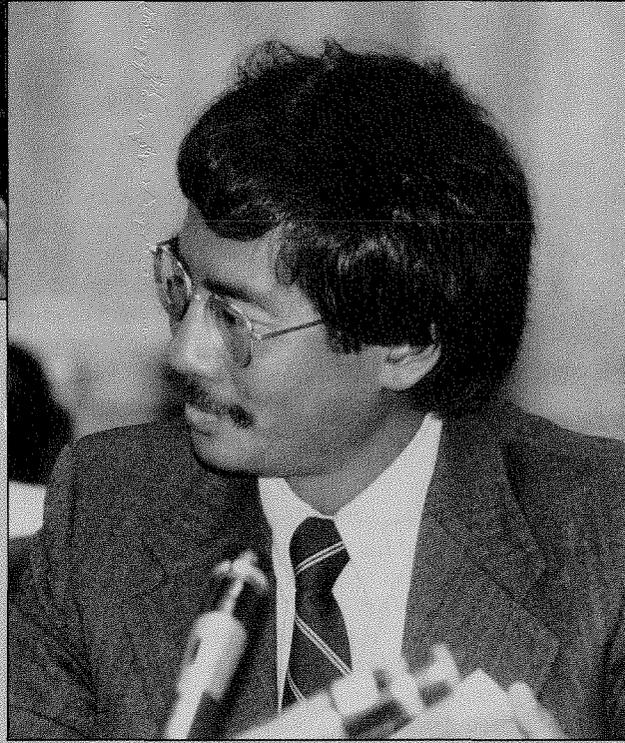
December 2-5 — "Thermal Performance of the Exterior Envelopes of Buildings" conference in Clearwater Beach, Florida. Cosponsored by ASHRAE and the Building Thermal Envelope Coordinating Council. For information: Marjorie C. Matthews, ORNL, Bldg 4508, Room 216, P.O. Box X, Oak Ridge, Tennessee 37830 (615) 574-4346.

December 11-12 — Northwest Power Planning Council meeting in Portland, Oregon.

Compiled by Ruth Curtis



Bob Saxvik



Kai Lee

Council elects Saxvik and Lee top officers

Robert W. Saxvik of Idaho was elected chairman of the Northwest Power Planning Council at the Council's annual business meeting, October 10. Saxvik succeeds Charles T. Collins of Washington. Kai N. Lee, from Washington, was named vice chairman.

Saxvik, appointed to the Council by Governor John Evans in 1981, will steer the eight-member group during its finalization of the new 20-year electrical power plan for the region. "The 1985 Power Plan starts the wheels in motion on an extremely important issue — better, more efficient use of the hydropower system," Saxvik said in remarks following his election.

"With the Council as regional policy-maker, the plan calls for regional cooper-

ation among private and public utilities, with Bonneville serving as facilitator," he said. He emphasized the importance of regional cooperation to the success of Council efforts, including developing goals to restore fish and wildlife in the Columbia River Basin.

He added, "The Council will continue its tradition of strong technical analysis and we will work closely with the ratepayers, tribes, state and local governments, shelter industries, utilities and others to translate that knowledge into workable public policy."

Saxvik was chief of staff for Governor Evans from 1978 to 1981 and his legislative liaison from 1977 to 1978. He served three terms in the Idaho State Senate where he was assistant senate minority leader. For 16 years, Saxvik was vice president and general manager of KBAR Radio in

Burley, Idaho. He is past president of the Burley Chamber of Commerce, Rotary Club and the Idaho State Broadcasters Association. He served in the U.S. Air Force for four years as a bomber crew member in the Strategic Air Command. Saxvik earned his Bachelor of Arts degree in education at Western Washington State College.

Kai Lee is an associate professor of environmental studies and political science

at the University of Washington. He is also an adjunct faculty member at the Institute of Marine Studies. He serves on the Board of Radioactive Waste Management at the National Academy of Science. From 1976 to 1977 he served as a White House Fellow to the Secretary of Defense. Lee has a degree in physics from Columbia University and a Ph.D. from Princeton University. —Beth Heinrich

IN THE NEWS

continued

Collins, Hemmingway to leave Council

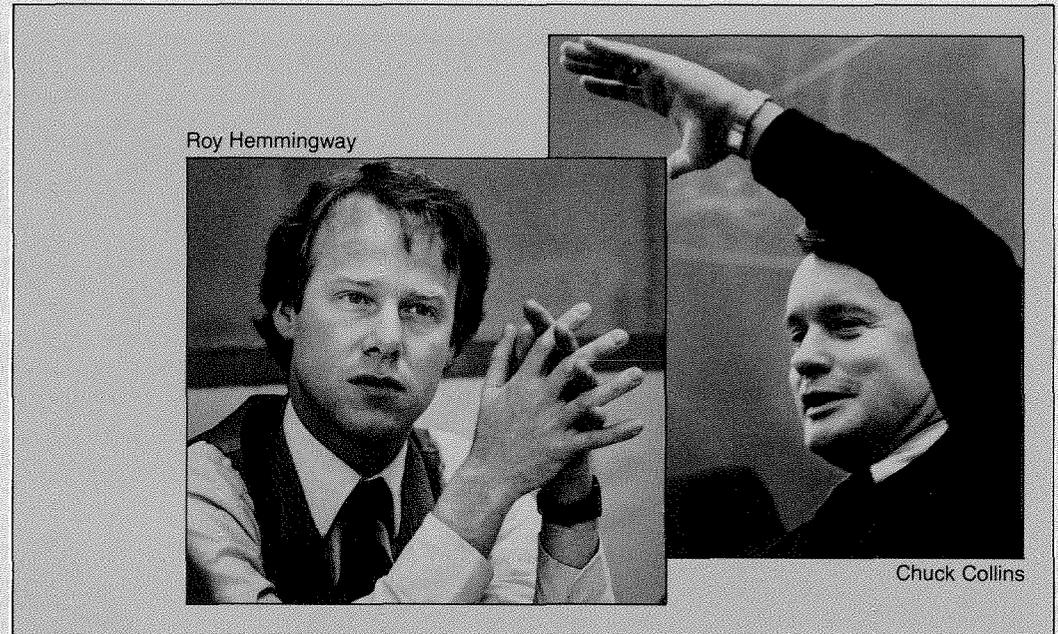
Two members of the Northwest Power Planning Council have announced their resignations. Washington's Chuck Collins and Oregon's Roy Hemmingway, members of the Council since its creation in 1981, both cited the desire for personal growth as the major factor in their decisions.

Collins, who had served as Council chairman this past year, expects to leave in January to assume a new position. Washington Governor Booth Gardner has asked Collins to chair the State Board of Higher Education.

In a letter to Oregon Governor Vic Atiyeh, Hemmingway cited his ten years of public service, primarily in the energy field, saying it was time to return to private life. Hemmingway was one of the principal authors of the Northwest Power Act which authorized the Council. While his term of appointment officially ends in January, he has told the Governor he will serve until his replacement is confirmed.

"It's a little bit like losing two institutions at once," the Council's Executive Director Edward Sheets said. "While we recognize their need to move on, we will feel their loss deeply. Both have made invaluable contributions not just to the Council, but to the entire Northwest power community. Mr. Collins and Mr. Hemmingway are widely respected for their leadership and their incisive minds. It's been an extraordinary combination."

Collins is a businessman and president of Colspur Corporation, a company involved in solid waste disposal. He has an extensive background in both the pri-



Roy Hemmingway

Chuck Collins

vate and public sector. In addition to his own business activities, he has served as director of Seattle's Metro Transit System and as chief administrative officer for King County in Washington.

Under his stewardship as chairman, the Council has tackled some major issues as it developed its Draft 1985 Power Plan. Those issues ranged from the futures of two unfinished nuclear plants to power sales to California. He personally worked to involve more people in developing the plan, particularly the region's public utility commissioners. A driving theme of his administration has been his effort to build cooperation among power entities.

"A major task will be rebuilding the regional institutions and framework for cooperation destroyed by litigation and rapid rate escalations," he told the Council as work on the new plan began.

Hemmingway, a lawyer, began his public service in 1976 as assistant to Oregon Governor Bob Straub. He

was a key figure in writing the state's Domestic and Rural Power Authority Act. Later, as Deputy Public Utility Commissioner, he played a leading role in drafting and lobbying for the Northwest Power Act.

Speaking of that Act, he said, "Northwest ratepayers now have a clear voice in determining their own energy future. The Northwest Power Planning Council represents the region's determination that its crucial electric energy decisions will be made here, in the Northwest, and with full public participation. The creation of the Council by the Northwest states is the first real effort by states anywhere to take back from the federal government critical authority over their futures." —DM

Northwest gets its own regional FERC office

The Federal Energy Regulatory Commission (FERC), which licenses and regulates nonfederal hydroelectric projects in the U.S., saw the lion's share of its work looming in the Northwest,

and decided to open a regional office in Portland, Oregon. The office opened November 1.

Commission Chairman Raymond J. O'Conner, in announcing the FERC decision, noted that the Northwest office is "essential," due in large part to the amount of hydropower-related activity taking place in the region. The new office will take over facilities inspections in the region and assist in the assessment of the impacts of clustering dams in the Salmon and Snohomish river basins and elsewhere in the region.

The Northwest Power Planning Council had asked FERC to create a Northwest office. Without such a base, FERC service to the Columbia River Basin is split among three regional offices in Illinois, Texas and California, none of which carries an emphasis on the environmental concerns hydroelectric development poses for this region.

"FERC was the only major implementor of the Columbia River Basin Fish and Wildlife Program that did not have

an office in the region," explained Edward Sheets, executive director of the Council. "We are very pleased with its new plans."

Sheets added that, "The Commission will be better able to evaluate the potential effects of its actions when it has a field operation located within the region. FERC's proximity to the Council, the fisheries agencies, Indian tribes and project operators will build much better communication among all of us."

Oregon's Senator Mark Hatfield and Representative Ron Wyden had also pressed for the move. Representative Wyden stated that he hoped the new FERC presence would provide "much more expeditious treatment" of hydropower license applications on hold in the area.

FERC has selected Quentin A. Edson, a former North-westerner, fisheries biologist and director of FERC's Office of Hydropower Licensing, to head the new office. Edson will report directly to the Executive Director of FERC, William McDonald. —CC

Seattle's code new approach to MCS

"We think it will qualify as an alternative code that meets the model conservation standards," said Seattle City Light Superintendent Randy Hardy. He was speaking of the new building code adopted September 30 by Seattle's city council.

Hardy said the new code omits some residential measures called for in the standards, but places more stringent requirements on commercial buildings. He believes the code, which goes into effect January 1986, will save ratepayers of the region's largest municipal utility "around \$140 million. That's

how much we're spending on the Lucky Peak hydro project to get 35 megawatts. During the next 20 years, we expect to gain between 35 and 40 megawatts through the code."

According to Seattle City Light policy analyst Sara Patton, high rise buildings in Seattle will have to perform better than the model conservation standards (MCS).

Since 1983, Seattle has required new buildings larger than 50,000 square feet to save 10 percent more than required by the city's commercial code, "which is almost identical to the MCS," Patton said.

"Most of our new construction will be commercial, rather than homes. That's why we expect to save as much or more than if we applied the standards in the conventional manner."

The Seattle code doesn't require heat-recovery ventilating systems or continuous vapor barriers in new homes, Patton said. "But it does improve the thermal performance of walls, ceilings, floors and windows to the MCS levels."

The Bonneville Power Administration offers financial and technical assistance to communities that adopt the model standards or their equivalent into codes ahead of the schedule set by the Northwest Power Planning Council. Hardy suggested that Bonneville will have to compare the Seattle code with the MCS to determine whether it qualifies for the assistance. —SE

Unique bond sale funds utility conservation

A \$17 million bond sale by the Bonneville Power Administration and the Eugene Water and Electric Board (EWEB) marks the first time

anywhere that such tax-exempt instruments have been used to fund conservation, according to EWEB treasurer Don Vanderzanden.

In September, after more than two years of working with Congress, the Internal Revenue Service, the Treasury Department and utility district voters to clear the way for this arrangement, Bonneville and EWEB sold the AA-rated issue to First Boston Corporation. The money will go to weatherize residences in EWEB's service area in west central Oregon.

Bonneville will acquire the energy savings from EWEB by paying debt service on the 15-year bonds. At 8.756 percent interest, said Vanderzanden, the bonds improve on Bonneville's federal borrowing rate by better than 2½ percent. "We get more conservation by the dollar this way," he said.

EWEB has arranged with Bonneville to use the \$1.8 million savings for weatherizing at least one high rise multifamily structure — a type of project not currently included in Bonneville's program.

According to Vanderzanden, a provision to the 1984 Tax Reform Act, advanced by Senator Bob Packwood of Oregon, gave Bonneville "a five-year window" through 1989, which frees the agency from prohibitions against federal entities guaranteeing tax exempt bonds. —SE

Customers tell utility favored energy features

Neither patriotism nor community spirit is the reason most people favor energy efficiency in their homes. Instead, people consider the benefits to be direct savings in their heating bills and the increased comfort in their

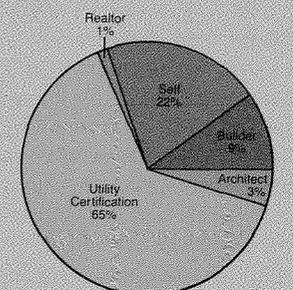
homes. These are among the conclusions of a study commissioned by the Eugene Water and Electric Board.

The survey of 400 people in Lane County, Oregon, also showed that energy related items are both the most and the least preferred features in new home construction. Insulation was chosen as the most important feature, out-ranking location — the traditional prime consideration of a new home. Three of the six top-ranked features dealt with energy conservation measures.

However, three of the four lowest ranked features also dealt, either directly or indirectly, with energy. While items such as insulation, extra caulking, and better quality double pane windows were popular, passive solar features and woodstoves were not.

The majority of respondents were most comfortable relying on a certification by their local electric utility to determine if a home is energy efficient. Approximately 90 percent were willing to spend additional money to get a house with that certification. And 71 percent indicated a willingness to spend over \$3,000 for it. —RC

Sixty-five percent of the survey respondents felt most comfortable with utility certification that a house is energy efficient.



IN THE NEWS

continued

1985 fall chinook run may be one of biggest

This year's Columbia River fall chinook run could turn out to be the second or third largest since the region's hydropower dams started generating. Fish counts through October at Bonneville Dam already mark this run as the eighth highest total passage since 1938, and the big fish are still coming up the river.

Spring chinook, sockeye and steelhead runs are also up this year over recent years. As of August 29, the spring and fall chinook, sockeye and steelhead adult returns were well above the ten-year average. By the end of September, steelhead returns had already passed last year's record-breaking run. That would make this the best steelhead run since fish counts were first recorded at the dam.

Up the river at McNary Dam near Hermiston, Oregon, the fall chinook counts are 54,000 above the totals for any year since that dam was completed in 1954. All lower river fish runs, with the exception of the summer chinook, are well above the ten-year averages.

Summer chinook counts are the highest since 1980, but that seasonal run, once considered the biggest run on the river, has also been the most depleted. —CC

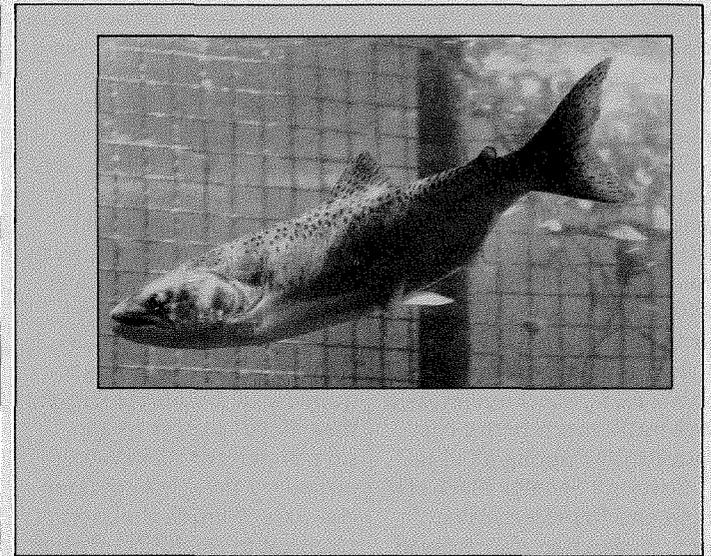
Study compares homes for indoor air quality

Energy efficient homes do not trap any more air pollutants than conventional homes, according to preliminary results from a study monitoring the levels of radon and formaldehyde in houses.

The study is being done by the Bonneville Power Administration. According to Conservation Manager Steve Hickok, "We were concerned that super energy efficient homes might collect these gases because of their extremely tight construction."

He went on to say, "the study indicates that, while formaldehyde and radon may be potential public health issues, well planned energy efficient construction does not appear to increase the risk over conventionally constructed homes."

Formaldehyde is a common industrial chemical found in many building materials.



Radon, a radioactive gas, is the natural decay product of radium, found in many soils.

Formaldehyde levels were measured in 530 homes throughout the Northwest. Levels averaged 0.09 parts per million (ppm) in conventionally built homes and 0.10 ppm in homes built to energy efficiency levels recommended by the Northwest Power Planning Council in the model conservation standards.

These efficient homes do not have the random, uncontrolled air leakage of a conventional home, but they are required to have some

type of mechanical ventilation. This ventilation ensures a low level of pollutants, while keeping the home's heat loss to a minimum.

The fact that the energy efficient homes are not as old as the conventional homes tested (six months compared to an average of three years) probably accounts for their marginally higher formaldehyde levels. Formaldehyde levels decrease over time as the gas is released from materials in the home and eliminated.

Radon levels were measured in 289 homes. Levels averaged 1.3 picoCuries per liter (the unit used to measure the amount of radioactive material in the air) in conventional homes, and 1.4 picoCuries per liter in efficient homes. The health risk from long-term exposure to levels at 5 picoCuries per liter is roughly equivalent to a person smoking two to three cigarettes a day.

Bonneville will be sharing these findings and future results with the state energy offices and state public health agencies in Oregon, Washington, Idaho and Montana.

—RC

Columbia River Basin Fish and Wildlife Program Amendments

Recommendations for amendments to the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program will be accepted through December 16, 1985. The program, which was adopted by the Council on November 15, 1982, addresses fish and wildlife losses in the Columbia River Basin that resulted from the development and operation of hydroelectric dams in the basin.

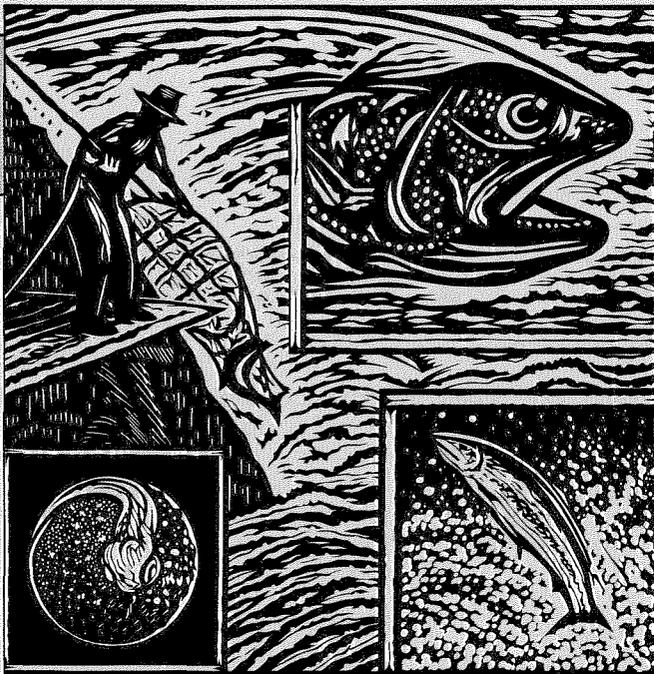
This will be the second time

the Council has amended the program. The current amendment process, like the last one, is open to Indian tribes, federal and state fish and wildlife agencies, water and land management agencies, electric power producing agencies and their customers, and members of the public.

The amendment process will include a series of consultations, public hearings throughout the region, public comment at Council meetings, oppor-

tunities to make written comment, and analysis by the Council and its staff.

All applications must be submitted on the application form developed for this purpose. Copies of the application and related materials are available from the Council. Call Janie Percy, Division of Fish and Wildlife, 1-800-222-3355 (Idaho, Montana and Washington), 1-800-452-2324 (Oregon), and 222-5161 for Portland, Oregon. —CC



The Great Goals Study

The Northwest's hydropower resources can hardly be over appreciated. The huge dams that have wrestled the Columbia River and its tributaries and made them productive are clearly among this region's most valuable assets. But the price paid for this productivity can also be couched in superlatives. The Northwest came terribly close to losing some of its most impressive natural resources — the fish and wildlife that also depended on the river.

The Northwest Power Act was signed into law at a time when the salmon and steelhead runs in the Columbia River Basin were on a steady decline that some felt would soon end in total annihilation. The Northwest Power Planning Council's ambitious Columbia River Basin Fish and Wildlife Program is designed to reverse this slow death through a basinwide set of over 200 measures to "protect, mitigate and enhance" the fish and wildlife resources in the basin.

But how much protecting, mitigating and enhancing will it take to settle the debt incurred by the hydroelectric system? Is such a goal even achievable? And how will the Northwest be able to determine whether the program has completed the job?

These questions were temporarily set aside when the Council sat down three years ago with state and federal fish and wildlife agencies, Indian tribes and others, to develop strategies for replenishing the dying resource. They are being asked and answered now in the complex weaving together of research, nationwide discussions and policy decisions that are known collectively as the "goals work plan."

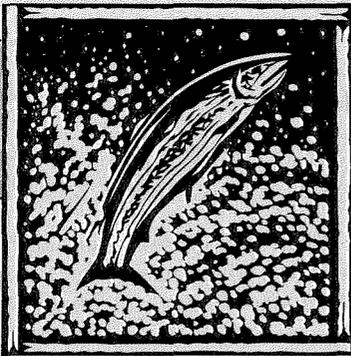
One of the first steps in the work plan is to assess the total losses of salmon and steelhead since development came to the basin. These preliminary estimates are contained in the *Draft Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin*, which is discussed on pages 10-13.

With this broad sense of the total loss, the hydropower caused losses must then be separated out, so ratepayers, who fund the program-related restoration, will only be paying for the effects of hydroelectric development. This second step is referred to as the "contributions issue."

With the questions of losses and contributions addressed, the Council moves into even more complex concerns that require policy decisions. Key questions must be answered: Should the program concentrate on improving the wild and natural salmon and steelhead runs or on increasing hatchery production? What should the program do about areas where salmon and steelhead are locked out of their spawning and rearing habitat by impassable dams, such as Grand Coulee and Hells Canyon?

Ultimately, the goals process will provide a standard against which program measures can be compared and progress, or the lack of it, can be evaluated.

The chart on page 9 explains the different parts of the study and how they all fit together. In addition, the following two articles cover major parts of the goals work plan in more detail. This article is the first in a series that will regularly track and report on the progress of the Council, its staff, and the goals process advisory committees. —CC



The Goals Process

by Ruth Curtis

1. LOSSES AND CONTRIBUTIONS

This portion of the goals process deals with gathering baseline data to estimate the amount salmon and steelhead runs have declined and hydropower's contribution to those losses.

A preliminary compilation of the numbers of fish lost was released in September for public comment. (See related story on page 10.) After consultations with fish and wildlife agencies, Indian tribes and other interested parties, a revised version will be presented to the Council for approval at the November 20 Council meeting.

These losses were caused by many factors, such as irrigation, logging, and commercial fishing, in addition to the development of the hydroelectric dams. To establish the scope of the Council's program, the relative contribution of hydropower must be determined. A paper discussing these relative contributions will be distributed for public comment in November. To order a copy, see back cover of this issue.

2. POLICY DECISIONS

System Planning Principles

If the goals process is to work, all major groups and agencies involved must have a clear understanding of the basinwide goals framework. To ensure this, a discussion paper was distributed last summer which described the principles to be used throughout the goals process.

These principles include the following concepts:

- Planning will emphasize a systemwide approach to the ecosystem in which salmon and steelhead exist.
- Offsite enhancement will be used in appropriate circumstances to meet the program's goals and objectives.

- Planning will emphasize protection, mitigation and enhancement of fish and wildlife affected by hydroelectric projects in upriver areas. (Previous efforts have focused on the lower Columbia River.)
- Planning will promote complementary activities by all entities affecting Columbia River fish stocks.
- The flexibility in coordinated hydropower operations will be used to achieve the program's goals and objectives.

Production Investments

Several approaches to fish production could be used to increase the numbers of salmon in the Northwest. They range from increasing wild, self-sustaining fish stocks to various types of hatchery production. The Council is evaluating these methods to determine which approach should be used in the goals process and to what degree.

After public comment on a paper dealing with these production approaches, the Council decided that more discussion of the issues and more technical analysis are needed before a decision can be made on how to invest in production.

Resident Fish Substitutions

A large portion of the basin is now blocked to migrating salmon and steelhead by hydroelectric projects. While these stocks of fish can never return to these areas, resident fish (fish that do not migrate to the ocean, such as rainbow trout) could be used to replace the original fish.

In August, the Council tackled the issue of whether these types of substitutions should be considered and, if so, where and to what extent. After hearing from various parties, the Council decided such substitutions should indeed

be considered and developed guidelines for evaluating proposed projects. The areas above Chief Joseph/Grand Coulee dams on the Columbia, and Hells Canyon Dam on the Snake River were named priority areas. (See related story on page 14.)

Accounting and Modeling

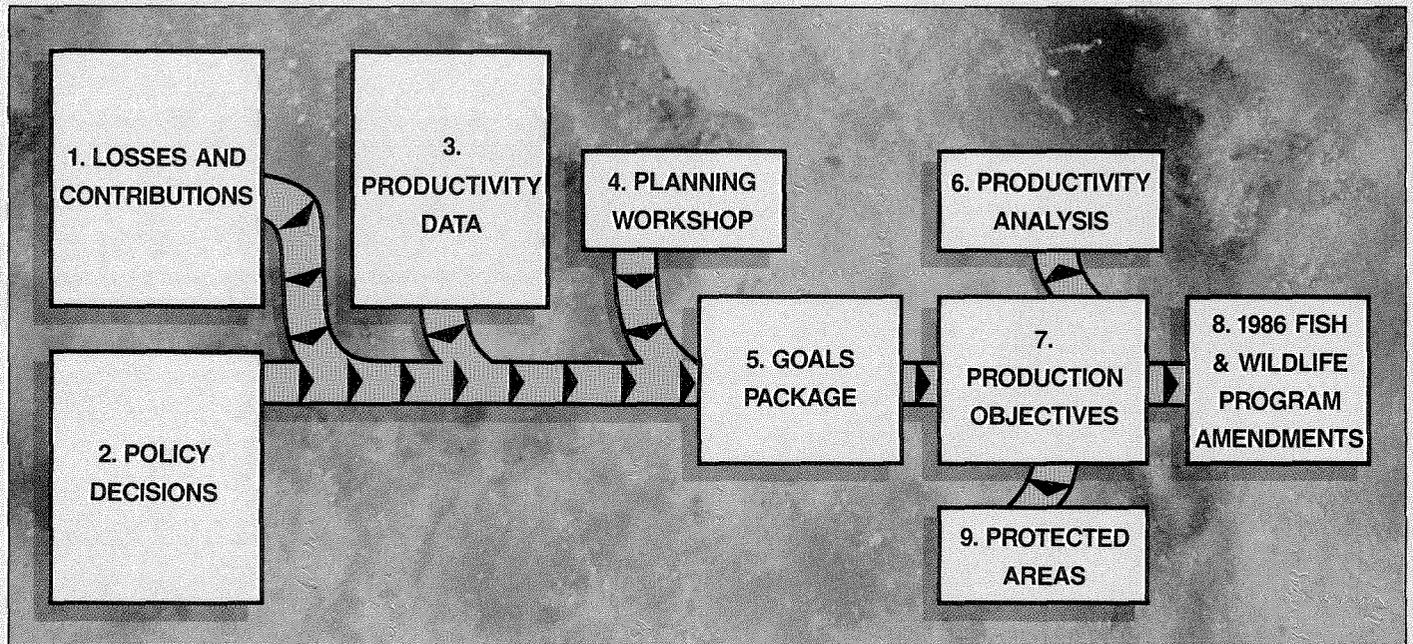
An accounting and modeling discussion paper sparked a dialogue in the region this summer regarding the Council's possible use of computer modeling to help fisheries biologists study alternative management plans and their possible results. A systemwide simulation model would describe the life of Columbia River Basin salmon or steelhead in terms of the events that influence their survival. These events would be formulated mathematically and linked so that the survival odds of the fish could be estimated.

A technical work group will assist the Council in developing the model. The group will be formed this winter and will consist of representative Columbia Basin fisheries experts.

3. PRODUCTIVITY DATA

Salmon and Steelhead Database

Using methods decided upon in September, the Council is collecting all available information on various indicators of existing salmon and steelhead productivity and habitat as well as estimates of the maximum potential production of these fish in Northwest streams and rivers. This information is being compiled in a computerized database. It is used for a variety of tasks, including setting priorities among the different geographic areas in the Northwest and among fish stocks to be produced. It will also be used in programs the Council has underway to protect certain sensitive areas from future hydroelectric development.



Resident Fish Substitution Productivity Information Test Area

Information on resident fish productivity is being gathered for the area above the Chief Joseph Dam on the upper Columbia River. This test area was chosen because: 1) the information for this area is readily available; 2) a wide range of resident fish habitat types are found there; and 3) the Council has designated this a high priority area for resident fish substitutions.

With the information gathered in the test area, the Council will be able to assess whether resident fish substitution projects are appropriate in that area and, if so, where they should occur and what production targets should be set. The test area will also provide guidance for determining the type of information that should be gathered for the other blocked areas.

A report on this work will be available in early winter.

4. PLANNING WORKSHOP

Experts from fish and wildlife agencies, Indian tribes and power interests will gather in early December to use the productivity data to do a trial run in developing production objectives. This

planning workshop is designed to develop a procedure for determining salmon and steelhead productivity objectives. The experience gained will help the Council set production objectives throughout the region.

5. GOALS PACKAGE

All of the information provided by these activities will be combined into a Draft Goals Package to be distributed for public comment in early 1986. The package will include preliminary long-term goals for the fish and wildlife program, as well as the responsibilities of the different parties involved in meeting those goals, and the procedures to be used for measuring progress.

After a public review and comment period, the Council is scheduled to adopt the final goals package in March 1986.

6. PRODUCTIVITY ANALYSIS

The Council, through various analysis methods (some of which are currently being developed by the region's fish and wildlife agencies and Indian tribes), will develop information on the existing and potential salmon and steelhead productivity of the Columbia River Basin. These

methods were discussed in an issue paper released in the late summer.

7. PRODUCTION OBJECTIVES

Once the goals package is agreed upon, the Council will use the goals and productivity information to develop production objectives. Experience gained in the planning workshop will help the Council frame these short-term objectives to deal with individual streams or river basins. Taken together, these objectives will meet the overall goals of the fish and wildlife program.

8. 1986 FISH AND WILDLIFE PROGRAM AMENDMENTS

The production objectives will be used to evaluate the proposals the Council receives in the 1986 amendment process for the Columbia River Basin Fish and Wildlife Program. (See box, page 6.)

9. PROTECTED AREAS

The production objectives will also be used to influence another ongoing study that is designed to help identify areas in the basin and elsewhere in the region that should be protected from hydroelectric development.

Salmon and steelhead losses

Counting Backward



by Steve Engel

It's a bit like counting ghosts.

Before 1850, before modern developments began to take their toll, how many salmon and steelhead returned each year from seagoing lives to spawn in the streams that fill the Columbia River?

The answer will help determine how many of these fish are replaced, and where, through a program decreed by Congress. The Northwest Power Planning Council will set goals for that program and, working with fish and wildlife agencies and Indian tribes, will design methods to achieve those goals. (See story on goals process, page 7.)

Although Congress tied the scope of the Council's program to losses caused by "the development, operation, and management" of hydroelectric facilities in the basin, the Council must first learn the total extent of salmon and steelhead losses. It must find out which species have been reduced, in what numbers, and from what areas. It will also consider

the damages caused by activities other than hydroelectric projects.

"Hydropower ratepayers will not be expected to compensate for fish and habitat losses caused by other factors," says Council Executive Director Edward Sheets.

As a first step in the goals-setting process, Council staff and contractors re-

cently produced the *Draft Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin*. This 350-page document draws together the work of many experts and agencies to arrive at estimates of the resource's current size, as well as the abundance of the various species in recent history and ancient times. (See box, "More than one way.")

This compendium does not apportion blame for the losses. Nor does it suggest what is to be done or how to do it. Those questions will be settled at a later stage. The purpose of the *Draft Compilation* is to gather and present data.

Trying to grasp the numbers of fish in a seasonal run, whether now or long ago, can become a slippery task — like taking hold of one live, surging, slick salmon. Public comment on the document, which ended October 11, brought new information on fish counts in some tributary rivers, and suggestions about ways to interpret ocean harvest figures and habitat surveys.

Yearly records since 1866 estimate how many salmon and steelhead were caught in the river or the ocean or packed at canneries. Since 1938, counts of adult fish heading upstream at Bonneville Dam give a rough idea of how many fish originating in the eastern reaches of the basin have eluded ocean trawlers and lower Columbia River commercial and sport fishers.

Adding the number harvested and the number of spawners tabulated at the dams gives a conservative estimate of fish run size. Estimates place the present annual run for all salmon and steelhead species at about 2.5 million fish. This number represents near-decimation — one-tenth the number — from some estimates of the annual run prior to major developments (since 1850).

The modern record (see Figure, "Total In-River Catch — All Species") shows the up-and-down results of many events, including natural cycles, fishing activity, and laws that limit fishing seasons or methods. The line plummets sharply fol-

lowing development of large dams on the Columbia River and its major tributaries. The bulk of this development took place after 1938.

The Council's draft study shows major losses of salmon and steelhead runs and habitat in the upper Columbia River and upper Snake River areas. These once-productive breeding grounds are now blocked to any returning fish by large dams — the Hells Canyon, Chief Joseph and Grand Coulee. (See related story, page 14.)

But where did the numbers start? Even 150 years ago, how many salmon and steelhead were nurtured in the 160,000 square miles of fish habitat that once made up the Columbia River Basin? How many miles of productive habitat have been lost? Is it possible to know the size of migrations:

...before the dams blocked the return of these fish to their ancestral gravels?

...before the spawning gravels were silted up by the effects of logging, irrigation and streamside grazing?

...before the stream-shading vegeta-

tion was torn away, allowing waters to heat up beyond levels that kill eggs and smolts?

...before irrigation and the thirst of cities drained streambeds dry?

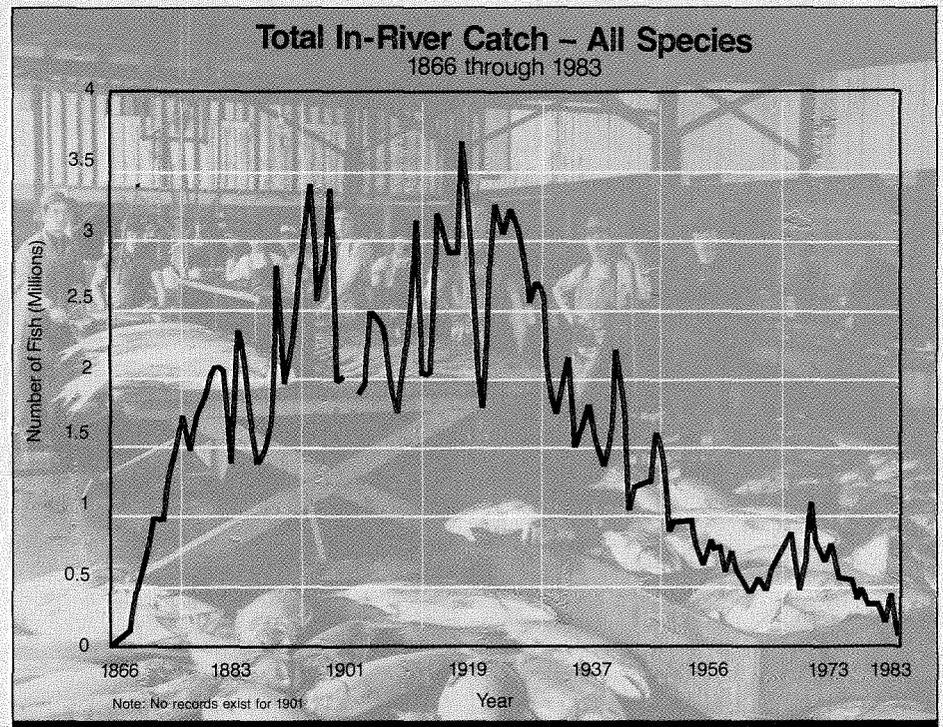
...before the waters were fouled with sewage and industrial effluent, and acid discharges from mining?

...before the smolts were held past their migration period in reservoirs, or destroyed by turbine blades, or plunged into the pressurized depths at the base of dams, where, stunned, they make easy prey?

We know a great deal, it turns out.

We know what species existed before the major developments, and have a good idea to which river basins they returned. These things are not believed to have changed until the advent of logging, irrigation and the building of dams. We also know what conditions are required for spawning these fish and sustaining them to maturity.

In 1979 the Pacific Fishery Management Council (PFMC) surveyed all river systems in the Columbia River Basin (as well



as the rest of the West Coast). Based on the observed productivity of stream reaches with the required slope, gravel content and water level, and the total area of such habitats, the PFMC estimated that the basin originally supported an annual run of about 8 million fish.

"This is an extremely conservative estimate," says John Marsh, project manager of the Council's losses study. "Presented with a number of different stream habitat assessments, the PFMC study chose the lowest estimate in every case."

The PFMC study estimates that modern developments have destroyed or blocked more than half of the potential breeding habitat in the basin — leaving 72,800 square miles of the 163,000 square miles considered available prior to 1850.

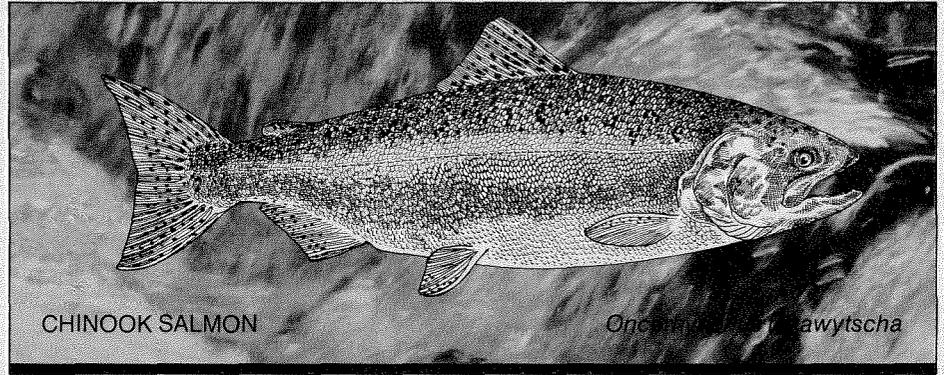
A larger estimate of the basin's former abundance of salmon and steelhead was arrived at by adding together the largest annual recorded catches for each species. These bumper years were achieved by commercial gillnetters in the lower Columbia River during the late 19th and early 20th centuries. The total maximum catch was 8 million fish. Estimates of catch efficiency (percent of the run actually landed) vary from half to two-thirds; hence, the prehistoric run is calculated to be either 12 million or 16 million.

To check the reasonableness of these figures, the Council study estimated the aboriginal consumption of salmon. From the wet, green west to the dry, brown east, and even up into the high plains, subsistence fishing in the Columbia River Basin supported a large portion of the human population prior to white settlement. It has been called the most productive aboriginal fishery in the world.

The remarkable wealth, complexity and culture of the societies that grew up were based on a large, reliable, year-round food source.

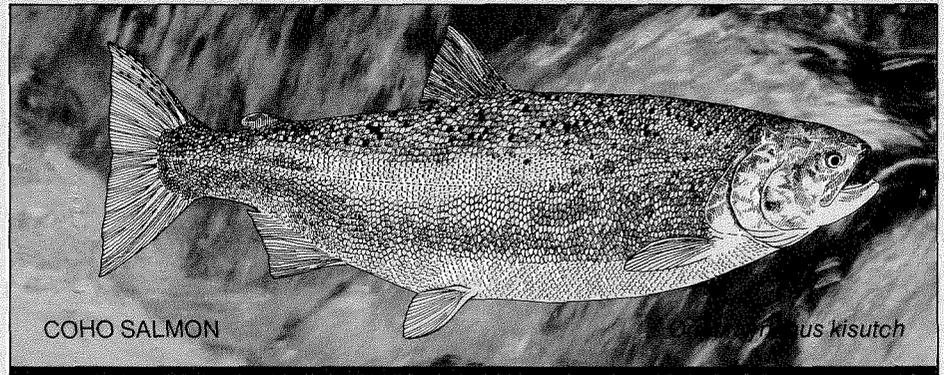
The artifacts and religious practices of the tribes in the Basin, as well as historical and present accounts, point to the fish runs.

Early explorers and traders reported the seasonal food-gathering activities of the people they saw. These accounts tell the



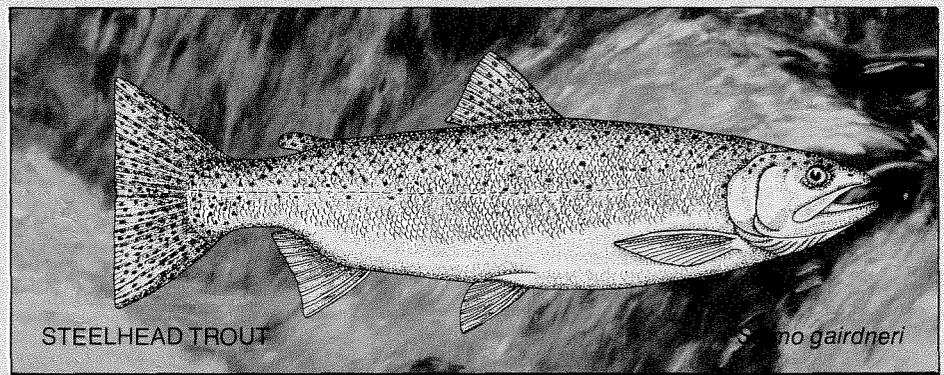
CHINOOK SALMON

Oncorhynchus tshawytscha



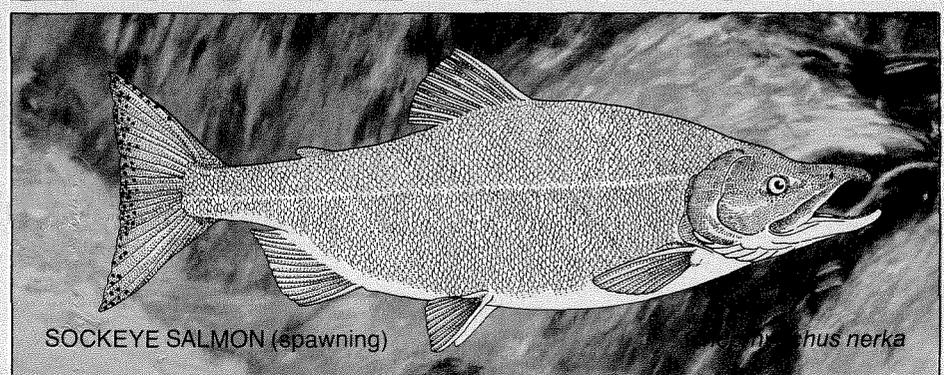
COHO SALMON

Oncorhynchus kisutch



STEELHEAD TROUT

Salmo gairdneri



SOCKEYE SALMON (spawning)

Oncorhynchus nerka

degree to which different tribes relied on the various salmon and steelhead migrations. They also give village locations and population estimates. Independent analyses of these early reports place the aboriginal population of the basin at 50,000 — although recent work cited during the public comment period would increase that figure. These written accounts can be compared with each other and with what elderly Indians told anthropologists in the early 1900s.

The *Draft Compilation* estimates aboriginal consumption of salmon and steelhead at about 3 million fish, totaling 42 million pounds. Comments received by the Council could increase these num-

bers. This estimate considers the tribal populations and the extent of their dependence on the salmon. It even calculates the number of calories the fish lost per mile over the distance they traveled from the mouth of the Columbia to each tribal territory.

Salmon and steelhead use is not documented for all streams and native populations in the basin. At some places, such as Shoshone Falls on the Snake River in Idaho, natural barriers blocked the migrations. Even so, the people who lived above those places often relied on the salmon; they traded for it, or traveled to favorable fishing spots.

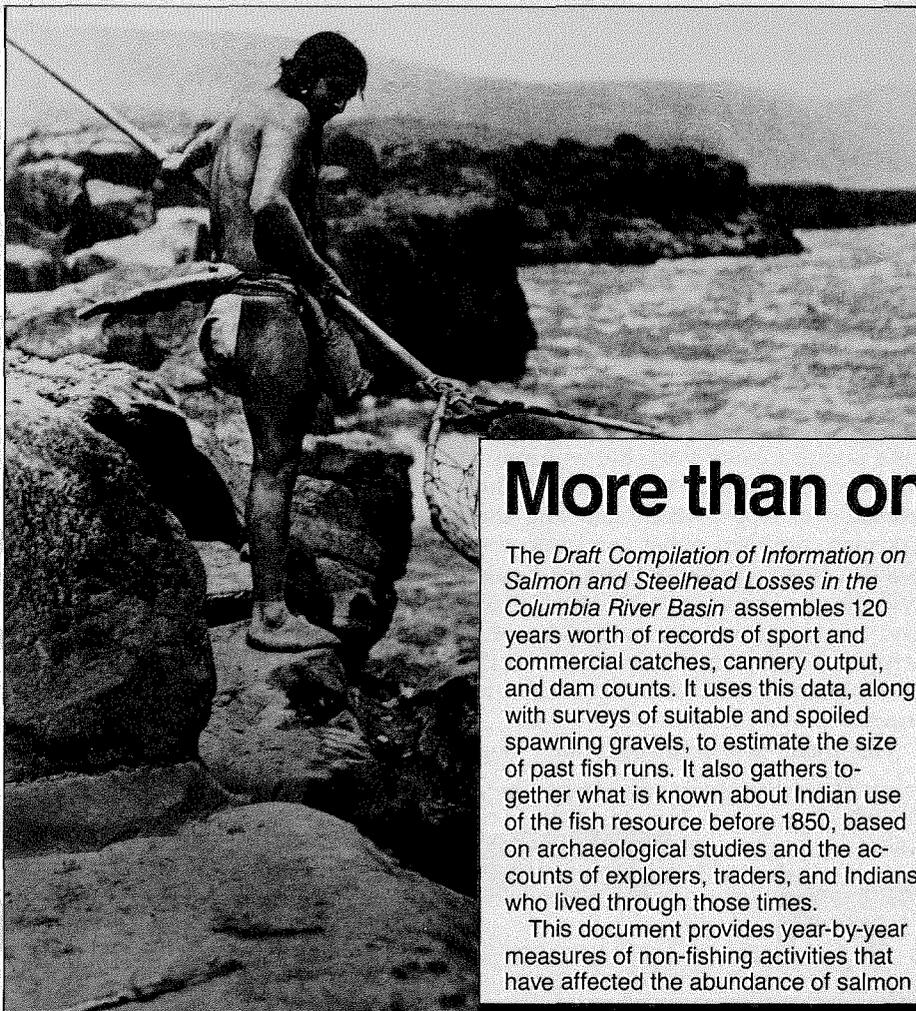
They would spear or net the fat, pink-

fleshed salmon. They would smoke the fish over alder fires, or dry them in the parching air — enough to feed every man, woman and child a pound a day through the cold, grey months to come.

New diseases and new ways swallowed most of the Indians — and most of the salmon. To the white society, the salmon became a moneymaking proposition, then a disappearing resource, and finally a legal and moral — and scientific — problem.

The riddle of the salmon ghosts has an answer now that is reasonably accurate, but broad. According to the *Draft Compilation*, there were 8.3 to 16.3 million salmon and steelhead in the river of old. There are about 2.5 million now. The loss stands somewhere between 5.8 million and 13.8 million. Some people will argue for a higher count, and some for a lower one. Much debate is sure to attend the determination of causes. The Council, says its former chairman, Chuck Collins, "will make an equity judgment."

The salmon, as they always have, and without comment, will seek the sea, and then the shallow waters of their beginning. ■



More than one way...

The *Draft Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin* assembles 120 years worth of records of sport and commercial catches, cannery output, and dam counts. It uses this data, along with surveys of suitable and spoiled spawning gravels, to estimate the size of past fish runs. It also gathers together what is known about Indian use of the fish resource before 1850, based on archaeological studies and the accounts of explorers, traders, and Indians who lived through those times.

This document provides year-by-year measures of non-fishing activities that have affected the abundance of salmon

and steelhead. These records include logging and mining production, irrigated acreage and related water diversion, grazing intensity, manufacturing employment and human population growth. The document charts cumulative storage capacity and cumulative power output for all dams in the basin, since these factors may correlate with fish run sizes and habitat destruction.

Other sections describe activities that have helped restore fish populations, including hatchery releases, protective laws, efforts to clean up the environment, and programs to increase the numbers of young and adult fish surviving dam passage.

SUBSTITUTIONS FOR STOPPED FISH

by Carlotta Collette

Some of the most difficult questions facing the Northwest Power Planning Council involve blocked areas – those parts of the Columbia River Basin where salmon and steelhead are locked out of spawning and rearing habitat by impassable dams. In two of these cases, the Council has adopted a preliminary policy for substituting resident fish, which do not migrate to the ocean, for those salmon and steelhead lost due to the hydropower blockage.

In the Council's decision, the blocked areas above the Chief Joseph/Grand Coulee dams on the upper Columbia River and Hells Canyon Dam on the Snake River will receive priority attention because the losses in those areas were so great. Resident fish released into the lakes and streams above these dams will benefit the people whose economies and lifestyles depended on the fish. These people have received very little compensation for their loss.

Resident fish substitutions in lower river blocked areas will be reconsidered when the current program's effectiveness in restoring salmon and steelhead runs and developing resident fish populations can be measured, and specific goals can be set for any necessary additional substitutions.

In its 1984 amendment process, the Council set the precedent for such substitutions by approving the Colville Confederated Tribes' application for a resident trout hatchery to be built near Chief Joseph Dam on the Colville reservation border.

Martin Louie sits full face to the sun, his lap covered with an old blanket. Beside him rests an older pipe. Martin Louie is older still than the blanket and pipe. He is old enough to remember fishing at the Kettle Falls before they were buried by the slow-rising water behind Grand Coulee Dam. He is old enough to remember going for berries in the hills he gestures at over his shoulder. When he was younger he hunted for deer there. He is a Kettle River Indian tribal elder, living in the town of Inchelium, Washington, where three of the creeks that drain the east face of the Kettle River Range pour into the huge reservoir that now borders his reservation on the east and to the south.

A young video crew has approached

Martin Louie to have him tell the story of how the salmon came to be in the upper Columbia River and its tributaries. The story is about Coyote, part prankster, part wizard, who nudged evolution in many traditional Indian legends. In this tale, Coyote hauled the salmon upriver after first tricking four women guardians at Celilo, and digging a channel in the earthen dam the women used to keep the salmon in the lower Columbia.

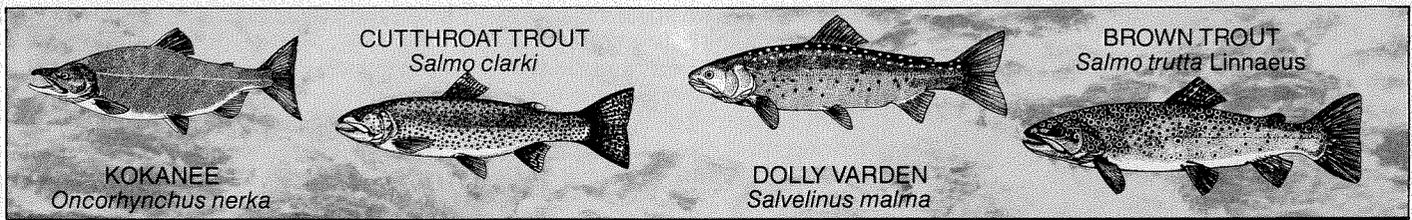
In Louie's Coyote story, the wily spirit then delivered salmon to the mouth of the Wenatchee, to the Okanogan and the Spokane, up Hard Creek, and into the Colville River. At the old site of Kettle Falls, he piled up rocks to hold the fish in and, in that manner, built the two-stepped falls that used to cascade first 15 and then ten more feet in their separate drops.

This must have occurred a long, long

time ago, because as old as records get in the upper Columbia, there have been salmon there, and Martin Louie's ancestors caught them in abundance.

Most of the Indian tribes, spread out on the wooded and hilly landscape before the dams closed out the upper Columbia, relied on the summer salmon runs for their subsistence. At Kettle Falls, the preferred fishing site of the Colville tribe, an 1841 report describes the not unusual taking of 900 salmon in a day and a night. Given the duration of the summer salmon runs (about 60 days), and an average haul of 500 fish per day, the annual Indian catch at Kettle Falls alone would have been about 600,000 pounds of fish.

When the river was high enough, the salmon could travel over the falls and on into the lands occupied by the Spokane, the Lakes and the Kutenai tribes. The salmon appear to have spawned in the



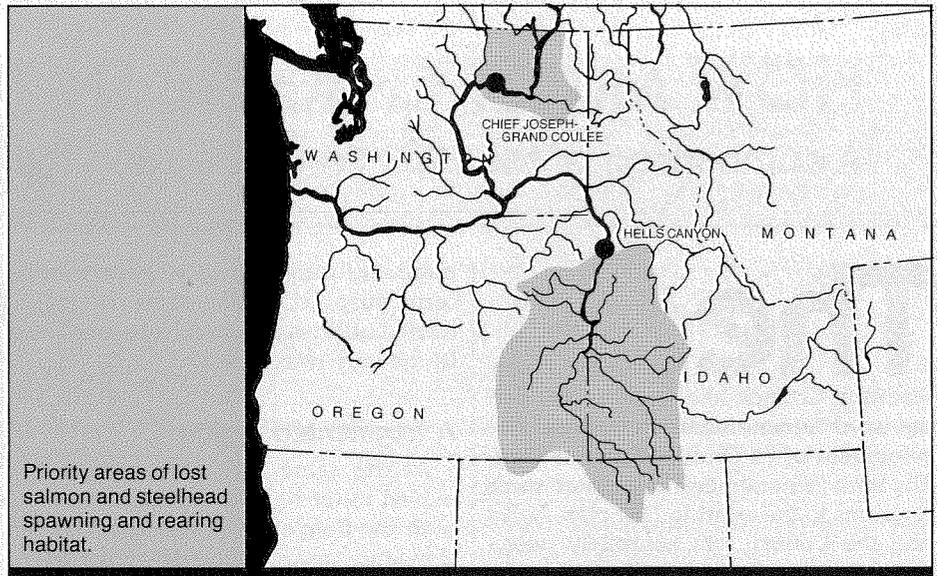
Columbia Basin nearly all the way to the river's source in Lake Columbia, some 1,300 miles from the sea. When the Bureau of Reclamation built Grand Coulee Dam 596 river miles up from the estuary at Astoria, they stopped those ancient salmon runs dead.

Grand Coulee Dam doesn't seem all that imposing at first glance. Mainstem dams on the Columbia River are huge by almost any standards, but Coulee doesn't look that much bigger or taller than some others. It helps one's perspective to catch a glimpse of a truck racing across the top of it. The truck seems antlike, and the dam, in contrast, looms high and wide around it. Or see it come grey and view-filling out of the dark at sunrise. It is big and almost ominous then, a rumbling concrete wall nearly a mile across and 350 feet above the water level on the downstream side.

It was noted, in the 1930s when the dam was built, that the Bureau's engineers poured enough concrete in it to build two 20-foot highways from the Atlantic to the Pacific oceans. Franklin Delano Roosevelt Lake, the reservoir behind the dam, covers 82,300 acres, runs to 151 miles and has a 600 mile shoreline. There's enough water in it to give every person in this country about 20,000 gallons each. But no salmon go there or beyond it to spawn anymore, and it would take a major miracle for even Coyote to carve a fish passage through that massive rock.

The similar construction of Hells Canyon Dam across the Snake River, between the steep cliffs that separate Oregon and Idaho, cut off about half of the Snake River Basin from salmon and steelhead runs. Hydropower dams have also blocked stream passage for anadromous fish in more than a dozen other tributaries of the Columbia.

Such barriers reduce the basin's total available spawning and rearing habitat for salmon and steelhead, by about half. This loss in habitat has almost certainly contributed to basinwide losses in numbers and even stocks of salmonids. The most notorious loss is the extinction of the oversized salmon known as the "June hogs." These fish once climbed the river



almost to its source. Cut off now by the wall at Grand Coulee, they have been completely eliminated from the river.

The blocked areas above dams like Grand Coulee and Hells Canyon will never again sustain runs of anadromous fish. The people who live in the vicinity of these blocked areas will not catch the big silver fish at their historic fishing sites, and they have yet to be fully compensated for their loss.

The Northwest Power Act called for replacement of fish "in kind and in place." But the Council concluded that, in some cases where anadromous fish cannot be supported, fish that do not require an ocean migration — resident fish — may be substituted.

This will be the case on Martin Louie's reservation, where a resident trout hatchery is in the design stages. The hatchery will likely aid the local economy in a corner of Washington that has only recently been seen by developers as "promising."

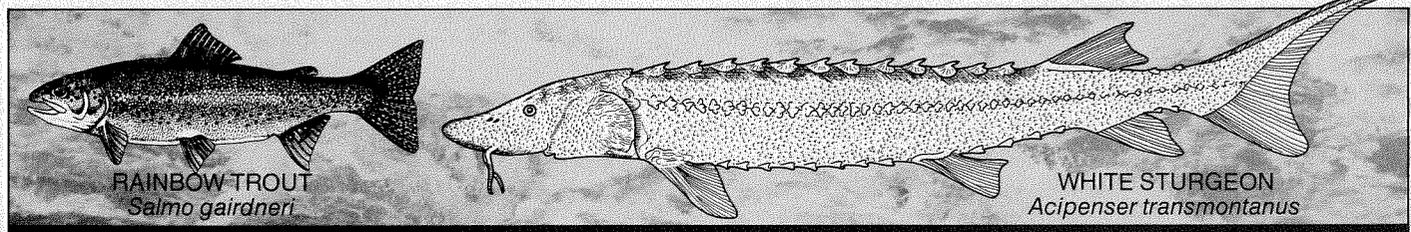
To John Smith, director of the Colville Confederated Tribes' Fish and Wildlife Department, developers finally "discovering" the beauty in and surrounding his reservation is a mixed blessing. But the Colville Trout Hatchery is welcomed wholeheartedly. "The hatchery will em-

ploy a lot of people here as well as provide needed food for the tribes. The additional fish will also attract sport fishermen to our area."

Hatcheries to compensate for the losses at Grand Coulee Dam are not a new idea. Federal and state agencies were already concerned about the preservation of the fisheries resource at the time the dam was built. Expected difficulties culling spawning fish from the turbulent tailrace at Grand Coulee precluded building a hatchery close to that project site.

Instead, four hatcheries were built on other river drainages: three federal hatcheries below the dam (on the Wenatchee, Entiat and Methow rivers), and one Washington State hatchery for resident fish above Grand Coulee. The Colville Tribes feel that none of these provided adequate compensation to the tribes or their reservation.

The new hatchery is expected to supply about four million young trout for seeding a portion of the reservation's 358 lakes and hundreds of miles of streams. Hatchery design proposals are now under review by the tribe, the Bonneville Power Administration, which is funding the hatchery, and the Council. If all goes according to schedule, the Colville tribe will be raising resident trout by 1988. ■



Sharon Torvik illustrations

HOW MUCH CHANGE IN TWO YEARS?

A comparison of the 1983 Power Plan and the Draft 1985 Power Plan

The

Northwest Power Planning Council has carefully avoided the word "amendment" throughout development of its Draft 1985 Power Plan. The term "amendment" suggested mere revisions to the existing 1983 plan. It did not, the Council felt, accurately reflect the major new analysis and substantive changes that went into the new draft.

True, the draft does not depart from the basic planning philosophies introduced in 1983. But if this planning perspective is essentially the same, the treatment of some significant issues is not — particularly the amounts and types of resources called for in the new resource portfolio.

Many of the changes in the 1985 draft are simply the result of having both better information and better ways to analyze information. A great deal of finetuning was possible because of more data on the cost and performance of resources and more sophisticated computer analysis.

New trends since 1983

Some differences between the plans respond to changing Northwest conditions and trends. At the forefront of these changes is the fact that the current electrical power surplus has turned out to be more expensive and is likely to last longer than anticipated in 1983. The Northwest's economic growth has lagged behind that of the rest of the nation. This slower recovery has meant lower growth in electrical demand.

In particular, the region's traditional industries such as forest products and heavy manufacturing, which rely heavily on electricity, have remained stagnant. The rapid growth has been in the high technology and service industries, which use relatively little electricity.

It has also become apparent since 1983 that the distribution of the electricity surplus is markedly uneven — with

public utilities tending to have a long-term surplus, while some investor-owned utilities may need new resources in the very near future.

A fragmented region

At the same time, the region has moved toward greater decentralization, with the Bonneville Power Administration and its public utility customers moving in one direction and those investor-owned utilities with growing resource needs moving in a variety of other directions.

When the 1983 plan was adopted, the Council assumed that Bonneville would take the lead for the entire region in acquiring new resources. But, in fact, Bonneville now serves less than half of the region, primarily public utilities and direct service industries.

The 1985 draft calls for Bonneville to take a stronger regional role and to develop a predictable, low-cost rate for power from new resources. Otherwise, some investor-owned utilities may choose to develop expensive new generating resources rather than risk uncertain rates by turning to Bonneville. The current draft also calls for a coordinated approach to resource acquisition for all utilities.

In particular, the draft emphasizes sharing resources such as conservation and hydropower made available by strategies to make better use of the system. It also calls for developing mechanisms to allocate costs, so that resources and resource options could be shared. A central focus of the new draft is making conservation in surplus utility areas — conservation that might otherwise go undeveloped — available to those utilities with growing electrical demand.

Major uncertainties increase

In addition to these changes, some uncertainties have increased dramatically since 1983. The 1985 draft deals at length with their effects. The most

dominant uncertainties center on the future of the direct service industries, the future of two partially completed nuclear plants, and the future of power sales and purchases outside the region. The direct service industries, primarily aluminum plants, are so called because they buy power directly from Bonneville.

Because of a depressed world aluminum market, there is a question about whether any or all of these companies will be around at the end of the Council's 20-year planning period. The question is significant because these industries use 15 percent of the region's electrical power. Their continued stay in the Northwest could make the difference between whether or not two unfinished nuclear plants would be cost effective to complete.

The 1983 plan assumed that Washington Public Power Supply System Nuclear Projects (WNP) 1, 2, and 3 would be completed. Based on this assumption, the plants were included in the 1983 planning base as resources to be available soon. Only WNP-2 was completed. Because of legal and financial barriers which jeopardize the completion of WNP-1 and 3, the Council chose not to include the plants, which represent 1,600 megawatts, in the portfolio of new resources for the 1985 draft.

The Council did, however, recommend maintaining the plants as potential options and working to remove the barriers to the plants' completion because they would be cost effective if the power is needed.

New ways of looking at hydro

Another resource that has diminished in size between the 1983 plan and the current draft is hydropower. The 1983 plan called for 920 megawatts of new hydropower in the high forecast. The 1985 draft considers only 255 megawatts available. This amount represents only potential hydropower from existing sites (through upgrades). No hydropower from new sites will be considered until

by Dulcy Mahar

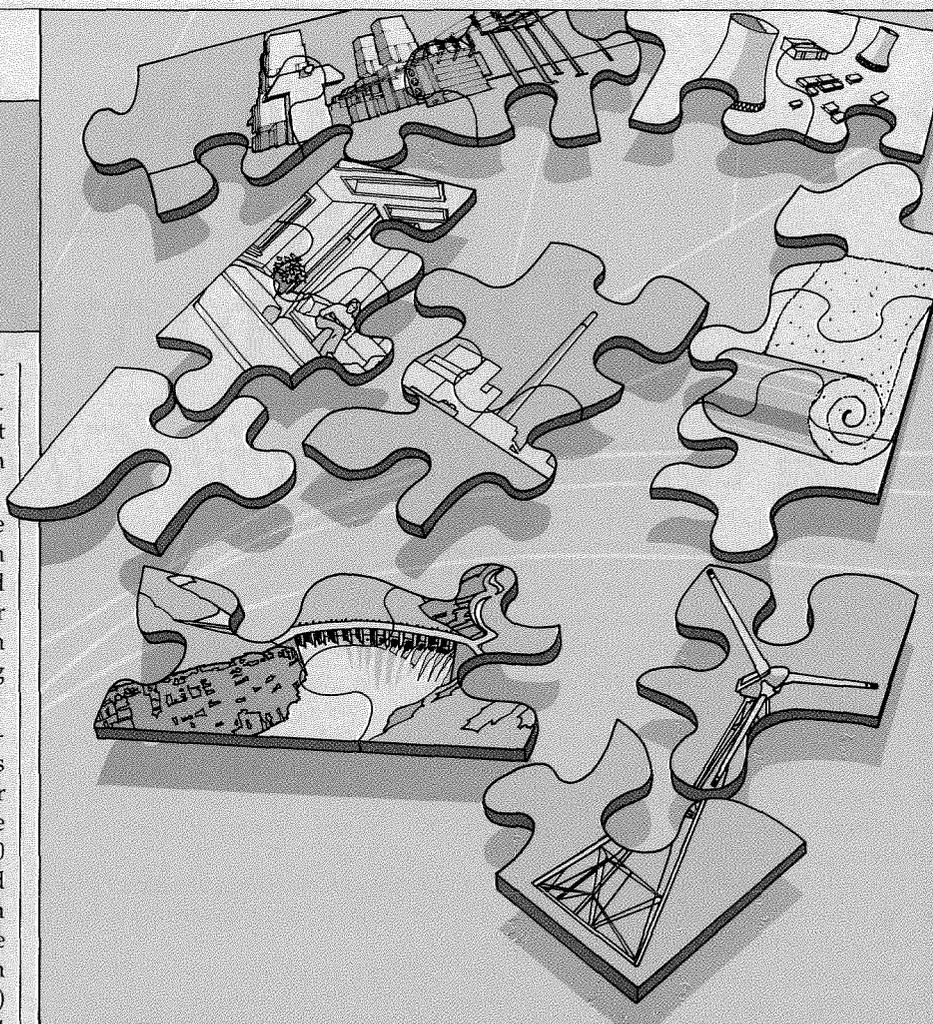
after the region's hydropower assessment study is completed later next year. That study will help determine what sites should be protected from development.

A sizable new resource appears in the Council's portfolio for the first time in the 1985 draft. The Council has identified approximately 2,000 megawatts of power that could be made available to meet firm Northwest loads by using the existing hydropower system more efficiently.

Currently, only the hydropower available in critical (historic low) water years is used to meet firm (contractual) power loads. In an average water year, the hydropower system produces 4,100 additional megawatts. This is called "nonfirm" power because it depends on the weather and therefore cannot be counted on. The draft calls on the region to explore strategies to firm (back up) this nonfirm power with resources that would only be needed occasionally.

The amount of conservation available in the 1983 plan has dropped by nearly 1,000 megawatts in the new draft. The available conservation depends largely on economic growth and the accompanying level of building activity. With slower growth, opportunities to conserve energy decline proportionately. The Council also removed structures that have been weatherized between 1983 and 1985 from the conservation assessment. Nevertheless, a large block of conservation remains.

While the changes in the 1985 draft are significant, they do not represent the only differences between 1983 and 1985. The draft changed noticeably from earlier issue paper positions, thanks to new information and insights brought to the Council's attention through the public involvement process. The Council is currently studying comments submitted on the draft plan during the past two months of public review. It is entirely possible that the final 1985 Power Plan, scheduled for adoption in December, may move even further from the 1983 Power Plan — or closer. ■



Public responds to draft power plan

The Draft 1985 Power Plan has been the subject of much comment since its release August 7. The public comment period closed October 25, after hearings were held in each of the four states in the region. Council members and staff also met in consultations with public utility commissions, utility groups and citizen environmental groups.

In September, a Draft Power Plan Workshop was sponsored by the Northwest Public Power Association. The workshop featured four Council members, the Council's executive director, staff members, and representatives from utilities, state energy offices, local governments, industries and conservation groups.

In general, the draft plan has met with agreement over its 20-year load growth forecasts, its emphasis on conservation as the least costly and most reliable resource, and its call for few new generating resources.

Concerns have been raised by the role the model conservation standards will play in the new plan and by the Council's decision to leave two unfinished nuclear plants out of the resource portfolio until the barriers that currently block their construction are resolved.

The Council's inclusion of new strategies to make better use of the Northwest's hydropower system has also stimulated discussion.

Nearly every presentation the Council has made on the draft plan has included a discussion of the need for regional cooperation. In the draft plan, the Council totaled up an estimated \$3.8 billion in regional benefits that can accrue if utilities and other power interests work cooperatively to develop the Northwest's most cost-effective resources on a regional basis.

The Council will review and respond to these and other elements in the draft plan at a series of open Council meetings throughout the month of November (see calendar). Adoption of a final 1985 Power Plan is expected in December. —CC

Three Regional Dichotomies

A conversation with Chuck Collins

by Dulcy Mahar

Chuck Collins is not a man to shy away from tough questions. One of the questions he's raising now is whether the Northwest might be in danger of losing its traditional industrial base in its rush to attract new industry. As he sees it, such a question is at the heart of decisions that must be made about electrical power planning in the very near future.

Collins, past chairman of the Northwest Power Planning Council, is what his colleagues would term a "big picture man." He has the ability to absorb masses of raw data and emerge with a cohesive concept and distinct directions. He was, for example, the first one to put the current Northwest electrical power surplus into perspective, noting that it is not the *size* of the current surplus that is unprecedented but the *cost*.

His ability to see the large picture will be missed, as Collins has announced he is leaving the Council to take a new position in Washington State government sometime in early 1986. (See news story page 4.)

Meanwhile Collins is shepherding the Council's Draft 1985 Power Plan and expects to see it through to adoption. His years with the Council have given him a singular perspective on the Northwest electrical power scene. One of the things that he sees from this vantage point is the emergence of "three dichotomies" within the Northwest. As he views it, these dichotomies pose some interesting questions both for economic developers and power planners.

"These dichotomies," Collins says, "are issues that bedevil Northwest industry. They're not the fault of industry; they're simply the nature of the world."

The first dichotomy, according to Collins, is the price of old power versus new power. "Thermal power — nuclear in particular — is expensive anywhere it enters the system, whether it's Texas, Long Island, Indiana, or the Northwest," he points out. "What many in the Northwest have failed to grasp is just how remarkably inexpensive our hydropower is. The existing hydropower is about one-thirtieth the cost of thermal power. We built a huge hydropower system, and it still supplies 75 percent of our power."

What happens when the region adds coal or nuclear plants to this system, he explains, is a cumulative effect. While thermal power represents only a quarter of the current electrical power supply, it is so much more expensive than hydropower that it causes overall power prices to escalate dramatically.

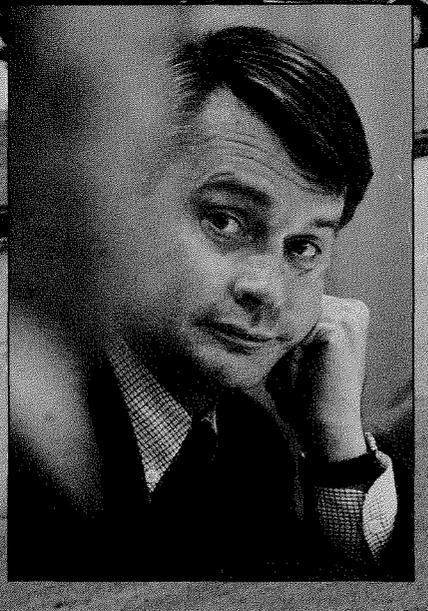
What gives this first dichotomy a "real world" dimension, Collins believes, is the second dichotomy — "the remarkably different interests of old and new power users." Regional growth is chiefly in new services and high technology, not in more traditional industries such as heavy manufacturing. These new industries need reliable electrical power, and the obvious route to reliability is to develop more electricity. Because relatively little development potential remains in the existing hydropower system, new, much more costly power would have to be acquired. While all new power is more expensive than existing hydropower, that is not a problem for new industry, Collins notes, because such industries are not energy-intensive — that is, they are not high users of electricity.

The price of power, on the other hand, is a very real problem for Northwest industries such as pulp and paper, pumped irrigation agriculture, forest products, chemical products, and primary metals — particularly aluminum.





Chuck Collins



"The aluminum companies have done a good job of explaining this problem," Collins says, "but it also affects other industries. Some 15 to 20 percent of the total production cost of a pulp mill is electricity. When you're operating in a market with a 10 percent profit margin and the price of electricity doubles, guess what? You're not operating anymore."

Agriculture is another area where electrical prices are critical. "We pump water 400 feet in Eastern Washington, Oregon, and Idaho to grow wheat. It's possible with low-cost electricity. Down in California they have vegetable crops — high-value crops. We can't grow them because of our climate, so we typically grow low-value crops. But these can still be profitable because of low-cost electricity," Collins says.

He points out that a half million primary jobs in the Northwest — outside of agriculture — depend on the traditional industrial base (there are many more jobs created by "ripple effects"). "Take out Boeing and the ports of Portland and Seattle, and we've just described the industrial base of the Northwest," he adds. "It's obvious these industries have radically different needs than the new service-oriented industries."

The third dichotomy Collins describes is between the "have" and "have not" utilities, a distinction that largely parallels the line between public and investor-owned utilities. Utilities in areas that are growing rapidly need or soon will need more power resources.

Most of the population growth in the Northwest has been in the suburban areas surrounding cities, particularly Seattle and Portland, and most of these areas are served by investor-owned utilities. Last year, for example, Puget Sound Power and Light Company had 58 percent of all new electrical energy growth in the region, according to Collins. Yet Puget has so little surplus power that it is the single investor-owned utility currently buying power from the Bonneville Power Administration.

On the other hand, public utilities — with their access to power from the federal dams — have the lion's share of the surplus. This imbalance is exacerbated by the fact that the public utilities, with the exception of Snohomish and Clark counties in Washington, typically serve more rural areas which are growing slowly.

"What we've got to do," Collins stresses, "is to make sure that we are not building expensive power plants in one part of the region, while attics are going uninsulated in other parts."

Collins believes there are two key points that utility planners must grasp. "First, this is an issue that the public understands, and ratepayers have a right to demand that their utilities behave in collective ways that serve the collective good," he says. "The second point is that this is an industry that has secured its cooperation in the past on the basis of ignorance. Long-term productive cooperation is possible only if every party knows his interest well, well enough to know how that interest can be blended with other parties."

As an example, he points to the fate of two unfinished nuclear plants owned by the Washington Public Power Supply System. "It's inconceivable, for example, that WNP-3 can be kept alive for 15 years with public power paying the whole cost, while investor-owned utilities are likely to need the resource. The cost allocation issue has to be sorted out."

"My observation on the wars I've seen has been that the utilities which oppose any proposed solution do so because they fear that they'll be tricked — and it's because they've been tricked so many times before," he adds. "Nothing can be accomplished in an environment of suspicion. Nothing is doable without a modicum of trust, and full disclosure is what makes trust possible."

Collins believes it's probably in everyone's interest to have the investor-owned utilities use the federal base system that is currently reserved for public utilities. "But you can't trick the public utilities into letting them use it. It's definitely not in the public customers' interest to have private utilities building plants."

"What scares me is that words like trust and cooperation make me sound Pollyannaish!"

What Collins sees right now in the regional electrical power picture is an environment where people have fragments of information. "It's a forum that rewards the monopoly holders of information. We've got to create a forum in which information is massively disseminated — both pros and cons — on every issue, because there is a vast mutuality of interest. A lot of people share a lot of the same needs."

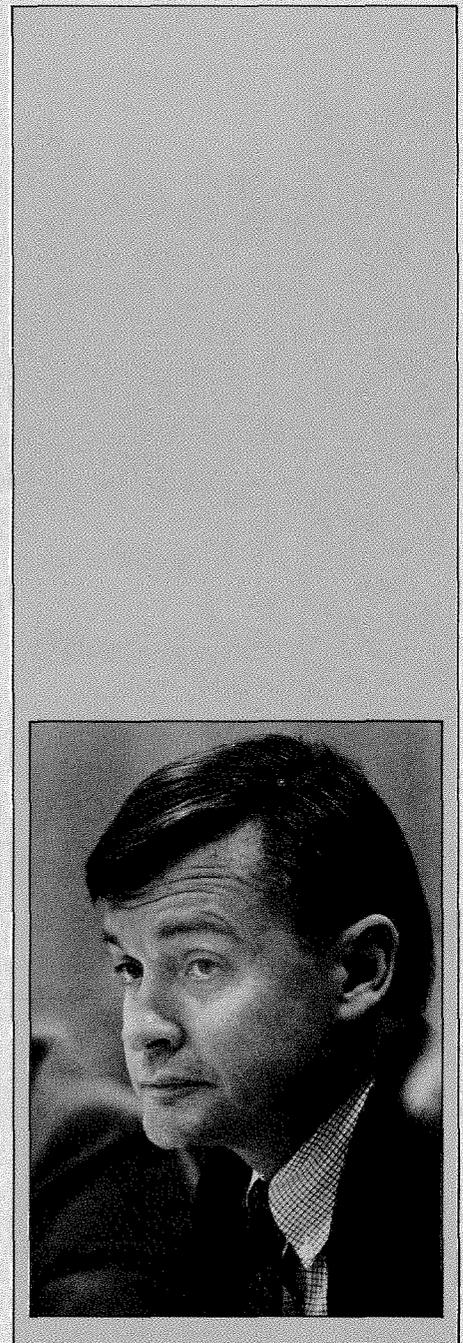
"Ratepayers have a right to demand that their utilities behave in collective ways that serve the collective good."

Collins calls the first dichotomy — the enormous difference in costs between the existing hydropower and new thermal power — a fact of life. Not much can be done about it. He also feels that all that can be done for the second dichotomy — the divergent interests of the Northwest's traditional industrial base and new industry — is to keep power rates low. "And the only instrument we have to do that," he says, "is the resolution of the third dichotomy. Those who have resources need to share them with those who don't have them."

Collins believes that ambiguities in the Northwest Power Act — or at least perceived ambiguities — are responsible for the present power environment. "In labor relations you don't sign a document without the parties agreeing on what it says. The Northwest Power Act is the biggest offender of this principle. It's clear that all sorts of parties left Washington, D.C., with all kinds of ideas of what the Act did, and all of them can point to a particular paragraph to support their viewpoint. What the Act really did was surrender action to the most able attorney.

"We've got to get that baggage behind us. We can't do anything about these dichotomies as long as there's a monopoly on information and as long as that's what's rewarded. We have a power plan that says there's nearly a \$4 billion benefit to cooperation. If one group ends up with \$3 billion of that benefit, it's not going to work.

"We're not talking about the free market," he concludes. "These are regulated agencies, because the public wants it that way. If we wanted Iacocca-like results, then we'd focus on competition. But it's been determined that there's a broader public interest here that can only be served through the absence of competition — that's why we have regulation. If that's truly the case, let's get that result — let's work toward the broader public interest." ■



BRINGING BACK THE

YAKIMA



P

reserving the natural habitat of salmon and providing access to that habitat will help save and restore wild and natural runs of these important Northwest fish. This goal is at the heart of major work currently being undertaken in the Yakima River Basin.

The restoration of fish runs in the Yakima Basin in Central Washington is often described as a microcosm of the larger Columbia River Basin Fish and Wildlife Program. Like the Columbia

Basin as a whole, the Yakima was once home to far more salmon and steelhead than are able to exist there now.

At one time, an estimated half million adult salmon and steelhead returned up the Yakima and into its tributaries to spawn. In recent years, that number fell to below 1,000 before climbing to last year's count of 2,500. Thanks to new efforts in the Yakima Basin, that number could climb tenfold in the next 20 years.

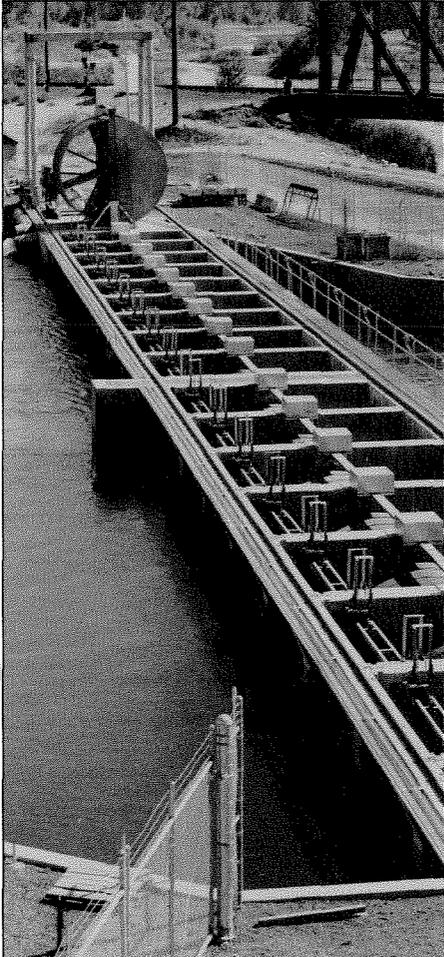
The decline of the runs in the Yakima

began in the early part of this century when irrigation diversion dams were first constructed to bring water to the arid but fertile soil of the vast Yakima Valley. These dams hindered passage of the adult fish returning from their saltwater migration to spawn in their natal streams. In some places, withdrawals of irrigation water left the river itself dry. Fish that did make it to the Yakima Basin were often blocked from the undamaged spawning and rearing habitat above the diversion dams.

by Mickey Riley

Mickey Riley photos

"At one time an estimated half million salmon and steelhead returned to the Yakima to spawn."



New screens at Sunnyside Dam.

On previous page:
Work in progress in Yakima Basin.

While adult fish were locked out, the young ones heading downriver to the ocean all too often found themselves washed into irrigation canals and onto fields. There were no screens, or inadequate ones, to guide them away from the canals and into the main stream.

Like the mainstem of the Columbia, the Yakima has two major problems: inadequate fish passage and guidance facilities, and a lack of sufficient stream flows to move fish up and down the river. Both rivers are undergoing substantial restoration work to correct these problems.

Sunnyside Dam

This summer, three new facilities at the Sunnyside, Wapato, and Naches-Cowiche dams were completed to help juvenile and adult fish passage. The installation of 17 new fish screens at Sunnyside Diversion Dam is perhaps the most visually impressive of the new constructions. The screens, 12 feet long and 14 feet wide, span the canal diagonally. Angled placement allows the juvenile fish to be guided gently by the stream flow away from the screens and into a bypass which returns them to the main river.

The new screens, designed and constructed by the Sunnyside Irrigation District, were funded by the Bonneville Power Administration. According to Bob Tuck, fisheries biologist for the Yakima Indian Nation, this may be the only major project in the basin where an irrigation district is in charge of the project design and construction. "We are extremely pleased with the job Sunnyside Irrigation District did," says Tuck. "They came in on time and under budget — and with a good product. You can't ask for more."

Sunnyside Dam also has a new fish ladder, and two more are under construction. Sunnyside's original ladders were designed and installed in 1907. By the 1970s, they were technically obsolete and in very poor condition. The new ladders make it possible for returning adult fish to get to the upstream habitat to spawn.

The Sunnyside project is the culmination of a broad-based cooperative effort among state and federal fishery agencies and Indian tribes. Work at Sunnyside was coordinated by the Northwest Power Planning Council, the Yakima Indian Nation, the Bureau of Reclamation and Bonneville. Three million dollars have been spent so far at Sunnyside, with the total

estimated budget for this project set at \$5 million.

Wapato Dam

Another new facility is further upstream at the Wapato Diversion Dam. The old dam, built in 1917, had no fish ladder on the west branch (the river is divided by an island) and two very old ladders on the east branch. This June, a new fish ladder was completed on the west branch. Locals have nicknamed the concrete block that houses the ladder, the "USS Wapato."

An additional ladder for the east branch of the dam and new fish guidance screens are currently being designed. Their construction is expected to be completed this November. Estimated cost of the project, also funded by Bonneville, is \$7.1 million.

Naches-Cowiche Dam

Unlike the Sunnyside and Wapato dams, the Cowiche Diversion Dam on the Naches River is not an irrigation diversion. This dam diverts water for the city of Yakima.

From the height of the dam, it appears fish could easily jump it. However, Tuck explained that salmon and steelhead can only leap six to eight feet under ideal water flow conditions. At Cowiche, the old spillway itself was trapping debris and blocking fish. Sections of the spillway had broken loose and needed replacing.

This summer, the whole spillway was rebuilt, with a ladder, screen and fish counting equipment added. The new facilities will provide passage for the upstream migration of spring chinook and steelhead.

The Yakima Master Plan

"One of our major goals in the fish and wildlife program is the protection of wild and natural salmon and steelhead stocks," explains Kai Lee, chairman of the Council's fish and wildlife committee. "Preserving genetic diversity is essential to the vigor and survival of the species. Without this diversity, stocks lose their ability to adapt to changing environments. That's why it's so important that we preserve the existing natural habitat as well as ensure access to that habitat.

"We will, of course, have to supplement hatchery-reared fish for those stocks that are severely depressed," he adds. "There are lots of unknowns re-

garding the impact of hatchery fish on wild fish populations. This is one of the reasons why the Yakima is such a prime test site. In the upper Yakima there is still plentiful salmon and steelhead spawning and rearing habitat. We will be able to raise hatchery fish and plant them in the Yakima to see the effects of carefully adding these new fish."

If such facilities are to benefit the basin in both research and production, they must be carefully planned and managed. Consequently, the Council is coordinating the development of what is being called the "Yakima Hatchery Master Plan."

According to Ron Eggers, biological services manager for the Council, hatchery facilities will be built for raising juvenile fish to plant in the Yakima and possibly elsewhere in the Columbia Basin. "Before the design of the facility is completed," says Eggers, "there are a number of factors that need to be determined: how many fish to release each year; how many to expect back; what species of fish; and where to release them."

"Right now," says Eggers, "we have a consultant evaluating possible sites for the hatchery facilities and developing a conceptual design for the sites. We also have an intergovernmental agreement with the Yakima Indian Nation to coordinate the studies on the number and type of fish to breed and on the best sites for releasing those fish."

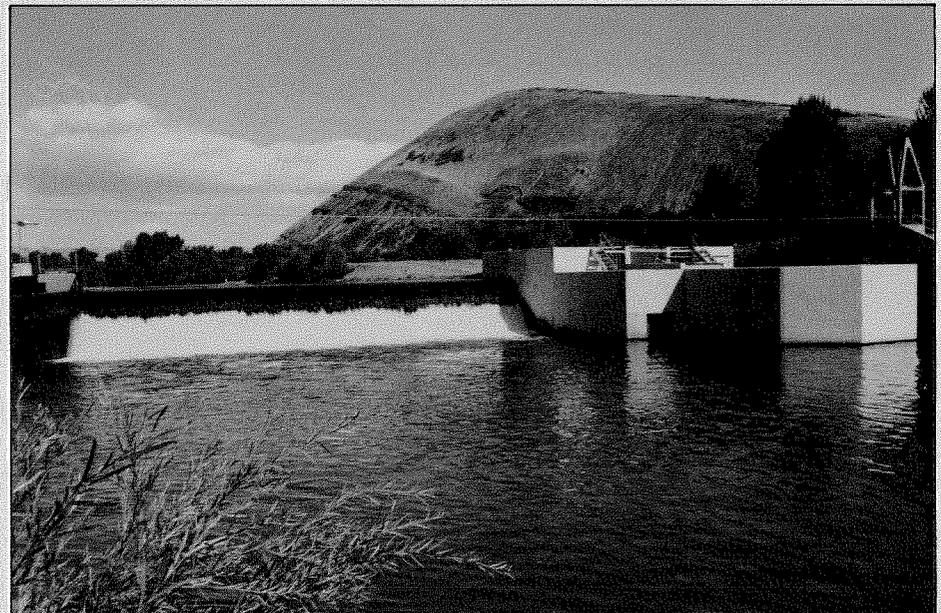
The hatchery project will help enhance stocks that are depleted. "But there are still other issues," notes Lee. "Water quality and quantity are both necessary to ensure survival of all those fish, and everyone is working towards a solution to these problems. We are hopeful that creative solutions to the issues of water conservation and additional storage capacity will be found over the next few years," Lee added.

The Council's fish and wildlife program has been described as the most ambitious natural resource restoration program in the world. In some ways, work in the Yakima Basin can be seen as a demonstration of the potential for improvement in the larger basin. Project Manager Eggers feels, "We are off to a very good start. The Council's program was adopted only three years ago, and already we have three major construction projects completed in the Yakima. The people in the basin have proven that it works." ■

"The people in the Yakima Basin have proven that it works."



The "USS WAPATO" fish ladder at Wapato Dam.



A new spillway and fish ladder for the Cowiche Dam on the Naches River.

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Publications

- Notice of Final Model Conservation Standards Amendment
- Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin (See page 10.)
- Columbia River Basin Fish and Wildlife Program Goals Study — Contributions Issue Paper (See page 8.)
- Columbia River Basin Fish and Wildlife Program — Amendment Application Form (1985)

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