



Anadromous Fish Law Memo



NRLI

Issue 38

November 1986

THE FAILED PROMISE OF THE COLUMBIA BASIN FISH AND WILDLIFE PROGRAM AND WHAT TO DO ABOUT IT

It is now evident that the Columbia Basin Fish and Wildlife Program, promulgated by the Northwest Power Planning Council to satisfy the mandate of the Northwest Power Act, is failing to make significant progress restoring upriver salmon and steelhead runs. That was the nearly universal sentiment expressed by fishery managers at a public workshop on Columbia Basin Program implementation held on September 27, 1986 in Portland. Repeatedly throughout the day-long workshop, fishery agency and tribal representatives catalogued instances in which federal project operators and regulators failed to implement program measures "to the fullest extent practicable." Worse, the Council has exhibited an increasingly lukewarm attitude toward such implementation failures. Moreover, the Council has tentatively rejected a number of program amendments recommended by the fishery agencies and tribes to make the program more effective and more enforceable.

Thus, 6 years after Congress made it national policy to preserve and restore the Columbia Basin's anadromous fish runs, 5 years after the fishery agencies and tribes made detailed program recommendations, 4 years after program promulgation by the Council, the program has yet to deliver on many of its promises. This issue of the Memo examines the program's failures, gives some of the reasons for these failures, and makes suggestions as to how to remedy them. Because the Council is in the process of considering comments on its draft program amendments (the public comment period for written comments closes on December 15, 1986), and because the Council has scheduled an oversight hearing on program implementation in Portland on November 17-18, 1986, there is still time for a concerned, informed public comment to influence the Council to change its course. This Memo aims to help the public effectively participate in these critical opportunities.

INSIDE: Fish Law "Briefs" on: Ninth Circuit Decision in Salmon Basin Case; PFMC Habitat Amendment to Ocean Salmon Plan; ODFW Challenge to BPA's Decision To Shelve Willamette Basin Mitigation Plan; Fishery Interests Protest of BPA Terminal Expansion; and Northwest Power Planning Council Fish Loss and Hydropower Responsibility Estimates.



I. Background

A. The Northwest Power Act

By 1980, it was clear that even severe harvest restrictions could not reverse consistent anadromous fish run size declines. Preservation of Columbia Basin fish runs required more -- they needed habitat protection, especially changed hydroelectric operations at mainstem dams to improve downstream fish migration in the spring. While seeking administrative protection for certain upriver runs under the Endangered Species Act,¹ fishery advocates also sought a legislative remedy. The result was the Northwest Power Act, a statute promising to "protect, mitigate and enhance" Columbia Basin fish and wildlife "to the extent affected by the development and operation" of the Basin's hydroelectric system.² The Act called for systemwide solutions to systemwide problems;³ required a new institutional entity--the Northwest Power Planning Council--to formulate and implement a restoration program emphasizing both improved fishery flows and dam passage;⁴ and ushered in an unprecedented era of public involvement in an effort to revise the balance struck between fishery protection and hydropower generation.⁵ The legislative history indicated that the program's purpose was to make fish and wildlife a "coequal partner" with hydropower, "on a par" with other project purposes.⁶

The statute also required the Bonneville Power Administration (BPA) to implement program measures by acting "consistent" with the program.⁷ And it required other federal water managers--such as the U.S. Army Corps of Engineers, the Bureau of Reclamation, and the Federal Energy Regulatory Commission (FERC) to take into account program measures at each relevant stage of their decision-making processes "to the maximum extent practicable."⁸ Finally, it required all 4 federal water managers to provide "equitable treatment" to fish and wildlife.⁹ This last requirement applies to activities not specifically constrained by the program, and is a standard that the courts will enforce.¹⁰

1. See Bodi, Protecting Columbia River Salmon Under the Endangered Species Act, 10 *Env'tl. L.* 412 (1980).

2. 16 U.S.C. §§ 839(b), 839b(h)(1)(A), (10)(A); see Memos #4 (Oct. 1979), #11 (June 1981).

3. 16 U.S.C. §§ 839b(h)(1)(A); see also id. § 839(h)(8)(A) (authorizing "offsite" enhancement measures to compensate for systemwide losses).

4. Id. § 839b(h)(6)(E).

5. See id. §§ 839(3), 839b(h)(3), (4), (5).

6. See House Comm. on Interstate and Foreign Commerce, H.R. Rep. No. 976 pt. 1, 96th Cong., 2d Sess. (1980), at 49, 56-57.

7. 16 U.S.C. § 839b(h)(10)(A).

8. Id. § 839b(h)(11)(A)(ii).

9. Id. § 839b(h)(11)(A)(i).

10. Yakima Indian Nation v. FERC, 746 F.2d

B. The 1982 Columbia Basin Program

In 1982, after extensive public participation and a detailed set of recommendations formulated by a coalition of the region's fish and wildlife agencies and Indian tribes, the Council promulgated its Columbia Basin Fish and Wildlife Program.¹¹ The program contained a number of innovations, notably (1) the "Water Budget," a block of water to assist downstream fish passage in the spring;¹² (2) a schedule for fish bypass installation at mainstem dams to improve fish passage;¹³ a fish propagation plan that favored restoration of wild stocks over new hatchery construction;¹⁴ and conditions which any new hydroelectric project must satisfy.¹⁵

While generally viewed as a sound, workable program that offered significant hope for restructuring the balance between fish and power at mainstem projects, the Council's program did not accept many key recommendations of the fishery agency and tribal coalition. For example, the Council rejected the fishery coalition's recommended "sliding scale" fish flows, whereby the fish runs would share water shortages in low flow years but would also share abundance in high flow years.¹⁶ In addition, the Council failed to set specific spill requirements to improve fish passage at dams without structural bypass systems.¹⁷ The 1982 program also rejected the fishery coalition's recommended pre-McNary goal, which would have committed the pro-

466, 473 (9th Cir. 1984), cert. denied, 105 S. Ct. 2358 (1985); see Blumm, A Trilogy of Tribes v. FERC: Reforming the Federal Role in Hydropower Licensing, 10 *Harv. Env'tl. L. Rev.* 1, 39-46 (1986).

11. See Memo #22 (July 1983); Blumm, Implementing the Parity Promise: An Evaluation of the Columbia Basin Fish and Wildlife Program, 14 *Env'tl. L.* 277 (1984) [hereinafter Parity III].

12. Columbia Basin Program §§ 301-04.

13. Id. §§ 401-04.

14. Id. §§ 701-04.

15. Id. §§ 1201-04.

16. Id. §§ 301-04. See Memo #16 (Dec. 1981) at 6-7 (describing the fishery coalition's recommended flows, which were reprinted at Northwest Power Planning Council, 1 Recommendations for Fish and Wildlife Programs Under Pacific Northwest Electric Power and Conservation Act (Nov. 1981) at 163-210; see also J. Lawrence, K. Lee & R. Palmer, The Water Budget: A Step Towards Balancing Fish and Power in the Columbia Basin (U. Wash. Water Resources Tech. Rep. No. 81, Aug. 1983) at 70-93.

17. The fishery coalition recommended that the Council set "sufficient spills ... to minimize losses of juvenile salmonids during the spring and summer migration periods." Fish and Wildlife Program Recommendations, above note 16, at 247. The Council's program simply required "a plan for spills which will achieve a level of smolt survival comparable to or better than that achievable by the best available bypass and screening systems." Columbia Basin Program § 404(b)(3) (1982).

gram to restoring the fish runs to 1953 levels (prior to construction of the McNary Dam).¹⁸ All of these rejections have produced program implementation problems, and none of these problems has been fully overcome some 4 years later.

C. The 1984 Amendments

In 1984, the Council recognized that the lack of specificity in its program measures produced implementation problems, causing disputes over the pace of funding, the scientific basis for action, and anticipated biological consequences among BPA, its customers, other federal project operators and regulators, and the region's fishery agencies and Indian tribes.¹⁹ Consequently, the 1984 amendments to the program included a 5-year "Action Plan" specifying numerous time deadlines for implementation entities.²⁰ In the wake of BPA's inability to effectively supervise studies to enable the Council to establish program goals,²¹ the 1984 amendments set 3 interim goals for the program.²²

However, the principal thrust of the 1984 amendments was to improve mainstem dam fish passage efficiency. Efficient fish passage at mainstem dams is absolutely critical to the success of the entire program, for investments in habitat and fish flows will not materially increase run sizes without significant reductions in fish mortality at mainstem dams. For example, if 80% of downstream migrating juvenile fish survive each of 8 mainstem dams, cumulative systemwide losses are more than 78% of the total run.²³ There are essentially 3 ways to improve

mainstem passage: installation of mechanical bypass systems to keep juvenile fish out of the dams' power turbines, provision of spills of water to pass fish around the dams, and barging and trucking of fish downstream below the dams. The 1984 amendments concentrated on the former by setting time deadlines for installation of bypass systems at a number of mainstem dams.²⁴ These bypass facilities are to achieve a fish guidance efficiency of 90%²⁵ (i.e., 90% of the fish pass through the bypass system), an improvement over the existing "state-of-the-art" facilities at McNary Dam, where 85% efficiency has been achieved.²⁶ In addition, the 1984 amendments required the Corps of Engineers to achieve 85% fish guidance efficiency at Bonneville Dam's second powerhouse or (subject to certain exemptions) shut the project down during the downstream migrant season.²⁷

But while scheduling bypass installation and requiring the Bonneville Dam second powerhouse to meet state-of-the-art results, the amendments did little to improve existing passage at dams without bypass. The Council set no minimum spill requirements; it simply called for a 90% survival rate at each mainstem dam²⁸ -- a less stringent standard than one based on bypass efficiency (since not all juvenile fish passing through power turbines perish), one much more difficult to monitor and control, and one which the fishery agency and tribes maintained supplied inadequate protection.²⁹ In fact, the standard produced a cumulative survival rate of 43%, effectively supplying no passage protection over pre-Northwest Power Act operations.³⁰ Even the means of achieving this standard -- (1) systemwide fish passage plans developed by the

18. Columbia Basin Program § 201; see Parity III, above note 11, 289-93.

19. Id. § 1501 (1984).

20. See id. § 1504 (effectively reorganizing the program into 11 "Action Items"); see generally Memo #30 (June 1985) at 5-7; Blumm, Reexamining the Parity Promise: More Challenges Than Successes to the Implementation of the Columbia Basin Fish and Wildlife Program, 16 Envtl. 461, 474-79 (1986) [hereinafter Parity IV].

21. See Parity III, above note 11, at 291-92 n.58 (BPA's allegation that funding the goals study proposed by the fishery agencies and tribes was "unacceptable to BPA management" and "not consistent with ratepayer interests" because it would amount to "funding advocacy" and be inconsistent with "sound business principles").

22. The interim goals were: (1) to increase the quality and quantity of salmon and steelhead produced in the Columbia Basin by providing Water Budget flows, by protecting against adverse effect of new hydroelectric development, and by increasing systemwide productive capacity; (2) to protect ratepayer investment in the program by improving harvest controls and monitoring the effectiveness of program measures; and (3) to proceed with wildlife and resident fish measures only where they do not conflict with anadromous fish measures. Columbia Basin Program § 102 (1984).

23. See Lothrop, The Failure of the Fish Passage Provisions of The Columbia Basin Fish and Wildlife Program and Some Suggested Remedies, Memo #34 (Nov. 1985) at 4.

24. Columbia Basin Program § 1504, Action Items 32.5 (complete bypass system installation at John Day Dam by the end of March 30, 1986); 32.12 and 32.13 (complete bypass installation at Rocky Reach and Wells Dams by March 20, 1987); 32.9 (complete bypass installation at Little Goose Dam by the end of fiscal year 1987); 32.11 (complete bypass installation at Priest Rapids and Wanapam Dams by March 20, 1988); 32.4, 32.7, and 32.8 (complete bypass installation at The Dalles, Ice Harbor and Lower Monumental by the end of fiscal year 1989). No specific date for bypass installation at Rock Island Dam was established. Id. at 32.12.

25. Id. § 403.

26. Id. § 404(b)(5)(B).

27. Id. Although designed to be state-of-the-art, the second powerhouse achieved only a 14-35% fish guidance efficiency prior to 1984.

28. Id. § 1504, Action Item 32.2.

29. Lothrop, above note 23, at 4; Water Budget Center, Water Budget Managers Summary Report of Juvenile Mitigation Operations April-June 1985 at 6 (alleging that a 90% survival standard does "not provide protection above a no spill, no bypass alternative").

30. See Memo #36 (July 1986) at 11-12.

Corps of Engineers and fishery agencies and (2) a comprehensive Corps report evaluating barge and truck transportation³¹ -- proved to be controversial.³²

The 1984 amendments also included some 27 new habitat improvement and passage restoration projects and set time deadlines for a number of major capital projects such as hatcheries in the Yakima Basin and on the Umatilla Indian Reservation, acclimation ponds at John Day Dam, and a low capital propagation program on the Nez Perce Indian Reservation.³³ But, as noted above, habitat improvement and artificial propagation initiatives without mainstem passage improvements will not materially increase run sizes. Many doubted that the Council's 90% survival standard satisfied the statutory directive of producing "improved survival of [anadromous] fish at hydroelectric facilities located on the Columbia River system."³⁴

D. The 1985 and 1986 Amendments

The formal program amendment process (under which the Council solicits recommendations from interested parties, makes a preliminary decision of those recommendations it will propose, and submits its proposal to public review and comment) was not scheduled to begin again until 1986. However, in 1985 and again in 1986, the Council was forced to shore up deficiencies in its program through unscheduled amendments. The first, approved in February 1985, eliminated BPA as a funding source for the "goals" studies.³⁵ The amendment thrust the Council into the role of overseeing the historical, anthropological, and biological studies it determined were necessary to establish justifiable program goals when it rejected the fish agency's and tribes' recommended "pre-McNary" goal.³⁶ Arguably, the role was one that the Council should have assumed from the outset.

The 1985 amendment produced results relatively quickly. In September 1985 the Council staff released a draft report detailing historic records of fish run sizes as well as estimating current run sizes.³⁷ In March 1986 the Council staff released its final report, estimating av-

erage annual run sizes of 10-16 million fish in the pre-development era, while current run sizes average around 2.5 million fish. These estimates produce net basinwide loss of 7-14 million fish and a 31% loss of habitat due to water development (38% in the basin above Bonneville Dam).³⁸ Notably, the report -- which did not attempt to attribute loss due to hydropower -- found that upper basin losses are "largely unmitigated" and gave as principal causes for the decline the severe cumulative effects imposed on both juvenile and adult fish that must successfully pass up to 9 dams between their spawning grounds and the ocean: 77% to 96% of the juveniles perish, while 37% to 51% of the adults fail to survive the hydroelectric system.³⁹ A subsequent staff issue paper estimated that of the total annual system losses of 7-14 million fish, 5-11 million were attributable to hydropower developments and operations, 36-78% of the total loss.⁴⁰ Both the losses estimated and the hydropower attributions issue paper are discussed in greater detail in an accompanying "Fish Law Brief" by D.H. Cole.

The Council's current draft program amendment document proposes to establish program goals based on the results of these studies. The proposed amendments state that hydropower development is responsible for annual losses of 5 to 11 million fish.⁴¹ This is a "cap" on ratepayer responsibility: ratepayers will not be asked to fund increased run sizes beyond losses attributable to hydropower. Yet, as the Council repeatedly emphasizes, there is no guarantee that run size increases of 3 to 5-1/2 times the current 2.5 million fish are feasible.⁴² In view of these disclaimers, the wisdom of spending more than 4 years (2 more than the Council originally expected) studying losses and hydropower responsibility may be questioned. While the studies produced interesting historical information,⁴³ they were not cheap, and they diverted Council attention from critical restoration issues like the adequacy of the program's spill provisions. From this perspective, the Council's 4-year effort to establish "scientifically justifiable" losses attributable to the hydroelectric system, losses the program is unlikely to be able to compensate for any time in

31. Columbia Basin Program § 1504, Action Item 32.2. This measure is now proposed for deletion in the 1986 Draft Amendment Document, see below note 90.

32. See below notes 48-50 and accompanying text.

33. Columbia Basin Program §§ 704(d), table 2; 1504, Action Items 34.12-14; see Parity IV, above note 20, at 476-77.

34. 16 U.S.C. § 839b(h)(6)(E)(i).

35. 50 Fed. Reg. 11,032 (1985) (amending § 201 of the program); see Memo #30 (June 1985) at 5 n.52.

36. See above text accompanying note 18.

37. See Northwest Power Planning Council, 1986 Annual Report at 10-11 (describing the Council's Draft Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin).

38. Northwest Power Planning Council, Staff Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin (Mar. 1986) at 4.

39. Id. at 5. These figures assume juvenile mortalities of 15-30% per dam, and adult mortalities of 5-10% per dam.

40. Northwest Power Planning Council, Staff Issue Paper on Hydropower Responsibility for Salmon and Steelhead Losses in the Columbia River Basin (Apr. 1986).

41. Northwest Power Planning Council, Draft 1986 Amendment Document (Sept. 1, 1986), at 8-II (proposed § 202).

42. Id.

43. See, e.g., Shalk, Estimating Salmon and Steelhead Usage in the Columbia Basin Before 1850: The Anthropologic Perspective, 2 Northwest Env'tl. J. no.2 at 1 (1986).

the near future, now seems like the search for the Holy Grail. The Council's rejection of the fishery agency's and tribes' recommended pre-McNary goal was a costly decision.

The unscheduled 1986 amendment concerned an attempt by the fishery agencies and tribes to strengthen the program's weakest link: its spill provisions. In response to an agency and tribal request, the Council began to reconsider its spill provisions in 1985. However, the Council rejected their recommendation, which they claimed would have improved fish survival by about 50% over the 90% survival standard in the program, as being too expensive and complicated to implement.⁴⁴ Instead, on December 12, 1985 the Council proposed to increase its survival standard to 95% in high or average water years and 92% in below water years.⁴⁵ However, in February 1986 the Council, rejecting its own staff recommendations, backed off even from this proposal. Instead, the 1986 amendment continued the 90% survival standard, because the Council concluded that an increased survival standard would not produce "significant biological benefits."⁴⁶ However, the amendment did extend the spill season through August 15 if necessary to protect wild and natural summer and fall chinook runs, and clarified that the spill program is to operate regardless of any effects on firm power.⁴⁷ It also called on the fishery agencies and tribes to set spill criteria that would set daily hours of spill and numbers of fish that would trigger spill sufficient to protect 80% of the typical downstream migrations. But the Council did not expressly require the Corps and the fishery agency and tribes to agree on a spill program, as the agencies and tribes requested.⁴⁸ Thus, in 1986 the Corps accepted some of the spill criteria of the agencies and tribes and implemented some of its own.⁴⁹ The Council did nothing to prevent the Corps from rejecting the fishery agency and tribal spill criteria, although it later noted, "the Corps explained why it did not adopt the criteria of the fish and wildlife agencies and tribes but did not explain why their criteria were impracticable, as called for in Section 4(h)(11) of the Northwest Power Act."⁵⁰ The Council suggested no remedy for the Corps' violation of the

44. See generally Memo #36 (July 1986) at 11-13 (discussing the 1986 amendment).

45. See Northwest Power Planning Council, Staff Issue Paper on Alternative Interim Fish Passage Objectives (n.d.) at 2; Lothrop, above note 23, at 5.

46. See Northwest Power Planning Council, Notice of Final Program Amendments (Feb. 13, 1986) at 37-39 (amending §§ 304, 404, and 1504 of the program).

47. See Memo #36 (July 1986) at 12.

48. The Corps' willingness to "consider" fishery agency and tribal spill programs, but to develop its own spill program, has been a long-standing Columbia Basin Program problem. See Lothrop, above note 23, at 4-5.

49. Council's 1986 Annual Report, above note 37, at 7.

50. Id.

statute.

The 1986 Amendments displayed a Council that appeared willing to reject the biological expertise of the fishery agencies and tribes which believed that increased spill would produce significant biological benefits. The Council disagreed, largely on the basis of computer models that showed higher than expected reservoir mortality rates that would be unaffected by increased spill.⁵¹ Although the Council properly rejected the arguments by BPA's Direct Service Industries (mostly aluminum plants) that a formal cost-benefit analysis was the proper litmus to evaluate alternative approaches to improve fish survival,⁵² it seemed to rely heavily on modeling studies of the Corps, despite acknowledging the uncertain nature of the biological and economic estimates of the models. Moreover, by effectively overruling the fishery agencies and tribes on the nature of the biological benefits that increased spills would produce, the Council seemed to forget that Congress did not want the Council to act as a "super" fish and wildlife agency.⁵³ The result was that, 6 years after the enactment of the Northwest Power Act, the fishery restoration program it called for offers no increased mainstem fish passage protection, a result inconsistent with a specific provision of the Act.⁵⁴

III. The Proposed 1987 Amendments

On September 1, 1986 the Council released a "Draft Amendment Document" containing numerous proposed amendments to the Columbia Basin Program.⁵⁵ The Council held hearings on the proposed amendments in October, scheduled an oversight hearing on November 17-18 in Portland on

51. Notice of Final Program Amendments, above note 46, at 25.

52. Id. at 28-30. On the inappropriateness of employing a cost-benefit test, see Memo #17 (Apr. 1982) at 15-22; see also PUD No. 1 of Chelan County, Wash., 34 FERC ¶ 63,044 (1986) (FERC Administrative Law Judge's rejection of a cost-benefit test, discussed in Memo #36 (July 1986) at 14-15); Lothrop, The Misplaced Role of Cost-Benefit Analysis in Columbia Basin Fishery Mitigation, 16 Envtl. L. 517 (1986).

53. 126 Cong. Rec. H10,683 (daily ed. Nov. 17, 1980) (remarks of Cong. Dingell). Section 4(h)(7) of the Northwest Power Act (16 U.S.C. § 839b(h)(7)) requires the Council to give "due weight" to the expertise of the fishery agencies and tribes in formulating the Columbia Basin Program. However, the Council alleged that the fishery agency and tribal spill proposal was not a "recommendation that triggers all the procedural requirements of the Northwest Power Act. See, for example, Section 4(h)(7)." Notice of Final Program Amendments, above note 46, at 19.

54. See above note 29 (no increased fish protection); cf. 16 U.S.C. § 839b(h)(6)(E)(i) (calling for "improved" fish passage); see above text accompanying note 34.

55. Northwest Power Planning Council, Columbia Basin Program Draft Amendment Document (Sept. 1, 1986).

program implementation issues, and will accept written comments on the amendments until December 15, 1986. The Council expects to approve final amendments to the program in February 1987.

A good deal of the proposed amendments concern the Council's findings that the hydropower costs to Columbia Basin anadromous runs amount to 5 to 11 million fish annually.⁵⁶ Also commanding a great deal of Council attention is its proposed "system perspective" to evaluate salmon and steelhead restoration efforts.⁵⁷ While no one would quarrel with the idea of ensuring coordination among fish passage, fish production, and harvest management efforts, the proposed system planning approach is largely composed of vacuous platitudes⁵⁸ and promises nothing specific in the way of action. How this planning approach may influence the 28 subbasin plans proposed to guide future propagation efforts is mere speculation.⁵⁹ However, subbasin planning, rejected by the Council in 1984, is a welcome addition to the program, as this publication argued over 2 years ago.⁶⁰

What follows is a relatively brief overview of some of the more controversial areas of program implementation and the proposed amendments' responses (and silences). If the tone seems especially critical, it is in an effort to encourage effective public participation. The fishery agencies and tribes, as well as the Council staff, attribute some of the program's failures to a lack of consistent, focused public participation. Below are some of the issues on which the public may wish to comment.

A. Spills

As noted above,⁶¹ until mainstem dams are equipped with protective screens and effective mechanical bypass systems, spills of water are essential to reducing power turbine-related mortalities. The Columbia Basin Program's weakest

links are its spill provisions. The lack of sufficient spill at unscreened projects threatens to jeopardize the program's investments in habitat restoration, hatchery construction, and spring flows. The fishery agencies and tribes state flatly that unless the Council calls for increased spills, the program's objective of restoring wild upriver runs cannot be achieved.⁶²

Because of an ongoing Federal Energy Regulatory Commission proceeding,⁶³ more generous spring spills are provided at non-federal projects on the mid-Columbia than at Corps' projects on the lower Snake. The spill programs for 4 of the 5 nonfederal projects⁶⁴ have an objective of 50% passage efficiency (i.e., 50% of juvenile fish avoid the power turbines), while the Council's 90% survival standard for Corps projects requires guidance efficiency only roughly of 40%.⁶⁵ The 90% survival standard means that, even ignoring reservoir mortalities, only about 40% of upriver Snake smolts will survive to below Bonneville Dam.⁶⁶

For over a year, the fishery agencies and tribes have attempted without success to convince the Council to require spills at federal projects equivalent to those at the FERC-licensed projects.⁶⁷ Their latest recommendation sought to increase interim spill levels at projects without effective bypass facilities to 31% of the average daily flow at Lower Monumental Dam and 41% at Ice Harbor and The Dalles Dams.⁶⁸ The Council's draft amendment proposes rejecting this recommendation because a similar recommendation was rejected in February 1986, and because the Council asserted that "no additional scientific knowledge has been offered to support the application since February 1986."⁶⁹ Reiter-

56. Id. at 3-11 (proposed amendments to § 201 concerning total salmon and steelhead losses, and to § 202 concerning hydropower responsibility); see above notes 38-43 and accompanying text; see also accompanying Fish Law "Brief."

57. 1986 Draft Amendment Document, above note 55, at 11-19 (proposed § 203).

58. E.g., "work together" to preserve and restore fish runs; "increase the level of scientific knowledge" about salmon and steelhead by learning from actions taken on their behalf; take action with "a reasonable understanding of potential risks and benefits." Id. at 11-13.

59. Id. at 19-22 (proposed § 204, calling for sub-basin plans to be developed by "planning subgroups" composed of (1) "management subgroups," composed of "technically-oriented" individuals from fishery agencies and tribes whose proposals will be reviewed by (2) "review subgroups," composed of representatives of the Council, land and water managers, utilities, BPA, and the public).

60. Memo #27 (Aug. 1984) at 8.

61. See above text accompanying note 23.

62. Columbia Basin Fish and Wildlife Council and Columbia River Inter-Tribal Fish Commission, Restoration of Upriver Runs of Salmon and Steelhead in the Columbia River Basin at 10 (Briefing Document distributed at a public workshop held in Portland, Or. on Sept. 27, 1986).

63. See Bodi, FERC's Mid-Columbia Proceeding: Ten Years and Still Counting, 16 Env'tl. L. 555 (1986).

64. Rock Island Dam is the exception. In part due to litigation over its re-licensing, Rock Island became the subject of an evidentiary hearing, and its interim spill measures are now the product of orders of the presiding administrative law judge. See id. at 573-77. For an overview of the differences that now exist between the spills required as a result of the FERC settlement agreement and the Council's program, see Northwest Power Planning Council, Quarterly Report on Implementation of Five-Year Action Plan (Oct. 10, 1986) at 64 (discussing Action Item 32.14.1).

65. Briefing Paper, above note 62, at 10-11.

66. Id. at 11.

67. See above text accompanying notes 44-55 (discussing the 1986 program amendment).

68. See 1986 Draft Amendment Document, above note 55, at 167.

69. Id.

ating its conclusion that increased spill levels would not increase run sizes because cumulative reservoir mortalities negate any biological benefits of additional spill, the Council asserted that the agency and tribal recommendation would produce only an increase in systemwide survival of 1-2%, depending on the water condition.⁷⁰ And, relying on assurances from the Corps that in average water years "spill will occur in addition to that called for by the program's 90 percent survival standard," the Council concluded that agency and tribal proposal was "virtually indistinguishable" from its existing program.⁷¹ The Council also evidently convinced itself that Congress mandated that "alternatives to spill be explored," although it cited no congressional directive to that effect.⁷²

In rejecting the fishery agency and tribal spill recommendation, the Council made clear that it considers the role of interim spills to be relegated to one of protecting against catastrophic losses in very low water years.⁷³ The biological basis for this conclusion remains obscure. If the Council intends to function as a "super" fish and wildlife agency, it ought to be prepared to cogently explain its biological basis for decision making, as well as how this decision complements existing and future activities of the fishery agencies and tribes, as the Northwest Power Act requires.⁷⁴

Interestingly, both in the 1986 amendment and in the current draft amendment document, the Council emphasized that biological judgments or spill criteria (i.e., the conditions triggering spill) and transportation policy were to be made by the fishery agencies and tribes.⁷⁵ It is not clear why the biological expertise of the fishery agencies and tribes should prevail with respect to transportation policy and spill criteria and not with respect to spill amounts. The Council does have the authority to reject agency and tribal spill recommendations if it finds that the recommendations would jeopardize "an adequate, efficient, economical and reliable power supply,"⁷⁶ but the Council made no such

determination. Given the region's long-term power surplus and the recent drop in oil prices (reducing the value of power exports to California), such a finding would be a difficult one to defend.

The Council's draft amendments do authorize summer spills, provide for spills irrespective of firm power commitments, and call upon the Corps to make spill decisions on the basis of spill criteria developed by the fishery agencies and tribes.⁷⁷ However, all of these measures are repetitions of decisions made in February 1986.⁷⁸ No additional protection is provided by the draft amendments. Moreover, the Council rejected a fishery agency and tribal proposal that the program clearly specify that the Corps and the fishery agencies and tribes jointly agree on an annual fish passage plan.⁷⁹ This rejection invites a repetition of the unhappy events of 1986, when the Corps rejected agency and tribal spill requests criteria without sufficient explanation.⁸⁰

Also rejected was a recommendation from the Columbia River Inter-Tribal Fish Commission that the program include a dispute resolution provision to speed implementation of program measures.⁸¹ Under the tribal recommendation, an allegation that a program measure was not being implemented would trigger a Council investigation and report within 60 days. The Council staff claimed the recommendation would be less effective than existing measures,⁸² ignoring the growing evidence indicating that those measures have failed to produce timely program implementation.⁸³

B. Juvenile Fish Transportation

The Corps of Engineers has always favored increased reliance on barge and truck transportation as a substitute for instream fish pass-

power shortages (not simply increased power costs) or a BPA inability to fulfill its self-financing requirements).

77. 1986 Draft Amendment Document, above note 55, at 44-49 (proposed amendments to §§ 403 and 404(b) of the program).

78. See Parity IV, above note 20, at 484 nn.126-28.

79. See Briefing Paper, above note 62, at 12.

80. See above text accompanying notes 48-50; see also Council Quarterly Report, above note 64, at 3, acknowledging that the Corps' 1986 spill passage plan was "largely inconsistent" with the Council's program.

81. 1986 Draft Amendment Document, above note 55, at 180.

82. Id. (citing § 1304(a) of the program, requiring written explanations when implementation is impracticable; § 1304(c), calling for consultation and coordination procedures; and a quarterly reporting system instituted by Council staff).

83. See, e.g., above text accompanying notes 48-50; below text accompanying notes 93-98.

70. Id. See Parity IV, above note 20, at 483-85 (describing the Council's reasoning in rejecting the proposed amendment of the fishery agencies and tribes in Feb. 1986).

71. 1986 Draft Amendment Document, above note 55, at 167-68. The Council gave no indication that when such additional spills might be supplied, how they could be managed to improve mainstem fish passage, or who would make these decisions.

72. Id. at 168.

73. Id.

74. 16 U.S.C. § 839b(h)(6)(A). See also above note 53 and accompanying text.

75. See Briefing Paper, above note 62, at 11 (1986 amendment); 1986 Draft Amendment Document, above note 55, at 44-49 (proposed changes to § 404(b) of the program).

76. 16 U.S.C. § 839b(h)(5); but see Memo #17 (Apr. 1982) at 9-11 (arguing that the statutory provision required a showing of large-scale

age. Trucking or barging juvenile fish might reduce pressures to spill or install juvenile bypass facilities, both of which are expensive. Transportation on the Snake has in fact benefited the fish runs, particularly steelhead, especially in low flow years.⁸⁴ However, spring chinook have not responded well to transportation, and in higher flows chinook seem to survive better in-river.⁸⁵ Moreover, the fishery agencies and tribes do not believe that transportation could ever substitute for safe passage conditions at individual projects, because substantial numbers of fish cannot be collected and transported. Further, they cite a lack of studies showing the relationship between transported fish and adult returns, fearing that transported fish suffer from stress that adversely affects them after their release in the lower river.⁸⁶

The Corps proposed a "full transportation" amendment to the Council that would maximize use of transportation for all species under all flow conditions. The proposed Council amendments reject this provision, because it would take the fishery agencies and tribes out of the decision-making process on transportation, inconsistent with provisions of both the program and the Act.⁸⁷ Therefore, the Council's draft amendments make clear that the fishery agencies and tribes possess the biological expertise and legal authority to set transportation policy.⁸⁸ Thus, their current policy -- which is to maximize transportation of all stocks under average or below average water conditions, but to minimize transportation of spring chinook in above average flows⁸⁹ is likely to continue.

The Council also rejected a Corps amendment that would have given the Corps transportation credits that could be employed to reduce in-stream migration protection. The Council considered the proposal likely to reduce juvenile survival and therefore inconsistent with a number of statutory standards.⁹⁰

C. Bypass Installation

While turbine passage kills approximately 10-30% of juvenile fish per project, passage through a mechanical bypass system or over a spillway kills only about 1-2% of the migrants.⁹¹ The key to upriver restoration is therefore mechanical bypass installation in the long-run and sufficient spills in the interim.

Of the 13 mainstem dams on the Columbia and Snake which pass anadromous fish, only 4 are fully equipped with juvenile fishways, and this includes Bonneville Dam's second powerhouse whose operation has been problematic and which is not yet entirely operational.⁹² A fifth project, John Day Dam, should have a new bypass system operational prior to the 1987 downstream migration, but the bypass installation schedules at 7 of the remaining 8 projects have slipped, generally up to 2-3 years.⁹³ Moreover, the Corps seems to be encouraging even longer delays, and the fishery agencies and tribes worry that the Corps will suggest to Congress that transportation could substitute for bypass installation at Lower Monumental and Ice Harbor Dams.⁹⁴ The Corps did recommend 2 and 3-year delays in bypass installation at these dams; the Council would only agree to a year slippage in the draft amendments.⁹⁵

Slippages in bypass installation are especially frustrating in view of the Council's unwillingness to approve interim spill levels that the fishery agencies and tribes believe are biologically justified. Had the Council approved the recommended spills, it might have helped form a coalition for stepped-up bypass installation, since power interests would have an incentive to ensure that interim spills are replaced with structural bypass as soon as possible. Without adequate interim protection, with only around 30% of mainstem turbines equipped with bypass facilities, and with no firm commitments for more anytime in the near future, improved mainstem fish passage must come almost wholly from high flows. The Northwest Power Act promised fishery advocates that they would no longer have to rely so heavily on the vagaries of the weather, but the Columbia Basin Program has not delivered on that promise.

84. See Briefing Paper, above note 62, at 12.

85. *Id.*

86. See Northwest Power Planning Council, Minutes for Meeting No. 100 (June 10-12, 1986) at 19 (testimony of Fred Olney and Doug DeHart).

87. 1986 Draft Amendment Document, above note 55, at 169 (citing 16 U.S.C. §§ 839b(h)(6)(A), (7)(C), and (11)(B) and § 1304(c) of the program, and also noting that in the 1918 Columbia River Fish Compact, 40 Stat. 515, Congress authorized the states of Oregon and Washington (not the Corps of Engineers) to regulate, preserve, and protect Columbia River fish runs).

88. *Id.* at 49-50 (proposed § 404(b)(17)).

89. See Briefing Paper, above note 62, at 12.

90. 1986 Draft Amendment Document, above note 55, at 169 (citing 16 U.S.C. § 839b(h)(5), (6)(E)(i), and (h)(7)(C)). The Council did agree to delete a Corps "comprehensive report" on transportation, at the Corps' request. *Id.* at 168. However, the amendments call for a 5-year research work plan on transportation, one of 2 major areas of research for the Corps (the

other being improving bypass at mainstem dams). *Id.* at 50 (proposed § 404(b)(17)(C)), 29 (proposed § 205(d)(2)(A)).

91. See Briefing Paper, above note 62, at 9.

92. *Id.*

93. *Id.* See generally Council Quarterly Report, above note 64.

94. See Briefing Paper, above note 62, at 10.

95. See 1986 Draft Amendment Document, above note 55, at 181-82, 117-18 (proposed amendments to § 1504, Action Items 32.7 and 32.8).

D. Water Budget

Heralded as the centerpiece of the Columbia Basin Program when first approved in 1982, the Water Budget Managers indicate that the Water Budget has thus far failed to produce its promised fundamental shift in hydroelectric system planning and operating priorities.⁹⁶ For example, during a 26-day period in 1985 (the only year of the past 3 in which flows were not above average), Water Budget flows were met only 6 days on the Snake.⁹⁷ Implementation problems concern (1) the Corps and BPA's shaping of requested flows to maximize power sales, (2) disagreements over how to account for budget use, (3) flood control operations frustrating budget use, and (4) reservoir refill taking precedence over budget requests.⁹⁸

It should be recalled that Water Budget flows provide less than the minimum flows recommended for the Snake by the fishery agencies and tribes in 1981.⁹⁹ And while the budget's flows are higher on the Columbia, the Council rejected a key fishery agency and tribal recommendation that would have established "sliding scale" flows -- so that while fish flows would be reduced in low water years, they would be increased in good waters years.¹⁰⁰ Instead, the approved Water Budget was based on worst case low flow assumptions, with no additional water supplied in high flow years. Thus, the existing Water Budget is very much a compromise measure; it hardly represents an unqualified victory for fishery interests. Consequently, the failure to implement the budget is most disturbing.

The fishery agencies and tribes did not seek a program amendment concerning the Corps' and BPA's giving priority to secondary energy sales and reservoir refill over budget flows because this is clearly a violation of the priorities established in section 304(a)(8) of the Columbia Basin Program. Instead, they sought to encourage the Council to become involved in the enforcement of its program's priorities by requesting a new dispute resolution process. As noted above, the Council rejected this recommendation, alleging (rather unconvincingly) that existing program measures supply more effective dispute resolution.¹⁰¹ Also proposed for rejection was a fishery agency recommendation that BPA provide the Council with an annual report of its power marketing operations during the Water Budget period. The Council's reasoning was that such

information was already required by the program.¹⁰² However, acknowledging that BPA has failed to supply such reports in the past, the Council requested BPA to specify a date by which the reports, including relevant power marketing information, would be made available to the fishery agencies and tribes as well as the Council.¹⁰³

Although they chose to negotiate an agreement to resolve Snake River Water Budget flows instead of seeking a program amendment,¹⁰⁴ the fishery agencies and tribes did seek an amendment to clarify that Water Budget "accounting" take place on an average daily basis.¹⁰⁵ However, the draft amendments would establish average weekly accounting as the basis for Water Budget use, while imposing an 80% flow fluctuation limit on weekends and holidays.¹⁰⁶ The Council felt that average weekly flows, coupled with fluctuation limits, would be as biologically effective as average daily flows at a lower cost to the power system.¹⁰⁷ Even if this produces a satisfactory resolution to the budget accounting problem, it is obvious that successful Water Budget implementation will not occur unless the Council becomes more involved in ensuring that (1) the program's priorities favoring Budget flows over secondary power sales and reservoir refill are followed, (2) sufficient water is released from storage from projects in the Snake Basin, and (3) flood control requirements and procedures are critically analyzed and revised, where feasible, to enable the region to have both adequate fish flows and flood protection.¹⁰⁸

96. See generally Parity IV, above note 20, at 494-501 (reviewing the 1984 and 1985 seasons -- the 1986 season was one of high flows, and therefore not indicative of the Water Budget's efficacy).

97. Id. at 497 (citing Water Budget Center, 1985 Annual Report (Aug. 1985) at 2).

98. See Lothrop, above note 23, at 5-6.

99. See Memo #16 (Dec. 1981) at 6.

100. See above note 16 and accompanying text.

101. See above notes 81-83 and accompanying text.

102. Columbia Basin Program § 1503 (calling for annual reports on, among other subjects, mainstem passage and Water Budget implementation).

103. 1986 Draft Amendment Document, above note 55, at 166.

104. See Briefing Paper, above note 62, at 9. The Council staff has recognized that a BPA-Idaho Power Company storage-exchange contract is essential to successful Water Budget implementation on the Snake. See Council Quarterly Report, above note 64, at 78 (discussing implementation of Action Item 33.4).

105. 1986 Draft Amendment Document, above note 55, at 165. For background on the "accounting" controversy, see Parity IV, above note 20, at 498 n.190.

106. 1986 Draft Amendment Document, above note 55, at 37-40 (proposed amendments to § 304(a) of the program).

107. Id. at 165.

108. On revising flood control rule curves, see Council Quarterly Report, above note 64, at 80-81 (discussing implementation of Action Item 33.5), summarizing a Corps of Engineers' study, "Preliminary Review of Flood Control, Columbia River Basin" (Feb. 10, 1986), indicating that portions of flood control rule curves (those representing water supply forecasts less than 70-80% of normal) could be modified to benefit anadromous fish.

E. Intertie Access

As a following Fish Law "Brief" indicates, BPA is in the process of expanding the capacity of the power lines connecting the Northwest to the large California market.¹⁰⁹ Conditioning access to these Pacific Intertie lines on compliance with Columbia Basin Program provisions would supply a powerful incentive for generating utilities and federal water project operators to comply and maintain compliance with the program. Although the existing program mentions BPA's Intertie arrangements among those activities that must be consistent with the program,¹¹⁰ it establishes no specific fish and wildlife policy on Intertie access, and it is not directed to generating utilities or other federal project operators.¹¹¹ Meanwhile, BPA is proceeding with long-term firm power contracts with utilities like Southern California Edison and an "upgrade" of one of the Intertie lines with little or no evaluation of how these initiatives could avoid conflicts with the program and facilitate program implementation.¹¹²

In an effort to persuade the Council to seize the opportunity to make the privilege of Intertie access encourage compliance with the Columbia Basin Program, the fishery agencies recommended an amendment that would call on BPA to incorporate into its Long-Term Intertie Access Policy¹¹³ (now under development) enforceable conditions requiring operators of generating resources that transmit Intertie power to be consistent with the program. The Council proposed to reject this amendment on the grounds that the program already requires BPA's consistency, and the Council's understanding that "BPA should develop methods to ensure that this policy is implemented."¹¹⁴ As in its response to the fishery agencies and tribal dispute resolution recommendation,¹¹⁵ the Council seems undisturbed or unaware that the track record simply does not warrant such optimism.

109. See Memo #34 (Nov. 1985) at 7-8 (Columbia River Inter-Tribal Fish Commission memorandum on BPA's Intertie upgrade activities).

110. Columbia Basin Program § 1304(a)(3).

111. See Parity IV, above note 20, at 490-92.

112. Id. at 493-94.

113. For a criticism of the BPA Near-Term Intertie Access Policy, see Memo #28 (Sept. 1984) at 8-9.

114. 1986 Draft Amendment Document, above note 55, at 182-83. The Council also asserted that "the two problems which concern the proponents of this measure the most -- accelerated installation of bypass systems at mainstem federal projects and FERC licensing of new small hydro projects -- can be approached more effectively directly." Id. at 183 (citing §§ 404, 1204, and 1504 of the program).

115. See above text accompanying notes 82-83.

Conclusion

This Memo does not attempt to explore all of the issues raised in the proposed amendments to the Columbia Basin Program. For example, the fishery agencies and tribes claim that both resident fish¹¹⁶ and wildlife¹¹⁷ have been

116. See Columbia Basin Fish and Wildlife Council, Resident Fish and the Northwest Power Act (Sept. 12, 1986). This study criticizes § 804(e)(16) of the current program (proposed as § 804(f), 1986 Draft Amendment Document, above note 55, at 80) for imposing burdens on sponsors of resident fish measures to identify losses and establish restoration goals on a case-by-case basis, without supplying any funding to help gather such information. The paper notes that, except in Montana, the program has little or no accomplishments in the resident fish area, and claims that the Council has indicated a lack of interest in expanding the resident fish program until at least 1990. The study recommends that the program adopt measures designed to provide (1) systemwide information on resident fish losses due to hydroelectric development and operation, (2) a process for establishing goals to address those losses, and (3) specific measures to achieve those goals. Without such an orderly systemwide process, the paper concludes that resident fish will remain a second class resource under the program. Numerous resident fish measures were proposed for rejection by the Council in its draft amendments, including measures concerning Lookout Point Dam on the Willamette River (recommended by Oregon Department of Fish and Wildlife); Hungry Horse and Libby Dams (Montana Department of Fish, Wildlife and Parks); American Falls Dam (Shoshone-Bannock Tribes); Pritchard Creek on the South Fork of the Snake River, Palisades Creek irrigation diversion on the Snake River, and Cascade Reservoir (Idaho Department of Fish and Game); the Upper Metolius River (Oregon Trout), and the Hanford Reach of the mainstem Columbia River (Washington Department of Game). See 1986 Draft Amendment Document, above note 55, at 172-76.

117. See Columbia Basin Fish and Wildlife Council, Wildlife Mitigation in the Columbia River Basin (Sept. 12, 1986). This paper criticizes §§ 1001-04 of the program for (1) not clarifying that it authorizes wildlife mitigation at projects not originally authorized for wildlife mitigation (i.e., that the program envisions compensation for past wildlife losses, just as it envisions compensation for past anadromous fish losses); (2) leaving mitigation planning and implementation at non-federal projects to the "voluntary cooperation" of local utilities; (3) failing to provide funding for operation and maintenance costs; (4) assuming that the allocation of hydropower responsibility at multi-purpose projects should be based on congressional repayment formulas, even where close to 100% of project water is used for power production; and (5) failing to prescribe a systemwide approach on issues such as limiting reservoir fluctuations for peak power generation. See also accompanying Fish Law

shortchanged by the program. These issues are, however, beyond the scope of this Memo. There are also numerous issues related to increasing production (both hatchery and natural) that remain unresolved.¹¹⁸ Production questions must of course be settled if the program is to achieve its restoration promise. However, unless the program strengthens its mainstem passage measures, ensures that its Water Budget produces fish flows instead of paper promises, and employs the Intertie expansion as an opportunity to speed program compliance, production planning issues will be largely academic. For example, the question of whether the U.S. v. Oregon settlement might encourage the program to invest heavily in new hatcheries,¹¹⁹ perhaps altering

"Brief" on BPA's attempt to shelve mitigation planning in the Willamette Basin.

118. A critical production issue concerns the role of "supplementation" of natural production with hatchery fish to achieve full production potential of underused spawning and rearing areas. A work plan for funding supplementation studies was submitted to the Council in November 1985, pursuant to program Action Item 34.24, but the Council has taken no action to implement the work plan, and the Council's proposed amendments simply call for more research, 1986 Draft Amendment Document, above note 55, at 140. The fishery agencies and tribes charge the Council with ignoring their recommendations and delaying "important work in this area while continuing the never-ending planning process." Briefing Paper, above note 62, at 7. They also assert that the Council's proposed research "guiding principles," 1986 Draft Amendment Document, above 55, at 25-26 (proposed § 205(b)), ignore their recommendations of high priority projects to help solve disease problems and improve hatchery effectiveness, unnecessarily delaying critical research on fish health. Briefing Paper, above note 62, at 7-8. The fishery agencies and tribes consider that "supplementation" will be necessary on a "massive scale" to achieve production goals. For a dissenting viewpoint, see Oregon Trout, 3 Riverkeeper no. 3 (Fall 1986) at 3 (expressing genetic reservations about the wisdom of large-scale supplementation efforts until there is some proof that it will produce self-sustaining natural runs).

Unresolved natural production issues include the Council's (as yet unfulfilled) promise to design are areas protected from future hydroelectric development (see Columbia Basin Program § 1204(c)(2); Columbia Basin Fish and Wildlife Council, The Importance of Designating Protected Areas for Fish and Wildlife (Sept. 9, 1986)); the need for run-by-run goals that distinguish what is achievable with wild or supplemented production; and undertaking critical evaluations of habitat enhancement projects to assess the value of habitat enhancement and aid in planning future projects (see Columbia Basin Fish and Wildlife Council, Habitation Improvement and Evaluation Briefing Statement (Sept. 9, 1986)).

119. See Briefing Paper, above note 62, at 5 (describing a number of hatchery initiatives designed to increase chinook stocks, including a large hatchery in northeastern Oregon to enhance

its wild stock preference,¹²⁰ is less important than whether the program is providing sufficient habitat protection -- in the form of flows and interim spills or bypass systems -- to sustain restoration investments. If the program cannot do better than concede 10% mortality at each mainstem project (as its 90% survival standard does), upriver wild stock restoration is simply impractical.

If the Columbia Basin Program's deficiencies are to be corrected, almost certainly the Council must hear from the public at large, either orally at the November 17-18 oversight hearings or in writing on or before December 15, 1986. Fishery agencies and tribal representatives at the September 27 public meeting noted the critical importance of informed, focused public comment. Since one of the Council's proposed amendments would delete the biannual amendment process, this may represent the last opportunity for the public to participate in a formal program amendment process for some time.¹²¹ Clearly, the time to redirect the program is now. Restoring the promise of the Columbia Basin Program may very well prove to be a function of the quality of participation by the public.¹²²

Contact:

Northwest Power Planning Council
850 S.W. Broadway, Suite 1100
Portland, OR 97205
(503) 222-5161
Toll free: 1-800-222-3355
(1-800-452-2324 in Oregon)

The Columbia Fish and Wildlife Council briefing materials cited in this Memo are available from:

Columbia Basin Fish &
Wildlife Council
Lloyd Bldg., Suite 1240
700 N.E. Multnomah St.
Portland, OR 97232
(503) 231-2241
FTS 429-2241

spring chinook in the Hood, Umatilla, Walla Walla, Grande Ronde, and Imnaha Rivers). For background on the U.S. v. Oregon case, see Harrison, The Evolution of a New Comprehensive Plan for Managing Columbia River Anadromous Fish, 16 Env'tl. L. 705 (1986).

^{120.} Columbia Basin Program § 701.

^{121.} See 1986 Draft Amendment Document, above note 55, at 94-95 (proposed § 1404(b) of the program, noting that the Northwest Power Act requires a review of the program at least once every 5 years, but also noting that the Council request recommendations to amend the program more frequently).

^{122.} If the Council is unable to redirect the focus of its program, perhaps a congressional oversight hearing would be appropriate. Congress has shown a willingness to help special Columbia Basin restoration efforts in the past. See discussion of the 1985 Yakima Basin emergency legislation discussed in Parity IV, above note 20, at 502-03.

FISH LAW BRIEFS

Ninth Circuit Rules FERC Violated
The Federal Power Act in Salmon
Basin Hydroelectric Cases

On September 30, 1986, the Ninth Circuit Court of Appeals gave fishery advocates a surprising victory when it ruled that the Federal Energy Regulatory Commission (FERC) violated the Federal Power Act (FPA) by issuing 7 preliminary permits in Idaho's Salmon Basin.¹ (Preliminary permits do not authorize project construction; they simply guarantee the permittee priority over competitors for a time, during which the permittee is to gather information necessary for licensing.)² The court ruled that there was no support in the administrative record justifying FERC's refusals to (1) prepare a comprehensive plan, (2) not require its permittees to conduct cumulative impact studies, (3) collect baseline environmental data for its permittee, or (4) include uniform study criteria in its permit articles.³ In fact, the court concluded that "all the evidence in the record" suggested the steps urged by the Wildlife Federation were necessary to enable the Commission to secure the information necessary to fulfill its statutory responsibilities.⁴

FERC alleged that it was unnecessary to secure additional information prior to issuing the permits because (1) "its usual experience" indicated its standard permit conditions (without the aid of a comprehensive plan) were "satisfactory"; (2) permittees might be put to "unnecessary expense and effort" if they had to conduct cumulative impact studies; and (3) cumulative impact studies "might be useless" because some of the projects might ultimately not be licensed.⁵ Chief Judge Browning found that these reasons had "no discernible support in the record ... let alone 'substantial evidence'" that the Federal Power Act requires.⁶ The court noted that FERC "simply did not mention the extensive and uncontroverted evidence ...".⁷ Because FERC failed to explore "all issues relevant to the public interest," the court ruled that the Commission violated the Federal Power Act.⁸

However, the court did not rule that FERC had to prepare a comprehensive plan before issuing the preliminary permits, only that the agency could not reject developing a comprehensive plan, while also rejecting requests to (1) require its permittees to develop cumulative impact data, (2) impose uniform study guidelines, and (3) collect baseline environmental data.⁹ Nevertheless, the court did state:

The statute requires the Commission to measure proposed projects against a comprehensive plan. If the Commission had first prepared a comprehensive plan for hydropower development in the Salmon River Basin, establishing the optional number, type, size and location of hydropower projects in the basin, cumulative impacts could be studied on the assumption that all projects detailed in the comprehensive plan eventually would be brought on line. Alternatively, permittees could have been required to conduct cumulative impact studies and prepare reports based on several development assumptions.¹⁰

Moreover, the court unequivocally observed that "[t]he Federal Power Act requires that a comprehensive plan for river basin development be available before licensing."¹¹ Thus, the case may constitute the first judicial recognition that FERC may no longer ignore the Federal Power Act's mandate to undertake comprehensive planning prior to licensing multiple projects that may have cumulative effects on a single river basin.¹²

The Ninth Circuit also held that in permitting the 7 projects, FERC violated the Northwest Power Act by "fail[ing] to consider the [Northwest Power Planning] Council's Program at all -- a clear violation of the Northwest Power Act's express requirement that the Council's Program be '[t]aken into account [to the fullest extent practicable] at each relevant stage.'¹³ The court determined that the issuance of a preliminary permit was a "relevant stage" of the hydroelectric authorization process.¹⁴ Judge Browning reiterated that the Northwest Power Act "impose[s] substantive requirements on the Commis-

1. National Wildlife Federation v. FERC, ___ F.2d ___ (9th Cir. 1986) [hereinafter cites are to slip opinion].

2. See *id.* at 4.

3. *Id.* at 6, 9-11. "Substantial evidence" is required to support FERC actions by 16 U.S.C. § 8251(b).

4. *Id.* at 10; see also *id.* n.13 (citing statements by Lorraine Bodi representing the National Marine Fisheries Service, Harold Miles of Idaho Consumer Affairs, Jack Griswold of the U.S. Forest Service, Tom Haislip, a hydropower developer, and Roy Heberger of the U.S. Fish and Wildlife Service, all arguing for development of a comprehensive plan).

5. *Id.* at 9.

6. *Id.* at 9, 10 (citing 16 U.S.C. § 8251(b)).

7. *Id.* at 10.

8. *Id.* (citing *Udall v. FPC*, 387 U.S. 428

(1967)).

9. *Id.* at 11.

10. *Id.* at 13 (emphasis added).

11. *Id.* at 4.

12. See Cole, Reviving the Federal Power Act's Comprehensive Plan Requirement: A History of Neglect and Prospects for the Future, 16 *Envtl. L.* 639 (1986); see also Eckberg, Cumulative Impacts of Hydropower Development Under NEPA, 16 *Envtl. L.* 673 (1986).

13. National Wildlife Federation v. FERC, above note 1, at 15 (citing 16 U.S.C. § 839b(h)(11)(A)(ii)).

14. *Id.* at 16 (the "issuance of preliminary permits and the formulation of their articles are of central importance in the process of licensing") (emphasis added).

sion and other federal agencies."¹⁵ Thus, by failing to consider the Program's instructions to review simultaneously all hydropower applications in a single river drainage and assess their cumulative impacts, FERC violated the Northwest Power Act.¹⁶ The court ordered FERC to revoke the preliminary permits, to articulate the reasons for its decisions based on evidence in the record, including the evidence calling for a comprehensive plan and cumulative impact studies, and to consider the Council's program to the fullest extent practicable.¹⁷

National Wildlife Federation v. FERC thus adds another chapter in FERC's continuous failure to convince the courts that it is adequately discharging its statutory obligations to protect fish and wildlife.¹⁸ The decision's most immediate impact will be to slow down Salmon Basin hydroelectric development, at least pending completion of its "cluster impact assessment procedure."¹⁹ Longer-range impacts are more far-reaching. While it did not order FERC to conduct comprehensive plans prior to issuing preliminary permits, the court did indicate that FERC must have a comprehensive plan prior to licensing.²⁰ Thus, the decision could revolutionize

15. Id. at 17 (citing the "equitable treatment obligation," above note 13 and Yakima Indian Nation v. FERC, 746 F.2d 466, 473 (9th Cir. 1984); see Memo #26 at 5-7; Blumm, A Trilogy of Tribes vs. FERC: Reforming the Federal Role in Hydropower Licensing, 10 Harv. Envtl. L. Rev. 1, 34-46 (1986). The court declined to decide whether FERC's decision violated the "equitable treatment" obligations imposed by the Northwest Power Act. National Wildlife Federation v. FERC, above note 1, at 17.

16. NWF v. FERC, above note 1, at 15-16 (discussing § 1204(b)(1) of the Columbia Basin Program).

17. Id. at 17. The court did not decide whether FERC's actions violated either the National Environmental Policy Act or the Nez Perce tribe's Indian treaty fishing rights. Id. at 17-19.

18. See A Trilogy of Tribes vs. FERC, above note 15; Bodi & Erdheim, Swimming Upstream: FERC's Failure to Protect Anadromous Fish, 13 Ecology L.Q. 7 (1986); Bodi, FERC's Mid-Columbia Proceeding: Ten Years and Still Counting, 16 Envtl. L. 555 (1986); Blumm & Kloos, Small Scale Hydropower and Anadromous Fish: Lessons and Questions From the Winchester Dam Controversy, 16 Envtl. L. 583 (1986).

19. In August 1986 FERC released a draft EIS on its "cluster impact assessment procedure for 15 proposed projects in the Salmon Basin. However, the court declined to rule on the sufficiency of this document, because it was not in the record on which FERC based its decision to issue the 7 permits. National Wildlife Federation v. FERC, above note 1, n.18. For a criticism of FERC's cluster impact assessment procedure, see A Trilogy of Tribes vs. FERC, above note 15, at 54; Memo #34 (Nov. 1985) at 8-10 (NMFS criticism).

20. See above text accompanying notes

FERC decision making -- which most fish and wildlife advocates would agree is long overdue.

PFMC Proposes Habitat Amendment For Ocean Salmon Plan

In September 1986 the Pacific Fishery Management Council (PFMC) issued a revised draft Habitat section for its Salmon Fishery Management Plan.²¹ The draft surveys the life history and habitat requirements of salmon species, discusses significant adverse habitat alternatives (from dams and impoundments, from agricultural and forest, and mining practices, and from polluting and dredge and fill activities), and makes recommendations concerning actions necessary to maintain and enhance productive habitat capacity. The draft makes 7 recommendations to conserve and protect Pacific salmon habitat²²:

1. There should be no net loss of the productive capacity of any marine, estuarine or freshwater habitat which sustain Pacific salmon.
2. Pacific salmon, along with other fish and wildlife resources, should be assured co-equal treatment with other purposes of water and land resource development.
3. Efforts to restore and enhance Pacific salmon stocks and their habitat should be pursued through vigorous implementation of programs.
4. Diligent application and enforcement of regulations governing timber harvest, mining, water withdrawals, agriculture, or other stream corridor uses is necessary on the local, state, and federal levels. Approved and permitted activities should employ the best management practices available to avoid adverse effects on salmon and their habitat.
5. Existing salmon production should be ensured and enhanced by operational modifications at existing hydropower and water diversion projects wherever possible.
6. Comprehensive planning to provide basinwide review of proposed hydropower developments and other water use projects should be accomplished to identify and avoid

10-11.

21. Pacific Fishery Management Council, Revised Draft Habitat Section for the Fishery Management Plan for Commercial and Recreational Salmon Fisheries Off the Coasts of Washington, Oregon, and California (Sept. 1986).

22. Id. at 24-25.

cumulative or synergistic impacts in drainages where Pacific salmon spawn and rear. The identification of no-impact alternatives should be encouraged in all water resource development.

- 7. Pacific salmon habitat must be protected from adverse effects of contamination from domestic and industrial waste disposal, dredged material disposal, and radioactive waste disposal.

Copies of the draft may be obtained from the PFMC, Metro Center, Suite 420, 2000 S.W. First Ave., Portland, OR 97201 (503) 221-6352 (FTS) 423-6352.

ODFW Challenges BPA's Decision To Shelve Willamette Basin Mitigation Plan

[On October 8, 1986, the Oregon Department of Fish and Wildlife issued the following press release, entitled "Immediate Action Needed For Oregon Wildlife."]

Mitigation planning is currently taking place for the Willamette Basin in Oregon and should provide a framework for on-the-ground mitigation benefits as early as late summer of 1987 if approved by the Northwest Power Planning Council. These benefits could include expansion of big game winter range, enhanced riparian and wetland habitats and habitat improvement for upland game and non-game species.

However, as of September 23, 1986, the Bonneville Power Administration (BPA) made an arbitrary in-house decision to drop the Willamette River Wildlife Mitigation Program from its budget to satisfy internal budget cuts. The Columbia River Basin Fish and Wildlife Council has recommended exchanging the Willamette Wildlife Mitigation project for some lower priority proposal in order to retain it in BPA's budget. Comments from BPA staff indicate that the decision to drop the Willamette project has been, in part, a political decision. This action could either defer mitigation in the Willamette River until after 1990, or eliminate it altogether. The Willamette mitigation was the only wildlife project to be dropped even though it is one of five ongoing wildlife projects.

This would have serious implications to wildlife, since:

- 1. The Willamette is the major wildlife mitigation project in Oregon.
- 2. The Willamette project is intended to mitigate for impacts to over 33,000 acres of wildlife habitat resulting from eight federal hydroelectric projects.
- 3. Improvements to resources proposed in the Willamette Basin Mitigation plan would provide

long-term benefits and protection to wildlife in an area dominated by timber industry interests.

To prevent the sacrifice of wildlife mitigation in the Willamette Basin, write to the following address expressing your concern that wildlife mitigation is, indeed, important to the citizens of Oregon and that sufficient funds need to be made available to accomplish the goals.

Attn: James Jura, Administrator
Bonneville Power Administration
Fish and Wildlife Division, P.J.
P.O. Box 3621
Portland, OR 97208

Fishery Interests Protest BPA Terminal Expansion

The Bonneville Power Administration's (BPA) Terminal Expansion Supplemental Environmental Assessment²³ (EA) sparked widespread objections, including those from the State of Idaho Attorney General's Office, the Columbia River Inter-Tribal Fish Commission (CRITFC), the Northwest Power Planning Council, and the National Marine Fisheries Service (NMFS).²⁴ The Terminal Expansion would increase the capacity of the Pacific Northwest-Southwest DC "Intertie" line by approximately 1100 megawatts.²⁵ BPA's EA concluded that the expansion would not produce significant environmental effects; therefore, the agency will not prepare an environmental impact statement on the project.

The BPA EA assessed the effects that increased power generation resulting from the increased capacity would have on the amounts of water spilled over dams, changes in river and reservoir flow rates, and variations in reservoir elevations. These hydrological changes were then analyzed in terms of their effects on anadromous fish survival.²⁶ BPA concluded that

23. Bonneville Power Administration, Terminal Expansion Supplemental Environmental Assessment (DOE/EA-0265, July 1986) [hereinafter BPA EA] supplementing the DC Terminal Expansion Environmental Assessment (DOE/EA 0262, Feb. 1985). The earlier assessment addressed only the impacts of the physical construction of the project, not its fishery effects.

24. Written comments [hereinafter the entities' abbreviations] included: Aug. 8, 1986 Letter of Idaho Attorney General Jim Jones; Aug. 8, 1986 Letter of CRITFC Exec. Dir. S. Timothy Wapato; Aug. 8, 1986 Letter of the Council's Exec. Dir. Edward Sheets; Aug. 8, 1986 Letter of NMFS Environmental and Technical Services Div. Dale R. Evans.

25. BPA EA, above note 23, at 1. The Terminal Expansion is the first of several projects designed to increase Northwest power sales to Southwest markets.

26. Id. at 4. This "Brief" is limited to anadromous fish concerns; however, the BPA EA also addressed resident fish, cultural and recreational resources, irrigation, and air and

project-induced changes in quantities of spill and flow would produce a mean difference in survival of all stocks of less than 1%, an insignificant result, according to the agency. It also concluded that variations in reservoir elevations were so minor (the probability of a decrease of greater than 5 feet was 2% or less) they would have no effect on anadromous fish.

Fishery interests submitted detailed letters having two common themes. First, they challenged BPA's allegation that the Terminal Expansion is independent of other Intertie-related actions.²⁷ The commentators asserted that the project's environmental impacts are cumulative and inextricably linked to the environmental effects of those activities that will be assessed in BPA's forthcoming EIS on Intertie Development and Use (IDU EIS).²⁸ Second, they challenged the methods and assumptions BPA used in its computer models and analysis of those models' results. They claimed BPA's methods and assumptions made its "finding of no significant environmental impact" indefensible. Moreover, the Terminal Expansion will enable BPA to contract for additional California power sales; such commitments may justify decreases in spill, thereby adversely affecting anadromous fish passage.

A. Relation of Terminal Expansion To Intertie Access Policy

Idaho, CRITFC, and NMFS claimed BPA should not have evaluated the project under the Near Term Intertie Access Policy (Near Term Policy). They maintained that since the Terminal Expansion is closely related to other Intertie actions, the National Environmental Policy Act (NEPA) requires that BPA evaluate it in a comprehensive EIS.²⁹ They also alleged BPA had not justified separating its evaluation of the Terminal Expansion from its impending comprehensive program to increase the Northwest's access to Southwest energy markets.

water quality, including impacts of the increased capacity on thermal (coal) plant operations.

27. *Id.* at 41.

28. Idaho Comments, above note 24, at 8; CRITFC Comments, at 11; NMFS Comments, at 1. The Council did not assert the need to include the expansion in the IDU EIS, only that the BPA EA was inadequate. Council Comments, above note 24, at 4.

On October 22, 1986 BPA issued its Draft Environmental Impact Statement on Intertie Development and Use and Proposed Long-Term Intertie Access Policy (DOE/EIS-0125, Oct. 1986). Public comments are due on the draft EIS by January 2, 1987. For more information, contact BPA Public Involvement Office, P.O. Box 3621-SJ, Portland, OR 97208; (503) 230-5136.

29. Idaho Comments, above note 24, at 7; CRITFC Comments, at 11; NMFS Comments, at 1. The IDU EIS, which will assess upgrade alternatives and establish a Long-Term Intertie Access Policy, is scheduled for publication in early 1987. See above note 28.

BPA analyzed the Terminal Expansion's environmental effects under Near Term Policy conditions because that policy is currently in effect.³⁰ However, the Long-Term Access Policy, not the Near Term Policy, will govern access and use of the Terminal Expansion. CRITFC claimed, therefore, that BPA's decision to evaluate the Terminal Expansion under the Near Term Policy was arbitrary.³¹ Moreover, since Intertie capacity is directly related to the Intertie Access Policy, the final decision to expand the DC Terminal limits the alternatives that can be considered in the forthcoming IDU EIS.³²

The commentators contended that because the Terminal Expansion is one of several Intertie proposals to increase the Northwest's access to Southwest energy markets, NEPA requires all the proposals to be evaluated in a programmatic EIS.³³ The commentators claimed the inter-related actions are either connected, cumulative, or similar actions, as defined by NEPA regulations, and therefore must be evaluated in an individual EIS.³⁴ In addition, CRITFC insisted the BPA inverted the NEPA regulations on tiering by preparing an environmental assessment on a project of narrow scope before completing the applicable broad programmatic EIS (the IDU EIS) instead of subsequent to completing the broader EIS.³⁵

30. *Id.* at 3, 43.

31. CRITFC Comments, above note 24, at 11. Note that the Near Term Access Policy is one of the alternatives under consideration for adoption as BPA's Long Term Access Policy. CRITFC Comments, above note 24, at 10; NMFS Comments, at 2.

32. Idaho Comments, above note 24, at 8, CRITFC Comments, at 11; NMFS Comments, at 1-2. See C.F.R. § 1502.4(c)(3) ("Statements shall be prepared ... and shall be available before the program has reached a stage of investment or commitment to implementation likely to ... restrict later alternatives"). See also 40 C.F.R. § 1506.1(2).

33. Idaho Comments, above note 24, at 7; CRITFC Comments, at 11; NMFS Comments, at 1. See also *Natural Resources Defense Council v. Hodel*, 435 F. Supp. 590 (D. Ore. 1977), *aff'd*, 626 F.2d 134 (9th Cir. 1980) (BPA must prepare comprehensive EIS before taking any action to implement "Phase 2" of Hydro-Thermal Power Program). Other Intertie-related actions include the Long-Term Access Policy, export sales agreements, and fishery protection measures. BPA EA, above note 23, at 41.

34. 40 C.F.R. § 1508.25(a). Connected actions are those in which one triggers the other, one is dependent on the other either previously or simultaneously, or one that justifies the other. See, e.g., *Thomas v. Peterson*, 753 F.2d 754 (9th Cir. 1985) (logging road construction will trigger Forest Service timber sales). Cumulative actions are those which when viewed with other proposed actions have cumulative impacts. Similar actions are those which when viewed with other reasonably foreseeable actions have similarities that form a basis for evaluating their environmental consequences together.

While BPA acknowledged that the Terminal Expansion was related to the other Intertie access proposals, it believed segmentation of the Terminal Expansion was justified by four reasons. First, BPA claimed that the Terminal Expansion had "independent utility" from the other actions and would be built and operated even if no other Intertie project or policy were undertaken.³⁵ The basis for segmenting environmental analyses is that not doing so would force an agency to consider speculative impacts of projects not yet approved. However, the commentators did not ask BPA to consider the specific impacts of each Intertie-related project in one EIS. Rather, they contended the BPA EA evaluated the narrow issues of the Terminal Expansion without considering broader cumulative impacts resulting from increased power marketing implemented under the Long-Term Access Policy.³⁷ In other words, the expansion's "independent utility" justifies preparation of a narrow EA only after the issues, such as Long-Term Access Policy, have been evaluated in the programmatic EIS, not before.³⁸

Second, BPA claimed that the other actions were not "ripe" for decision,³⁹ stretching the ripeness concept to allow going forward on the Terminal Expansion only 6 months before the IDU EIS is scheduled for completion. In fact, preparation of the IDU EIS was well underway when BPA prepared the EA on the Terminal Expansion.

Third, BPA maintained that segmenting the Terminal Expansion EA from the IDU EIS was proper because subsequent intertie proposals will evaluate cumulative impacts of all intertie actions.⁴⁰ NMFS, however, claimed that the time to evaluate cumulative impacts was in the EA.⁴¹ Since BPA is preparing a cumulative effects analysis as part of its impending IDU EIS, it is likely that BPA had access to the information

necessary to disclose likely cumulative effects in the EA. Moreover, the impending proposals under consideration in the IDU EIS may well be "reasonably foreseeable"; if they are, the CEQ regulations require their cumulative effects to be analyzed in the EA on Terminal Expansion.⁴²

Fourth, BPA justified segmentation of the Terminal Expansion because it has a different construction schedule than the other Intertie projects. Idaho retorted that "any construction contracts⁴³ driving these different schedules" limits the choice of reasonable alternatives in violation of NEPA.⁴⁴ More fundamentally, a construction contract schedule that creates a time constraint on the NEPA process may violate the NEPA requirement that agencies comply with NEPA to the fullest extent possible.⁴⁵ Thus, avoiding contractual penalties for further construction delays on the Terminal Expansion may not excuse BPA from performing an EIS on the project, or from completing the programmatic EIS before determining the environmental effects of the expansion.

B. Models and Analysis

BPA's analysis of the Terminal Expansion's effects on anadromous fish focused on two computer models: BPA's System Analysis Model (SAM) and the Corps of Engineers FISHPASS model.⁴⁶ The SAM model predicts changes in reservoir levels, river flows, and spill quantities which result from given hydroelectric operations, demand for electricity, and power resources.⁴⁷ The results from SAM were used in the FISHPASS model to evaluate the effects of the hydrologic changes on fish survival and spawning.

Concerning the SAM model, the Council questioned the BPA's use of its 1985 long-range medium load forecast only, with no simulations of long-range low and high load for comparison.⁴⁸ The Council also questioned the reli-

35. CRITFC Comments, above note 24, at 11. "Tiering" refers to the coverage of general matters in broader [EISs] ... with subsequent narrower statements or environmental analyses ... incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared." 40 C.F.R. § 1508.28.

36. BPA EA, above note 23, at 41.

37. Idaho Comments, above note 24, at 7; CRITFC Comments, at 11; NMFS Comments, at 1. For example, NMFS asserted that the Terminal Expansion could not be considered independent of the Long-Term Access Policy because that policy will govern access and use of the expansion. BPA also claimed the Terminal Expansion's unique issues (those unrelated to other Intertie actions) justified segmentation. BPA EA, above note 23, at 41. However, as Idaho pointed out, it is the "related issues," not the unique ones, that require concurrent consideration. Idaho Comments, above note 24, at 7.

38. See above note 35.

39. BPA EA, above note 23, at 41. See also above note 28.

40. Id.

41. NMFS Comments, above note 24, at 1.

42. 40 C.F.R. § 1508.25(a). See above note 34.

43. BPA EA, above note 23, at 41.

44. Idaho Comments, above note 24, at 8 (citing 40 C.F.R. § 1506.1(a)(2) (NEPA regulations)).

45. 42 U.S.C. § 4332 (1982); see also *Forelaws on Board v. Johnson*, 745 F.2d 677 (9th Cir. 1984). In *Forelaws*, BPA claimed the Northwest Power Planning Act created a time constraint which made compliance with NEPA impossible. However, the court ruled that the time constraint was imposed by BPA, not the statute, and that such administratively imposed conflicts violated NEPA's command of compliance to the fullest extent possible.

46. BPA EA, above note 23, at 3.

47. Id. at 4.

48. Failure to simulate a range of load/resource forecast was the first in a series of modeling decisions that led the commentators to question BPA's finding of no significant impact. The Council claimed the FISHPASS model results might be biased because 1985 was a below average water year, with an unusual run-off shape.

ability of using 20 "randomly-picked" SAM simulations of water conditions from a population of 200 for FISHPASS analysis.⁴⁹ Finally, both the Council and NMFS questioned the assumption that current long-term "firm" power sales contracts will not be renewed or replaced in light of BPA's sales goals.⁵⁰

The commentators had even greater reservations about BPA's assumptions, analysis, and conclusions concerning the FISHPASS model. Basically, the commentators asserted that many of BPA's assumptions in employing the model do not reflect the real world.⁵¹ The 5 most hotly contested issues concerned BPA's use of (1) a 1:1 spill efficiency ratio,⁵² (2) allegedly unrealistic survival rates of fish transported around dams,⁵³ (3) a 30-day biological time limit for fish to travel from Snake River rearing areas to salt water,⁵⁴ (4) an assumption that wild fish populations dynamics track those of hatchery fish,⁵⁵ and (5) extremely optimistic

fish guidance efficiencies (FGE).⁵⁶

BPA also apparently failed to perform a sensitivity analysis on the FISHPASS model simulations. A sensitivity analysis identifies those parameters (e.g., river flow rate) for which small numerical changes can result in dramatic model results (e.g., reservoir mortality).⁵⁷ Without a sensitivity analysis, one cannot evaluate the validity of the model results for the parameters BPA used.

In addition, the commentators questioned the sufficiency of the data analysis to support a finding of no significant impact, claiming BPA's data analysis was flawed by averaging survival across species and over 20 years to estimate whether fish mortality would be significantly different with the project than without it.⁵⁸ Finally, NMFS challenged BPA's conclusion that, because the project would result in an average decreased fish survival less than the survival range observed with existing water level variations, the decrease would not be significant. NMFS believed that given existing impacts, any additional decrease in survival is significant.⁵⁹

These challenges to BPA's models and analysis indicate that BPA's finding of no significant impacts was not based on technical analysis, but rather on economic expediency, driven by the construction contract schedules.⁶⁰

Council Comments, above note 24, at 4. The Council did not speculate as to whether the bias would overestimate or underestimate survival.

49. *Id.* The Council claimed SAM needs "at least 200-300 simulations ... before stable results are obtained," and claimed that 20 may not represent an equitable range of water conditions. Apparently, the Council believes that a population of 200 simulations is not randomly distributed. Therefore, a subset of 20 are not likely to be randomly distributed, even if the 20 are selected randomly. The Council suggested the 20 should represent the full range of water conditions and be appropriately "weighted" for the FISHPASS simulations.

50. *Id.* at 2; NMFS Comments, above note 24, at 2. See also notes 64-67 and accompanying text below.

51. Unlike SAM, FISHPASS has numerous parameters -- such as survival rates for fish transported around each dam -- for which collected, verifiable data are not available. But see notes 52-53 below.

52. Spill efficiency ratio is the ratio of the percent of the fish in the stream that spill to the percent of water in the stream that is spilled (e.g., if spilling 10% of the flow would spill 10% of the fish, the ratio is 1:1). CRITFC maintained that data collected at PUD dams resulted in efficiency ratios substantially different from 1:1. CRITFC Comments, above note 24, at 3.

53. CRITFC cited data collected on transported fish as ranging from 33% to 67% survival, not the 95% and 98% survival used by BPA. *Id.* at 3, and Attachment A. The Council maintained that transported fish are removed from the model and therefore not subjected to downstream mortality factors included in the model. The Council also asserted that the dominance of reservoir mortality masks significance of dam mortality. Council Comments, above note 24, at 3.

54. NMFS contended the 30-day figure documented for coastal coho is inappropriate for other species and contrary to existing data for spring chinook. NMFS Comments, above note 24, at 2-3.

55. Idaho maintained the BPA did not adequately address wild and natural stocks. Idaho Comments, above note 24, at 4. One way these stocks were not addressed is the assumption of constant migrant population size, independent of preceding generations. CRITFC Comments, at 8. While this assumption may be realistic for hatchery fish, it is not for wild fish. Hence, BPA did not investigate possible long-term effects of the project on wild fish.

56. BPA assumed that FGE (fish survival around dams by screened bypass systems) were 70% where no screens presently exist compared to 38% and 20% at existing dams, and that the future screens would be operating by 1992 despite possible construction delays. NMFS Comments, above note 24, at 3; Idaho Comments, at 5.

57. Apparently the BPA put the cart before the horse as the Council's Mainstem Passage Advisory Committee is presently conducting a sensitivity analysis that will be completed this fall. Council Comments, above note 24, at 3.

58. CRITFC Comments, above note 24, at 8-9. See 40 C.F.R. § 1508.9(a)(1). CRITFC also maintained BPA should have used a parametric analysis on the data. CRITFC performed such an analysis, and the results indicated significant decreases in fish survival.

59. NMFS Comments, above note 24, at 3.

60. See above notes 43-45 and accompanying text. After receiving the comments, but before issuing the finding of no significant impact, BPA made certain changes to the models to conduct a sensitivity analysis. However, the commentators claimed they were not consulted concerning the subsequent modeling analysis. Per-

C. Surplus Power

Increasing the capacity of the DC Terminal will allow utilities to supply surplus power to Southwest markets. Yet, surplus power will no longer be "surplus" once it is committed in a sales contract. BPA's conclusions in the BPA EA concerning fish survival, coupled with firm contract sales, effectively elevated power management concerns over BPA's responsibilities for fish protection and migration.

BPA asserted that increased downstream fish passage and improved spawning escapement could counterbalance the effects of increased fish mortality at dams, caused by increased surplus energy sales. In other words, that ocean harvest management restrictions and other mechanisms increasing fish survival past dams may compensate for mortalities due to additional surplus power sales.⁶¹ This is a highly questionable assumption, one that might fail to supply "equitable treatment" to fish, as the Northwest Power Act requires.⁶²

Another debatable assumption concerned BPA's position that current long-term "firm" power sales contracts would not be renewed or replaced with similar contracts, but instead assumed sales contracts for "nonfirm" or short-term "firm" sales to California.⁶³ NMFS and the Council took issue with this assertion, claiming that it conflicted with recent BPA actions, citing the agency's recent long-term firm contract with Southern California Edison.⁶⁴ BPA responded by stating that the Edison contract was possible without the Terminal Expansion (i.e., could be met with existing capacity).⁶⁵ However, BPA's response was inconsistent with its assumption employed in its SAM analysis that "[l]ong-term ... firm power was assumed not to be allowed for Existing or Expanded Capacity."⁶⁶

The Council referred to surplus power as "surplus firm energy."⁶⁷ In other words, once

surplus power is contracted, it becomes "firm" power. BPA assures delivery of firm power.⁶⁸ Such contractual obligations could conflict with spills needed to fulfill the Northwest Power Act's promise of "improved" fish passage.⁶⁹ Because BPA's EA did not thoroughly analyze the effects of contractual commitments on spills, it is also possible that the EA failed to satisfy the Act's directive of giving "equitable treatment" to fish and wildlife.⁷⁰

BPA's hurry to find no significant environmental impacts from the proposed DC Terminal Expansion seems to have caused BPA to fail to analyze connected or cumulative actions associated with the proposal. Despite the critical comments, BPA issued a "finding of no significant impact on the Terminal Expansion on August 28, 1986. Thus, unless one of the commentators seeks and secures judicial relief, BPA will have effectively segmented the first element of its Intertie expansion program with minimal consideration of its effects on ongoing efforts to restore the Columbia Basin's anadromous fish runs.

Helen Kennedy
Class of 1988

Northwest Power Planning Council Estimates Columbia River Basin Fish Losses and Assesses Hydropower Responsibility

In 1982, the Northwest Power Planning Council promised to establish fish and wildlife goals when it adopted Program section 201, requiring an assessment of salmon and steelhead losses attributable to hydropower development and operations.⁷¹ As a first step toward that end, in March 1986 the Council staff issued its final Compilation of Information on Salmon and Steelhead Losses in the Columbia River Basin, describing fish losses attributable to all causes since development began in the second half of the 19th century.⁷² A month later, the

sonal communication, Oct. 14, 1986, Rob Lothrop, CRITFC. Since then, the commentators have continued negotiations with BPA. Personal communication, Oct. 14, 1986, William Whelan, Deputy Attorney General, Idaho.

61. BPA EA, above note 23, at 11. BPA's argument also ignores the consequences to the fishing industry of imposing harvest restrictions to allow increases in hydropower-related fatalities. See Lothrop, The Misplaced Role of Cost-Benefit Analysis in Columbia Basin Fisher Mitigation, 16 Env't. L. 517 (1986). By-pass structures and transport mechanisms are two factors for which the commentators claimed BPA's model analysis was unrealistically optimistic. See above notes 52-53.

62. 16 U.S.C. § 839b(h)(11)(A)(i).

63. BPA EA, above note 23, at 4.

64. NMFS Comments, above note 24, at 2; Council Comments, at 2.

65. BPA EA Comments, above note 24, at 45.

66. BPA EA, above note 23, at 4 (emphasis added).

67. Council Comments, above note 24, at 2. In addition, the commentators claimed the increased capacity would prompt more resource development (more dams). BPA responded by claiming future resource development could be dependent on increased capacity. Such development was remote and speculative. CRITFC claimed BPA's response contrasted sharply with the Federal Energy Regulatory Commission's position, when recently granting a hydropower license for a small dam project that increased capacity will provide an expanded market for small hydropower projects. CRITFC Comments, above note 24, at 11.

68. Bonneville Power Administration, Draft Environmental Impact Statement, Intertie Development and Use, vol. 2, Proposed Long-Term Intertie Access Policy, at 6 (DOE/EIS-0125, Oct. 1986).

69. 16 U.S.C. § 839b(h)(6)(E)(i).

70. Id. § 839b(h)(11)(A)(i).

71. Columbia Basin Program § 201 (amended in Feb. 1985).

72. Northwest Power Planning Council, Staff

Council released an issue paper assessing hydro-power responsibility for salmon and steelhead losses in the Columbia Basin.⁷³ This "Brief" digests the Council's findings regarding total fish losses in the Columbia Basin since 1850, as well as the relative responsibility of hydro-power for those losses.

A. The Numerical Range of Total Fish Losses

The Council's final Losses Compilation estimates of the numerical range of total fish losses occurring since 1850. The Council first estimated predevelopment annual run size using one habitat-based and two catch-based approaches.

The habitat-based approach, developed by the Environmental Task Force of the Pacific Fishery Management Council, estimated available habitat and potential production of each species for Columbia Basin salmon, but not for steelhead.⁷⁴ However, by assuming that coho salmon production approximately equaled steelhead produced per mile of habitat, the Council was able to estimate pre-1850 steelhead production potential of around 2 million per year.⁷⁵ This habitat-based method yielded an estimated predevelopment run size of approximately 8.3 million salmon and steelhead, a "conservative" estimate, according to the Council.⁷⁶

In one catch-based approach, analysts used maximum catch records and assumed catch efficiencies of between 50% and 85% to derive an estimated total Columbia Basin predevelopment run size range of 10 to 16 million salmon and steelhead.⁷⁷ Another catch-based approach, proposed by the Bonneville Power Administration (BPA), estimated total salmon catch by the harvest of fish wheels, which were assumed to take 5% of the total run. This method produced an estimated annual predevelopment fish run as high as 35 million.⁷⁸ Thus, the 3 approaches examined by the Council yielded a range of approximately 8.3 to 35 million salmon and steelhead produced annually in the Columbia River Basin prior to 1850. However, the Council discounted both the habitat-based estimate (8.3 million) as "extremely conservative" and BPA's fish wheel catch-based estimate (35 million) as "unrealistically high."⁷⁹ The Council concluded that an annual predevelopment run size of 10 to 16 million fish was most reasonable given the harvest rates of the late 1800s.⁸⁰

Compilation of Salmon and Steelhead Losses in the Columbia River Basin at 1 (Mar. 1986) [hereinafter Losses Compilation].

73. Northwest Power Planning Council, Staff Issue Paper on Hydropower Responsibility for Salmon and Steelhead Losses in the Columbia River Basin (Apr. 1986).

74. Losses Compilation, above note 71, at 7.

75. Id. at 8.

76. Id. at 7.

77. Id. at 9.

78. Id. at 13.

79. Id. at 13-14.

The Council found the current run size almost as difficult to estimate as the predevelopment run size. Whereas the prime difficulty in estimating historical runs was the lack of data, current run calculations were complicated by conceptual, as well as data problems. Although run size estimates differ depending on which stage of the life cycle the fish are counted, the Council recognized "it is still possible to estimate total current production in the Basin with some degree of confidence."⁸¹ Employing the Washington Department of Fisheries model, the Council estimated total current production of salmon and steelhead in the Columbia Basin to be about 2.5 million fish annually.⁸²

The Council then subtracted this current annual run size estimate of 2.5 million fish from its predevelopment run size estimate of 10 to 16 million fish to arrive at a losses estimate of between 7 and 14 million salmon and steelhead.⁸³ By identifying the percentage of the historical catch produced above and below Bonneville Dam, the Council attributed the vast majority of salmon and steelhead losses since 1850 to stocks originating above Bonneville Dam.⁸⁴ However, the Council did not attribute the losses to the various developmental factors which have affected salmon and steelhead populations since 1850. Instead, it left this issue to its "attributions" issue paper.⁸⁵

B. The Predevelopment Fishery

For up to 5,000 years before 1850, Indians were the only humans who harvested the Columbia Basin's salmon and steelhead runs, primarily for subsistence. Despite a scarcity of accurate data on the fishery prior to the developmental era, the Council was able to quantify annual run size based on the size and distribution of the Indian populations, their daily fish consumption, and the fact that the primary use of harvested fish was subsistence.⁸⁶ Relying on ethnographic (oral information from elderly Indians), ethnohistoric (written Euroamerican information of Indian events and behavior) and archaeological data (physical information of the time-scale of human inhabitation and resource use), the Council could roughly determine "the

80. Id. at 14.

81. Id. at 15.

82. Id.

83. Id. at 17.

84. Id. at 17-19.

85. See below § D.

86. Losses Compilation, above note 71, at 23; see generally Shaik, Estimating Salmon and Steelhead Usage in the Columbia Basin Before 1850: The Anthropological Perspective, 2 Northwest Env'tl. J. no. 2 at 1 (1986). While not all native groups in the Columbia Basin relied year-round on the fishery resources, the Council concluded that "there was probably some dependence upon salmon in virtually all areas of the basin that provided accessible spawning habitat." These areas ranged throughout the Basin, from below Shoshone Falls on the Snake River in Idaho, up to Arrow Lakes in Canada.

magnitude of numerical and cultural losses that have occurred due to elimination or significant reduction of salmon and steelhead available to native peoples.⁸⁷

Based on aboriginal population figures and per capita salmonid consumption estimates, the Council determined that the catch ranged from 18 to 42 million pounds of fish per year, an estimate the Council considered to be conservative.⁸⁸ Therefore, it calculated the annual salmonid catch by Columbia Basin Indians in the early 19th century to be nearly 42 million pounds of fish, almost twice the size of the earlier estimates.⁸⁹

The Council translated pounds of fish into numbers of fish caught by assuming that the species composition in the aboriginal catch before 1850 was proportional to the species composition in the lower river commercial catch from 1880 to 1920, when records were first kept. Thus, the Council calculated that a population of about 50,000 to 62,000 Columbia Basin Indians caught approximately 5 to 6 million fish every year in the early 1800s, more than twice the number of salmon and steelhead currently produced yearly in the Columbia Basin today.⁹⁰

C. The Decline in Fish Runs and Habitat Since 1850

The Council's Losses Compilation assessed declines in Columbia Basin fish runs and habitat since the onset of development. By adding harvest figures to fish and redd counts, the Council estimated the current annual run size. Based on fish counts from the 4 mainstem Columbia River dams below the confluence with the Snake, the Council estimated a current average annual run size of almost 2,260,000 fish, and a maximum annual run size of 2,350,000 salmon and steelhead in the Columbia Basin.⁹¹ This constitutes a 75-89% decline in the average annual fish run prior to 1850, as assessed by the Council.⁹²

The Council also estimated the loss of salmon and steelhead spawning habitat in the Colum-

87. Id. at 24. See also id. at 26-27 (discussing the types of information relied upon by the Council).

88. Id. at 66-68. The estimates were conservative because they (1) ignored other aboriginal uses of the fish, such as for religious rituals, ceremonial rites, and trade; (2) assumed a per capita consumption that was, for certain groups, either too high or too low; (3) assumed a caloric content of the salmon that was too high; and (4) assumed that the entire salmon was consumed.

89. Id. at 72.

90. Id. at 74. See also above note 82 and accompanying text (discussing the Basin's current annual production of anadromous fish).

91. Losses Compilation, above note 71, at 76-79.

92. See above note 80 and accompanying text.

bia Basin since the onset of development. Prior to 1850, over 163,000 square miles of salmonid habitat existed in the Columbia Basin, representing almost 13,000 miles of stream, 80% of which was above Bonneville Dam. By 1976, the area accessible to anadromous fish was cut by about 31%.⁹³ Most of the losses on the Columbia River have been sustained upriver of the Bonneville Dam and on the Snake River above Hells Canyon Dam.⁹⁴

D. Causes for the Decline

Although the Council's Losses Compilation does not directly attribute responsibility for the decline in the Columbia River fishery among the various known causes, it discussed generally the activities detrimentally affecting salmon and steelhead populations over the past 135 years. These activities include commercial fishing, hydropower development and operations, logging, mining, grazing, agriculture/irrigation, and urbanization/pollution. The study examined these causes in a chronology which traces the fishery's decline and discloses the magnitude of their cumulative effects on the resource.

1. Commercial Fishing

By 1861, commercial fishing was a thriving industry on the lower Columbia River. In 1882, increased harvest rates contributed to a noticeable depletion in the salmon runs.⁹⁵ Shortly after the turn of the century, commercial trollers began exploiting the ocean fisheries. In 1917, when trolling licenses were first required, almost 124,000 chinook and silver salmon were harvested offshore. The harvest grew significantly in the mid-1920s, as fishermen with larger vessels discovered more highly populated feeding grounds about 25 miles offshore. But by the late 1940s, while commercial landings continued to increase, analysts noted a marked decline in the average age of fish caught. By the mid-1950s, landings began to decrease sharply.⁹⁶ These trends indicated to the Council that the ocean fishery significantly affected chinook populations.⁹⁷ However, since the 1920s, there has been a relatively steady decline in lower Columbia River commercial fishing catches for all species of salmon.⁹⁸

2. Hydropower Development and Operations

Hydroelectric development of the Columbia River Basin began in 1888 with the construction of the T.W. Sullivan Dam at Willamette Falls on the Willamette River south of Portland, Oregon. Major development, however, began in the 1930s, with the construction of the Rock Island and Bonneville Dams. In the 45 years that followed,

93. Losses Compilation, above note 71, at 87-89.

94. Id. at 88, table 15.

95. Id. at 99.

96. Id. at 99-103.

97. Id. at 102-103.

98. See id. at 106.

27 dams were completed on the mainstem Columbia and Snake Rivers within the natural limits of historical anadromous fish runs. Today, the Columbia River Basin supports some 58 hydroelectric dams and 78 multiple purpose projects.⁹⁹

Hydropower dam construction and operations significantly affect anadromous fish populations, wiping out entire runs at dams where no fish passage facilities have been provided, inundating spawning and rearing habitat, raising water temperatures, altering water chemistry, and fostering increased predation. Increased water velocity at diversion structures kills fish, trapping them on intake screens. Where screens are not provided, the fish may be killed by changes in pressure or by physical strikes as they pass through hydraulic turbines. The high levels of dissolved gas in the water released through the turbines can cause a fatal condition in fish similar to the bends. Fish become stunned and disoriented as they move through the turbines, increasing their vulnerability to the predators that await them at the base of the dams.¹⁰⁰ In low flow years, when all juvenile migrants must pass through turbines, analysts estimate losses of between 95% and 99% for Snake River chinook and steelhead.¹⁰¹

3. Logging

Logging was among the first industries to develop in the Pacific Northwest. Many logging-associated practices contributed to the decline in the Columbia Basin salmon and steelhead runs, such as stream modification, road construction and blasting. These practices reduced habitat, degraded water quality (by increasing water temperature and decreasing dissolved oxygen levels), increased sedimentation, and created barriers to fish migration.¹⁰² In addition, log dams reduced rearing habitat for juveniles and delayed migration. More recently, use of fertilizers, pesticides and herbicides have increased the potential for widespread acute and chronic harm to aquatic communities.¹⁰³ Areas most severely degraded by these logging practices include the Willamette and Deschutes Basins in Oregon, and most streams in western Washington.¹⁰⁴

The Council concluded that many of the detrimental effects of logging on salmon and steelhead populations have been "eliminated" in recent years, thanks mainly to the use of "buffer strips" along streams. Although the efficiency of buffer strips remains a controversial issue,¹⁰⁵ the Council believes adverse effects

can be eliminated by logging companies' using "proper techniques," current technology, and enforcement of pertinent laws.¹⁰⁶

4. Mining

As with logging, many of the detrimental effects of mining activities along streams have abated, thanks in part to federal legislation.¹⁰⁷ In the mid-1800s, mining was the predominant non-Indian industry in the Pacific Northwest. Especially in the lower Snake Basin and the Coeur d'Alene and Clark Fork areas of the Columbia Basin, miners used placer and dredge mining techniques to remove mineral deposits from streambeds and banks.¹⁰⁸ Dredge mining techniques were particularly devastating to salmon and steelhead habitat, leaving the streams unsuitable for fish. Dredge mining increased downstream sedimentation, degrading spawning habitat.¹⁰⁹ To the extent that habitation degradation due to mining continues, the Council attributed it to the lack of uniform enforcement of state and federal laws regulating sand and gravel operations.¹¹⁰

5. Grazing

Over 50% of the Columbia Basin is suitable for livestock grazing. Fully half of that territory consists of public lands managed by the Bureau of Land Management (BLM) or the U.S. Forest Service (USFS). Grazing affects salmon and steelhead populations primarily by depleting the riparian habitat, accelerating soil erosion which affects water quality and quantity.¹¹¹ Grazing deteriorates streambanks, pollutes the water and damages riparian habitat, especially in early fall when lower flows encourage livestock to congregate near streams. The magnitude of the resulting harm is considerable: ungrazed rivers produce from 2.4 to 5 times more fish than grazed streams in the basin. Unfortunately, statistics indicate that, since 1980, grazing is on the increase in Oregon.¹¹² On the other hand, the Council cited recent BLM and USFS range management practices, including fencing, revegetation and expanded fire protection, which promise to ameliorate grazing-associated problems.¹¹³

99. Id. at 128-30.
100. See id. at 149-54.
101. Id. at 152.
102. See id. at 159-60.
103. Id. at 160.
104. Id. at 159.
105. See National Wildlife Federation v. U.S. Forest Service, 592 F. Supp. 931 (D. Or. 1984) (Forest Service estimated effectiveness of buffer strips belied by its own landslide records).

106. Losses Compilation, above note 71, at 164-65. See, e.g., Northwest Indian Cemetery Protective Ass'n. v. Peterson, 764 F.2d 581 (9th Cir. 1985) (enjoining a road building and timber harvesting plan for violating state water quality standards, approved under the federal Clean Water Act).
107. Id. at 171 (also noting the role of recent adverse economic incentives to mine).
108. Id. at 165-66.
109. Id. at 170.
110. Id. at 171.
111. Id. at 171-72. See generally Braun, Livestock Grazing in Riparian Zones: Ensuring Fishery Protection in BLM Rangeland Management, Memo #37 (Oct. 1986).
112. Losses Compilation, above note 71, at 172.
113. Id. at 174; see Braun, above note 111.

6. Agriculture/Irrigation

Twelve percent (25 million acres) of the Columbia Basin is farmland. As non-Indians settled in the region during the mid-1800s, irrigation developed slowly. But with the onset of commercial-scale farms and federal encouragement of land reclamation through the Desert Lands Act of 1877 and the Reclamation Act of 1902, irrigation increased rapidly. These statutes increased irrigated lands in the Columbia Basin almost 5-fold in the first 10 years of this century. By 1925, 2.9 million acres of Columbia Basin lands were irrigated; by 1966, 6.6 million acres; by 1980, 7.6 million acres.¹¹⁴ This exponential rise continues as irrigated lands in the region increase by 53,000 acres each year.¹¹⁵

Irrigation development obstructs fish passage, damages water quality, decreases flows and increases water temperature. Unscreened diversions also deplete fish runs. Associated agricultural practices remove stream corridor vegetation and increase erosion and sedimentation. Return flows (irrigation water flowing off irrigated fields back into the streams) degrade water quality by introducing phosphates, nitrates, pesticides, salinity, parasitic nematodes, and coliform bacteria.¹¹⁶

Thus, irrigation practices reduce anadromous fish food sources, decrease livable habitat, increase juvenile susceptibility to predation, delay adult spawning migration, and increase egg and alevin mortalities by stranding fry and delaying downstream migration. Moreover, herbicides and pesticides accompanying return flows are toxic to the fish.¹¹⁷ The Council acknowledged these problems persist throughout the basin, but noted that they predominate in the lower Columbia where cumulative impacts of return flows are more pronounced.¹¹⁸ However, the Council also recognized that improved farm practices tend to minimize erosion and conserve top soil could reduce stream sedimentation.¹¹⁹

7. Urbanization and Pollution

Non-Indian settlement of the Columbia River Basin proceeded slowly after 1850, until completion of the transcontinental railroad around 1890. Then the population exploded, rising from 251,000 (in Idaho, Oregon and Washington) to 705,000 in just 10 years. This growth continued into the 1900s, spurred by legislation and innovations in irrigation and the logging industry. By 1970, more than 6 million people inhabited Washington, Oregon and Idaho.¹²⁰

As they arrived, non-Indian settlers urbanized the region, clearing the land, building roads, constructing buildings, channeling streams, removing riparian vegetation, and polluting the waterways. Their industries (pulp and paper mills and, later, aluminum plants) and municipalities discharged pollution directly into the rivers, resulting in reduced dissolved oxygen levels and direct fish toxicity due to sulfite liquors from the pulp and paper industry and metal toxicity from the metal mining industry. Rapid population growth also demanded increased water supplies, leading to more dam construction.¹²¹ Despite the problems water pollution poses for anadromous fish populations and habitat, the Council concluded that currently there is no extensive water pollution problem in the Columbia Basin, due primarily to effective state enforcement of federal legislation passed in the 1970s to protect water quality.¹²²

E. Mitigation of Fish Losses

The Council's estimate of fish losses since 1850 took into account efforts to identify and compensate those losses. Mitigation efforts are, in fact, irrelevant to quantifying losses, which are based simply on contrasts between historical and contemporary run sizes.¹²³ Nevertheless, the Council determined that an analysis of compensation efforts, primarily in the form of artificial production, is essential to an understanding of the biological losses resulting from shifts between wild and hatchery production.¹²⁴

Traditionally, fish loss compensation mirrored hydropower and multi-purpose dam development. However, the mitigation efforts concentrated on the lower Columbia Basin. Few attempts to rebuild depleted upriver runs were undertaken. By 1970, hatchery production of chinook, coho and steelhead exceeded natural production. By 1980, hatchery-produced steelhead and chinook comprised more than 75% of the entire run for those species. Current hatchery production is even higher, leading the Council to conclude that artificial stocks comprise an even higher proportion of the runs.¹²⁵

F. Assessing Hydropower Responsibility For Columbia Basin Fish Losses

With a clear understanding of the magnitude of losses sustained by Columbia Basin salmon and steelhead populations between 1850 and 1986, the Council's next step toward establishing Fish and Wildlife Program goals was to assess the relative responsibility of hydropower development and operation for those losses. On April 3, 1986, the Council staff released an Issue Paper on Losses, designed to generate public discus-

114. Losses Compilation, above note 71, at 174-78.
115. Id. at 178.
116. Id. at 195.
117. Id. at 195-97.
118. Id. at 195.
119. Id. at 198.
120. Id. at 198-99.

121. Id. at 203.
122. Id. at 207.
123. Id. at 211.
124. Id. However, the Council did not subsequently examine the biological effects of artificial propagation on the fish runs.
125. Id. at 212.

sion on the extent of hydropower responsibility.¹²⁶

Disclaiming a "comprehensive" approach to estimating fish losses due to hydropower because of an overall lack of information concerning production, mortality rates, ocean survival, and inundated or blocked habitat, the Council staff instead proposed two simplified methods for estimating hydropower responsibility.¹²⁷ The first alternative was based on the following assumptions: (1) all hydropower-caused mortalities occur at mainstem Columbia and Snake Rivers projects and associated reservoirs; (2) the reservoir survival rate is 80%; (3) the upstream passage survival rate is 95% per dam; (4) ocean survival rates vary from 2% to 10%, depending on the species of salmon and the amount of time spent in the ocean; (5) most of the lost production occurred in areas above Grand Coulee and Hells Canyon Dams; and (6) all blocked area losses are caused by hydropower development. Applying a 4-step arithmetic procedure to determine salmon and steelhead losses due to hydropower construction and operation, the Council staff arrived at a figure of 7 to 8 million fish lost due to hydropower, or 50% to 80% of total fish losses in the Basin since 1850.¹²⁸ Using this approach, the staff also estimated hydropower responsibility based on the potential recovery of fish lost since 1850 due to hydropower development and operation. The theory was that losses from all other causes (irrigation, fishing, logging, mining, grazing, agriculture, urbanization, pollution, and other effects) are "largely reversible."¹²⁹

The second method the Council staff considered for assessing hydropower responsibility employed fewer assumptions than the first approach, but may be less accurate because of its simplicity.¹³⁰ Here, the Council staff merely multiplied total loss by the percent Congress attributed to hydropower at particular dams to determine hydropower responsibility. This model assumes that all losses since the predevelopment run are the result of hydropower development and operations.¹³¹ This approach produced losses of 5 to 11 million salmon and steelhead.¹³²

Comparing the premises and results of both methods, the Council staff averaged the estimat-

ed hydropower responsibility at about 8 million fish, a large figure considering that the Columbia Basin currently produces only 2.5 million fish per year. To meet the assigned responsibility, fish runs would have to be increased 3- to 5-fold, which may not be possible, given existing social and biological conditions.¹³³

Finally, the Council staff addressed the cumulative and continuing nature of hydropower-caused fish losses, concluding that, even if past losses are fully compensated, the hydropower system's responsibility to protect, mitigate and enhance salmon and steelhead populations will likely continue. Hydropower consumers will bear the burden of investing funds to increase production of fish to compensate for past and current losses, but, as the Council staff recognized, it is up to the agencies, tribes, and land and water managers to successfully apply that investment.¹³⁴

D.H. Cole
J.D. 1986
Lewis and Clark Law School

The Anadromous Fish Law Memo is an aperiodic publication of the Lewis and Clark Law School's Natural Resources Law Institute, edited by Professor Michael Blumm, assisted by D.H. Cole, Class of 1986 and Helen Kennedy Class of 1988, and superbly typed by Lenair Mulford. The Memo is supported in part by the U.S. Department of Commerce through the Oregon State University Sea Grant College Program. Those wishing to be placed on the mailing list or to receive back issues should contact:

Anadromous Fish Law Memo
Lewis and Clark Law School
10015 S.W. Terwilliger Blvd.
Portland, OR 97219
(503) 244-1181

126. Northwest Power Planning Council, Staff Issue Paper on Hydropower Responsibility for Salmon and Steelhead Losses in the Columbia River Basin 1-2 (Apr. 1986).

127. Id. at 6-7.

128. Id. at 7-10; see also above note 80 and accompanying text (discussing total fish losses in the Columbia Basin since 1850).

129. Id. at 11.

130. Id. at 7.

131. Id. at 13. Thus, the underlying premise of both methods for estimating hydropower responsibility is that Columbia Basin fish runs are capable of recovery to pre-1850 abundance, but for hydropower. Id.

132. Id. at 7.

133. Id. at 13-14.

134. Id. at 15.

Oregon State University
Extension/Sea Grant Program
Administrative Services Bldg. 422-A
Corvallis, Oregon 97331

Non-Profit Org.
U.S. Postage
PAID
Permit No. 200
Corvallis, OR 97331

Address correction requested

Howard Horton, Head
Marine Advisory Program
Dept. Fisheries & Wildlife
CAMPUS

cps