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Current Plans to Ameliorate the Depletion of Snake River Salmon: Old Controversy or New Solution

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CURRENT PLANS TO AMELIORATE THE DEPLETION OF SNAKE RIVER SALMON: OLD CONTROVERSY OR NEW SOLUTION?

I. INTRODUCTION

The depletion of salmon populations in the Pacific Northwest has plagued the Snake River in the Columbia River Basin since the mid-nineteenth century.[1] The original cause of salmon depletion was over-fishing.[2] Over-fishing resulted because water, unlike land, is a commonly-owned resource.[3] Individual conservation efforts go unrewarded in this scheme because any fish that escape one fisherman's net will be caught in another's.[4] Therefore, fishermen have

1. *See generally* ARTHUR F.MCEVOY, THE FISHERMAN'S PROBLEM: ECOLOGY AND THE LAW IN THE CALIFORNIA FISHERIES 1850-1980 (Cambridge University Press 1986) [hereinafter THE FISHERMAN'S PROBLEM] (chronicling decline of California's lush and varied fisheries throughout nineteenth and twentieth centuries); *see also* Michael C. Blumm et al., *Saving Snake River Water and Salmon Simultaneously: The Biological, Economic, and Legal Case for Breaching the Lower Snake River Dams, Lowering John Day Reservoir, and Restoring Natural River Flows*, 28 ENVTL. L. 997, 998 (Winter 1998). A major tributary to the Columbia River is the Snake River, draining approximately 109,000 square miles into the states of Idaho, Wyoming, Utah, Nevada, Washington, and Oregon. *See* U.S. ARMY CORPS OF ENGINEERS, IMPROVING SALMON PASSAGE: THE LOWER SNAKE RIVER JUVENILE SALMON MIGRATION FEASIBILITY REPORT/ENVIRONMENTAL IMPACT STATEMENT (DRAFT), at *The Four Dams* (December 1999) [hereinafter *Draft EIS*] (recognizing that salmon from lower Snake River may have to pass up to eight dams before reaching Pacific Ocean).

2. *See generally* THE FISHERMAN'S PROBLEM, *supra* note 1 (citing overfishing as impetus of fish depletion in Pacific Northwest).

3. *See* Garrett Hardin, *The Tragedy of the Commons*, SCIENCE 162 (1968) (stating since fisheries are not privately owned, fisherman have no incentive to conserve salmon stocks because of competition from other fisherman).

4. *See id.* (calling this phenomenon "the tragedy of the commons"); *see also* Ransom E. Davis, Esq., *Individually Transferable Quotas and the Magnuson Act: Creating Economic Efficiency in Our Nation's Fisheries*, 5 DICK. J. ENVTL. L. & POL'Y. 267, 268 (1996). Davis states that:

> [e]conomists identify the common property nature of fisheries as the root cause of the chronic depletion of the resource. Because fishers possess no property rights in unharvested fish, the free market drives them to augment capital and fishing effort in a race against competitors to harvest fish as quickly as possible. Any fisher who attempts to conserve fishery resources by leaving some fish behind to reproduce will lose them to competitors.

Id. at 267-68. While competition in most free markets drives an industry to produce an optimal quantity of goods at low prices, competition in fisheries induces fishermen to increase their fishing effort, thus depleting fish stocks and causing prices to rise. *Id.* at 268. *See also* THE FISHERMAN'S PROBLEM, *supra* note 1, at 10 (stating that since no one owns resource so as to keep others away from it, everyone has incentive to fish so long as profit is to be made, whereas no one has incentive to refrain from fishing so as to conserve stock). The resultant over-fishing is

a decreased incentive to conserve salmon resources.[5]

While over-fishing was the original cause for the depletion of salmon stocks, urban development is currently the primary cause of salmon depletion.[6] Urban developers face no consequences from exploiting salmon resources because there are no penalties for depleting salmon stocks. Initially, the birth of hydroelectric dams in the 1930s significantly reduced salmon stocks.[7] Today, dams, as well as pipelines built to enable salmon to circumvent such dams, pose threats to salmon stocks in the Pacific Northwest.[8] Both the dams and the pipelines, constructed to offset the effects of the dams, interfere with natural salmon habitats.[9]

Dam construction on the Columbia and Snake Rivers in the Columbia River Basin was the principal factor that led to the listing of many salmon species under the Endangered Species Act ("ESA").[10] The Army Corps of Engineers ("Corps") operates four federal dams on the Snake River that play a significant part in

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aptly named "the fisherman's solution." *See id.* at 102 (stating that fisherman's solution to fisherman's problem is to "burn every other . . . boat but mine").

5. For a fuller discussion of decreased incentives to conserve salmon, *see supra* notes 3 - 4 and accompanying text.

6. *See* THE FISHERMAN'S PROBLEM, *supra* note 1, at 8-9 (stating that urban development such as building of hydroelectric systems, mining, and agriculture have directly caused salmon depletion). While tides and temperature affect the habitat of the fish, pollution from the Gold Rush and other mining activities, the building of hydroelectric dams and other improvements, and the construction of irrigation systems have all had a major impact on Pacific Northwest fisheries. *See id.* at 9.

7. *See id.* at 125 (stating that irrigation and hydroelectric dams closed streams to salmon spawning).

8. *See* Larry Swisher, *Fish Die as Humans Flounder on River Issues,* LEWISTON MORNING TRIBUNE, April 12, 1998, at 3C. Biologists believe the Bonneville pipeline may harm young fish even though it is designed to carry fish safely around the Bonneville Dam. *See id.* Many government agencies fail to consider the salmon's best interests. *See id.* The U.S. Army Corps of Engineers and its sister federal agency, the National Marine Fisheries Service (NMFS) are:

> [h]ell-bent on building a structure for collecting and bypassing salmon around Bonneville that may be as deadly as the turbines themselves . . . [they have] refused to prepare an environmental impact study, ignored directions from Congress to face a review by the North-west Power Council and independent scientists, dismissed alternatives, and won't wait until NMFS issues its comprehensive salmon recovery plan next year.

Id. Such agencies dismissed the objections of Indian tribes and environmental and sports fishing groups. *See id.*

9. *See id.*

10. *See id.* (discussing dam as major culprit for deterioration of salmon population); *see also* FEDERAL CAUCUS, CONSERVATION OF COLUMBIA BASIN FISH; BUILDING A CONCEPTUAL RECOVERY PLAN 5 (December 1999) [hereinafter *Federal Caucus*] (discussing effects of hydropower development on salmon and steelhead in Columbia River Basin); *see also Draft EIS, supra* note 1, at "Defining the Problem" (noting impact of dams on decline of salmon and steelhead in Northwest).

blocking salmon migration.[11] These four dams are the Ice Harbor, Lower Monumental, Little Goose, and Lower Granite dams.[12] Tearing these dams down, or "breaching" them, requires Congressional approval.[13]

Despite attempts to increase the salmon population in the Pacific Northwest rivers, salmon numbers continue to decline while ESA listings continue to rise.[14] Salmon stocks have the potential to flourish if federal and state governments begin to regulate the fisheries.[15] Many groups and organizations recognize that "[r]escuing Snake River salmon from the edge of extinction is now one of the foremost issues on the nation's environmental agenda."[16] Unfortunately, if regulatory agencies continue to clash on an effective conservation plan without accommodating Indian treaty rights to fish, salmon literally may be studied to death in the interim.[17] The

11. *See Draft EIS, supra* note 1, at *The Feasibility Study* (recognizing need to determine how four lower Snake River dams actually impact fish).

12. *See id.* at *The Four Dams* (discussing aspects of dams). The four dams have drawn attention because they are part of an eight-dam migratory corridor that fish must pass before getting from the lower Snake River drainage system to the Pacific Ocean. *See id.*

13. *See* Phillip M. Bender, *Restoring the Elwha, White Salmon, and Rogue Rivers: A Comparison of Dam Removal Proposals in the Pacific Northwest*, 17 J. LAND RESOURCES & ENVTL. L. 189, 227 (1997) (stating that Senator Gorton drafted bill that put dam removal into Congress's hands). Congress has the final say on whether to fund the purchase or removal of dams. Therefore, Congress has the final say on whether the federal government will erect or breach a federal dam. *See id.* at 229; *see also* Blumm et al., *supra* note 1, at 1049 (discussing needed congressional approval for dam breaching). Besides the congressional funds needed to breach the dams, the lower Snake River dams provide navigation, irrigation and power. Therefore, Congress must also approve elimination of these navigation channels. *See id.*

14. *See* Rocky Barker, *Law Says Salmon Must Survive; When Matter Goes to Court, Judge Will Have Few Choices Under ESA*, THE IDAHO STATESMAN, Dec. 27, 1999, at 1a (stating "salmon numbers have continued to plummet").

15. *See* THE FISHERMAN'S PROBLEM, *supra* note 1, at 10 (stating it is government's responsibility to consider environmental effects of such activity, to set standards for resource use, and to regulate behavior of resource users so as to protect community's long-term interest in its fisheries). Numerous state and local organizations have formed in response to threats to the salmon and other species in the Columbia River Basin. *See* COLUMBIA RIVER ALLIANCE *at* <http://www.cral.org> (last visited Jan. 28, 2000); *see also* WASHINGTON DEPARTMENT OF FISH AND WILDLIFE SALMON RECOVERY *at* <http://www.wa.gov/wdfw/recovery.htm> (last visited Jan. 28, 2000).

16. Blumm et al., *supra* note 1, at 1051; *see also Endorsement List to Retire Lower Snake River Dams* at http://www.taxpayer.net/snake/groups.html (last visited Feb. 25, 2000) (listing newspapers, organizations, and individuals in support of breaching dams to save salmon).

17. *See* Swisher, *supra* note 8, at 3C (stating that government agencies have been pushing and pulling in different directions with little coordination or cooperation for over two decades on salmon issues); *see also* THE FISHERMAN'S PROBLEM, *supra* note 1, at 111 (stating that Jack London's *Tales of the Fish Patrol* offers insight into how difficult it was to enforce regulations limiting seasons and permissible

Northwest Power Act, the National Marine Fishery Service's ("NMFS") Biological Opinions ("BiOps"), and state fisheries' and tribal attempts to protect salmon stocks have failed.[18] In fact, several of the NMFS' BiOps, which aimed to rectify the salmon situation, have been challenged as violations of the ESA.[19] While these legal battles are fought in the courtroom, there is no reprieve for the salmon; in March 1999, six more species of fish were added to the ESA.[20]

Section II of this Comment outlines the background of the salmon depletion problems in the Snake River.[21] Section III discusses the current state of the salmon.[22] Section IV delineates the many varied alternatives available to rectify the depleted state of the Snake River salmon.[23] Finally, Section V argues that there is really only one solution left to save the salmon.[24]

Critics have attacked the federal government for its repeated failure to take effective action to regulate fisheries.[25] This indo-

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fishing gear in late nineteenth century). To circumvent restrictions on fishing seasons enacted by the California State Board of Fish Commissioners, "[a]s soon as the 1875 season closure became law, salmon fishers set up camps . . . and salted their catches there during the closed season . . . . Fishers posted lookouts . . . to signal with fire or with gunshots the approach of a suspicious-looking boat." *Id.*

18. *See* Swisher, *supra* note 8, at 3C. Today, twelve Columbia River Basin species are listed as threatened or endangered. *See Federal Caucus, supra* note 9, at 1-2 (providing background of problem in Columbia River Basin). The first two were listed in 1991. *See id.* For further discussion of the Northwest Power Act's attempts to prevent ESA listings, *see infra* notes 102 through 124 and accompanying text. For further discussion of NMFS Biological Opinions, *see infra* notes 125-45 and accompanying text.

19. *See* Blumm et al., *supra* note 1, at 1002 n.12 (discussing genesis of first NMFS Biological Opinions in 1995).

20. *See* NATIONAL MARINE FISHERIES SERVICE NORTHWEST REGION, *The ESA Proposed 4(d) Rules for Pacific Salmon*, (discussing newly proposed regulations to protect fourteen threatened species), *available at* <http://www.nwr.noaa.gov/1salmon/salmesa/pubs/fs4drule.htm> (last visited Mar. 17, 2000); *see also Draft EIS, supra* note 1, at *Defining the Problem* (discussing National Marine Fisheries Service's listing of six additional anadromous fish in Pacific Northwest in 1999). The Corps notes that although a number of improvements have been made in the last few decades, the salmon and steelhead populations in the region continue to decline. *See id.*

21. *See infra* notes 22 - 56 and accompanying text.

22. *See infra* notes 57 – 157 and accompanying text.

23. *See infra* notes 158 – 273 and accompanying text.

24. *See infra* notes 274 – 334 and accompanying text.

25. *See* THE FISHERMAN'S PROBLEM, *supra* note 1, at 174 (stating that taking responsibility for fish resource depletion is like political version of "tragedy of the commons"). The theory is that neither unions, trade organizations, nor the government can afford the political cost of defending a situation for which they share responsibility with a number of other bodies. *See id.*

One commentator attacks the Magnuson Act for its failure to prevent fish depletion because the Act fails to change the common property nature of fisheries. *See* Davis, *supra* note 4, at 268. Any viable solution to fish depletion must address

lence serves as the background for the current controversy surrounding the depletion of salmon in the Snake River and for proposed solutions to the problem.[26]

II. THE INDIAN TREATY RIGHT TO FISH

Native Americans have long understood the importance of fish to their diets and recognized that the preservation of fish resources would require careful planning and attention.[27] Unlike modern fishers, many Native American communities demonstrated that they could exert considerable pressure on a resource while sustaining a constant yield for centuries.[28] During the mid-nineteenth

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the common resource problem. *See id.* at 305. One solution would be to assign each fisherman an individually transferable quota ("ITQ") rather than employ restrictions such as limited entry, shortened fishing seasons, and technological restrictions which do not address the lack of property rights in fisheries. *See id.* An ITQ defeats the tragedy of the commons problem by assigning each ITQ holder a defined quantity of fish which he may harvest. *See id.*

The Magnuson Act of 1976 sets forth Congress' findings, purposes, and policy for fishery conservation and management. *See* 16 U.S.C. § 1801. The Act "establishes exclusive United States authority over virtually all marine resources within 200 miles of United States shores." Davis, *supra* note 5, at 285. The Act also "provides regional councils with the tools and authority to regulate fisheries and to enforce optimum yield calculations." *Id.* at 313. The Act has also been attacked for its failure to eliminate over-fishing because it erroneously identifies foreign fishers as the heart of the over-fishing problem, rather than properly identifying the common nature of fisheries as the problem. *See id.* at 298.

26. See *infra* notes 73-92, 102-61, and accompanying text.

27. *See* THE FISHERMAN'S PROBLEM, *supra* note 1, at 19-21 (stating Indians recognized hunting and gathering techniques could strain their resources enough to damage them, and different Indian communities met conservation problem with varying degrees of success). Historical records reveal that over time, Indians learned how to adjust their fishing techniques so as to balance their harvest with their community's needs. *See id.* at 21. Some Indian communities even adjusted their use of resources so as to stabilize stocks. *See id.* This measure of cooperation and self-restraint separated Indian communities from Westerners. *See id.*

28. *See id.* at 23. Evidence suggests that the Indians controlled their fish intake in various ways. First, the Indians limited their fish harvests by adjusting their diets so that fish made up a small but reliable portion of a varied seasonal diet. *See id.* at 21. In communities where fish played a more substantial role in the economy, Indians circumscribed their harvests through complex systems of legal rights and religious observances. *See id.* Population control was a substantial social tool by which Indian communities limited fish harvests; while "positive" checks on population such as war and famine were not significant in the lives of California tribes, "[i]nfanticide, abortion, taboos on intercourse during lactation, meaningful social roles for celibates, and other deliberate controls on human fertility," however, were significant checks on population for aboriginal Californians. *Id.* at 29-30. Some tribes even resorted to tactics including contraception and geronticide, as well as a systematic removal of twins, defective infants, and infants of deceased mothers. *See id.* at 30.

Conversely, Westerners not only failed to take steps to limit their harvests, but rather over-harvested, and in 1880, threw 9,000 dead salmon back into the water because no one would purchase them. *See id.* at 80.

century, one of the American Indians' most pressing concerns when deciding whether to enter into treaties with the federal government was the preservation of their fishing rights on lands ceded to the federal government.[29] These treaties granted sovereign immunity to the Tribes and almost entirely exempted them from government regulation.[30] The same treaties would later cause problems for regulatory agencies seeking to enact laws aimed at restoring salmon populations.[31]

For the past 150 years, courts have attempted to balance Indian fishing rights against the rights of the surrounding communities.[32] First, courts defined the nature of the Indian treaty right to fish.[33] In *Sohappy v. Smith*,[34] the United States District Court for the District of Oregon held that Indians have fishing rights superior to those of other citizens.[35] The *Sohappy* court further noted that Indians are entitled to take their fair share of fish along with commercial and recreational fishers.[36] In *United States v. Washington*

29. *See* Michael Mirande, *Sustainable Natural Resource Development, Legal Dispute, and Indigenous Peoples: Problem-Solving Across Cultures*, 11 TUL. ENVTL. L.J. 33, 40 (1997). In the 1850s, many tribes found themselves in the path of U.S. expansion into the Pacific Northwest. *See id.* In order to facilitate settlement of the territory, the federal government recognized the aboriginal tribes as "sovereign entities possessing 'Indian title' to their aboriginal lands" and began to enter into treaties with the Indians. *Id.* A typical treaty stated that "'[t]he exclusive right of taking fish in all the streams where running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places in common with citizens of the Territory.'" *Id.* (quoting "Treaty with the Nez Perces," 12 STAT. 957 (1855)).

30. *See* Bob Mottram, *New Fishing Rules Try to Protect Sea Birds; State Seeks to Address Problem of Birds Getting Entangled in Gillnets - But Tribes and Canadians Have Yet to Change*, THE NEWS TRIBUNE (Tacoma, WA), September 1, 1997, at B1 (stating that federal court rulings that designate treaty tribes co-managers of fisheries allow tribes to "set their own fishing seasons, fishing areas, equipment regulations and other rules."). Thus, since tribes play by different rules due to their sovereign status, agencies cannot force the tribes to abide by various regulations. *Id.* A tribe may be regulated only when the regulation is aimed at conservation. *See* United States v. Washington, 384 F. Supp. 312, 333 (1974) (stating that state has police power to regulate off-reservation fishing by Indians only when reasonable and necessary for conservation of resources).

31. *See id.*

32. For a discussion of court holdings on Indian fishing rights, see *supra* notes 15-27 and accompanying text.

33. For a discussion of court holdings on interfering with Indian water and fishing rights, see *supra* notes 16-24 and accompanying text.

34. 302 F. Supp. 899 (D. Or. 1969).

35. *See id.* at 903 (stating that wording common to all Indian treaties, that they have treaty right "of taking fish at all usual and accustomed places" on Columbia River, secures to tribes right to their fair share along with commercial and recreational fishers).

36. *See id.* (noting that treaty right to fish secures minimum portion of fish necessary to provide for tribes' accustomed intake; it is not merely same right to

(*Washington Phase I*),[37] the United States District Court for the Western District of Washington reserved up to fifty percent of the harvestable fish, passing though the tribes' usual fishing grounds, solely for the Indians.[38]

Second, courts defined the scope of the Indian treaty right to fish, holding that Indians are entitled to enjoin activities that interfere with their treaty rights.[39] In *Winters v. United States*,[40] the United States Supreme Court granted the Indians of the Fort Belknap Indian Reservation an injunction enjoining a diversion of the Milk River waters.[41] Pursuant to an agreement dated May, 1888, the federal government created a reservation on arid land that lacked irrigation.[42] The *Winters* court found that, based on these facts, it is implausible that the Indians intended to cede access to irrigation.[43] Later, the United States Supreme Court held in *United States v. Washington* (*Washington Phase II*)[44] that Indians have the right to protect their fisheries from despoliation by timber companies, hydroelectric development, and irrigation projects.[45]

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fish given to all other citizens). Although the state argued that the treaty right to fish affords the tribes merely the same right to take fish as afforded to all citizens, the court emphasized that the state's theory is unreasonable since it would make the treaties worthless. *See id.* at 904-05.

37. 384 F. Supp. 312 (1974).

38. *See id.* at 343.

39. For a discussion of court holdings on interfering with Indian water and fishing rights, see *supra* notes 16-24 and accompanying text.

40. 207 U.S. 564 (1908).

41. *See id.* at 565 (stating that United States is enjoined from constructing or maintaining dams or reservoirs on Milk River in state of Montana, and from preventing water from river or its tributaries from flowing to reservation).

42. *See id.* at 576.

43. *See id.* (stating that when presented with two possible conclusions, Indians either intended to give up their rights to irrigation or did not; by rule of interpretation of agreements and treaties, ambiguities will be resolved from standpoint of Indians). It is unlikely that the Indians intended to defeat the purpose of their 1888 agreement by relinquishing their rights to the Milk River. *See id.* at 577. It would be absurd to believe that shortly after creating the reservation, Congress intended to leave the reservation a barren waste and to take from the Indians any means of continuing their old habits or of creating new ones. *See id.*

44. 506 F. Supp. 187 (W.D. Wash. 1980).

45. *See id.* at 203. The court stated that:

> implicitly incorporated in the treaties' fishing clause is the right to have the fishery habitat protected from man-made despoliation. The Indians understood, and were led by Governor Stevens to believe, that the treaties entitled them to continue fishing in perpetuity and that the settlers would not qualify, restrict, or interfere with their right to take fish.

Id. at 203. It is well-established that the treaty negotiators assured the Indians that they could continue their fishing activities notwithstanding the changes that the impending western expansion would entail. *See id.* at 204. The court stressed that were this not the rule, the Indians' treaty:

Despite these protections, the courts have thus far limited damages for infringement on the Indian treaty right to fish to specific relief.[46] For example, the United States District Court for the District of Idaho held in *Nez Perce Tribe v. Idaho Power Co.*[47] that monetary damages were not available to the Indians for the power company's interference with fish runs because the tribe possessed only a treaty right to catch available fish, and not an ownership interest in the fish.[48]

In addition to entitlement to their fair share of fish and to injunctive relief against despoliation, tribes also received protection from excessive government regulation of their fishing rights.[49] A regulation is valid only if it is necessary for the conservation of fish, does not discriminate against Tribes, and meets the appropriate standards.[50]

> right to take fish would eventually be reduced to the right to dip one's net into the water . . . and bring it out empty. Such result would render nugatory the nine-year effort in Phase I . . . to enforce the treaties' reservation to the tribes of a sufficient quantity of fish to meet their fair needs.

Id. at 203; *see also* Muckleshoot Indian Tribe v. Hall, 698 F. Supp. 1504, 1504-05 (1988) (stating that tribes are entitled to preliminary injunction enjoining construction of 1200-slip marina because construction of marina would eliminate portion of tribes' usual and accustomed fishing areas, thus interfering with their treaty right to fish). The Bureau of Indian Affairs argued, and the court agreed, that "'[b]y authorizing a loss of a portion of a usual and accustomed fishing area, the Corps would be destroying treaty fishing rights at that particular portion of the fishing area.'" *Id.* at 1508 (quoting Hickey Declaration, Ex. 15). The court also predicted that the tribes would win on the merits based on the fact that the construction of the marina infringed on their property right to take fish at all accustomed places, a right which may only be taken away by act of Congress. *See id.* at 1511.

46. *See* Nez Perce Tribe v. Idaho Power Co., 847 F. Supp. 791, 819 (D. Idaho 1994) (stating that no monetary damages are available for diminished salmon runs).

47. *See id.* (stating that monetary damages are not available for interference with fish runs).

48. *See id.* The power company's construction and maintenance of three dams on the Snake River in Washington State had a negative effect on the salmon runs. *See id.*

49. *See* Sohappy v Smith, 302 F. Supp. 899, 907 (D. Or. 1969) (stating that such protections are based on Indians' federal treaty right).

50. *See id.* (citing Puyallup Tribe et al. v. Dep't. of Game et al., 391 U.S. 392 (1968)).

Tribes are often immune from state regulation because of their treaty status.[51] In *United States v. Wilson*,[52] the United States District Court for the Northern District of California held that the Department of the Interior's regulation suspending all commercial fishing on the Klamath River for six years was a substantial infringement on the Indians' federally-reserved right to take fish for commercial purposes.[53] The *Wilson* court thus confirmed that tribes are immune to regulation when the regulation falls short of a conservation measure intended to protect a species from depletion.[54]

Because treaties are the law of the land, the federal government owes a "trust responsibility" to all native peoples. This trust responsibility imposes strict fiduciary standards on federal agencies.[55] The federal government's trust responsibility applies to all tribal property, including rights acquired through treaties, such as water rights, fishing and hunting rights, and gathering rights.[56]

Tribal property interests often conflict with the federal government's interests or are overlooked when agencies implement general plans and programs.[57] The near collapse of the Columbia

51. *See* U.S. CONST. art. VI, cl. 2. Article VI, clause 2 of the Constitution of the United States provides,

> This Constitution . . . and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.

Id. Thus, the states are bound by the rights afforded to the tribes in the their treaties with the federal government. *See id.*

52. 611 F. Supp. 813 (N.D. Cal. 1985).

53. *See id.* at 815 (stating that regulation is substantial infringement since fish were not in danger of extinction).

54. *See id.* at 818 (stating that rules of treaty construction apply and that ambiguous expressions in treaties must be construed as Indians would have understood them).

55. *See* U.S. CONST. art. VI, cl. 2 (stating that treaties made under authority of United States are supreme law of land); *see also supra* note 51 for the language of the Supremacy Clause; Mary Christina Wood, *Fulfilling the Executive's Trust Responsibility Toward the Native Nations on Environmental Issues: A Partial Critique of the Clinton Administration's Promises and Performance*, 25 ENVTL. L. 733, 743 (1995) (explaining origin of and duties imposed by federal government's "trust responsibility" to native Americans). The trust responsibility arose as a result of the transfer by conquest, treaty, or congressional or executive order, of native lands to the federal government. *See id.* at 742. Tribal leaders invoke the government's trust responsibility when fighting for protection of their rights, and courts enforce this right. *See id.* at 742-43.

56. *See* Wood, *supra* note 55, at 744; *see also* Fort Mojave Indian Tribe v. United States, 23 Cl. Ct. 417, 426 (1991) (holding treaty water rights constitute trust property that federal government has fiduciary duty to preserve).

57. *See* Wood, *supra* note 55, at 746 (providing examples of conflicting interests faced by federal agencies). Without policies for agencies to follow so that treaty rights and the trust obligation are upheld, tribal property and treaty rights are likely to be violated. *See id.* at 748.

River Basin ecological system "provides an extreme and wrenching example of the tragic results for tribes when agencies carry out their general statutory mandates in disregard of their trust responsibility."[58] For the first time since tribal people inhabited the Columbia River Basin, fish populations are insufficient to support basic cultural needs.[59]

Before Congress approves a plan to protect salmon to the Snake River, it must first uphold the government's trust obligation and ensure that the plan does not abrogate the Indians' treaty right to fish.[60] At the same time, Congress must also ensure that it does not abrogate the treaty right to fish through inaction and indecision, resulting in the extinction of additional salmon stocks.[61]

III. CURRENT STATE OF NATIVE SALMON SPECIES AND RECOVERY ACTIVITIES IN THE COLUMBIA RIVER BASIN

A. Current State of Salmon in the Snake River

Depressed fish populations in the Columbia River Basin have devastated both American Indians and commercial fishermen.[62] In

58. *Id.* at 748 (discussing NMFS's implementation of Endangered Species Act in Columbia River Basin).

59. *See id.* at 741. Courts have held that the trust obligation overrides other interests competing for resources. *See id.* at 746; *see also* Klamath Water Users Protective Ass'n v. Patterson, 204 F.3d 1206, 1213 (9th Cir. 1999) (noting that Indian treaty water rights are superior to irrigators' contractual water rights). Congress may, however, abrogate treaty rights in some limited instances. *See* United States v. Dion, 476 U.S. 734, 738-39 (1986) (recognizing congressional right to abrogate treaty rights if necessary in interest of United States and Indians themselves). In that case, a member of the Yankton Sioux Tribe was convicted of shooting four bald eagles in violation of the ESA. *See id.* at 735. The Eighth Circuit Court of Appeals reversed the conviction under the ESA because the tribe had a treaty right to hunt bald and golden eagles on the reservation for noncommercial purposes. *See id.* at 736. The Court held that congressional intent to preserve the bald and golden eagles was inconsistent with the Indian right to hunt them, and that the Eagle Protection Act and the Endangered Species Act, which contain similar provisions, abrogated the treaty right to hunt the birds. *See id.* at 745-46. The Court recognized, however, that "Congress' intention to abrogate Indian treaty rights [must] be clear and plain." *Id.* at 738. There must be explicit statutory language, and courts have been "extremely reluctant" to find that Congress has abrogated treaty rights. *See id.* at 739.

60. *See* Wood, *supra* note 55, at 748 (discussing difficulty of blending statutory duties of federal agencies with unique trust obligation owed tribes at level of program implementation).

61. *See* Blumm et al., *supra* note 1, at 1051 (discussing failure of existing method of preserving salmon runs to stop decline of species).

62. *See* Sam Howe Verhovek, *Returning River to Salmon, and Man to the Drawing Board*, N.Y. TIMES, Sept. 26, 1999, § 1, at 1 (commenting on passion of environmental groups, Indian tribes, and commercial fishermen to take radical steps to save salmon). Those groups hope to some day be able to "catch a healthy run of Idaho-born fish in their waters," while farmers and others in the region are "bitterly op-

the past, approximately ten to sixteen million salmon and steelhead returned to spawn in the Columbia River Basin each year.[63] Currently, however, only one million return to the basin each year.[64] Before the development of the federal hydropower system, the Columbia River supported over 200 anadromous stocks.[65] Currently, approximately sixty percent of the anadromous salmonid stocks in the Columbia River Basin are listed as depressed, threatened, or endangered.[66] Roughly sixty-five native stocks have already been completely destroyed.[67] Many of the fish that currently return to the Basin originate from hatcheries and not from the wild.[68] The NMFS has listed twelve Evolutionarily Significant Units ("ESUs")[69] as threatened or endangered under the ESA.[70] Of those twelve species, four are Snake River species.[71] These include the spring/summer chinook, the fall chinook, the steelhead, and the sockeye.[72]

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posed" to the idea of breaching the dams which are necessary for both shipping and electricity. *See id.*

63. *See* Federal Caucus, *supra* note 9, at 1 (noting drastic fish depletion in Pacific Northwest region). "The decimation of what was once the world's largest salmon runs has occurred rapidly as a result of the massive industrialization and dam-building that accompanied non-Indian settlement of the region." Wood, *supra* note 55, at 741.

64. *See id.*

65. *See* Independent Scientific Group, *Return to the River: Prepublication Copy*, at 3 (Sept. 10, 1996) [hereinafter *Return to the River*] (discussing effects of hydropower system on fish stocks).

66. *See* Federal Caucus, *supra* note 9, at 14 (discussing decline of salmonids in Columbia River Basin). "Salmonids" are salmon, trout, steelhead, whitefish, and other members of the family salmonidae. *See id.*

67. *See id.* (discussing that many populations appear stable but are actually composed mostly of young fish, grown in artificial hatcheries).

68. *See id.* at 14-15 (discussing status of species in Basin).

69. *See id.* at 1 (discussing effect of decline in salmon population). The U.S. Fish and Wildlife Service has also listed salmon "ESU's" as threatened or endangered under the ESA. *See id.* An Evolutionarily Significant Unit, or "ESU", is "a population or group of populations that is considered distinct for purposes of conservation under the ESA." *See id.* For the purposes of this comment, the term "species" will be used in place of "ESUs."

70. *See id.* at 15 (listing anadromous species status in Columbia River Basin). There are four Chinook salmon ESUs listed as threatened, and one listed as endangered; one Chum salmon ESU listed as threatened; one Sockeye salmon ESU listed as endangered; and five Steelhead ESUs listed as threatened or endangered. *See id.* A Coho salmon ESU has been identified as a candidate for ESU listing, and the NMFS has proposed one ESU of Cutthroat Trout for listing as threatened under the ESA. *See id.*

71. *See* Federal Caucus, *supra* note 9, at 15 (providing locations of listed ESUs within Basin).

72. *See id.*; *see also Return to the River*, *supra* note 65, at 3 (identifying extinct and threatened salmon species).

The NMFS has listed other aquatic species as threatened or endangered under the ESA as well.[73]

In addition to over-fishing and urban development, the steady decline of fish in the Pacific Northwest is attributable to logging, agriculture, recreation, and shipping.[74] The hydropower system, however, causes the greatest impact on the area, accounting for eighty percent of the salmon decline and "greatly diminish[ing] the diversity of [a] habitat once characteristic of [the] watershed."[75]

B. Hydropower System Effects on Fish

"Dams kill salmon."[76] Two dams in the Columbia River Basin, the Grand Coulee Dam on the Columbia River, and the Hells Canyon Complex on the Snake River, have blocked off over half of the salmon's historic upriver spawning areas.[77] Dams that do not completely block upriver spawning areas still present unusually large barriers that obstruct the salmon's paths.[78]

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73. *See* Federal Caucus, *supra* note 9, at 15-16 (discussing cutthroat trout, bull trout, Kootenai River White Sturgeon, and other Snake River Aquatic Species).

74. *See* Northwest Power Planning Council, *The Year of the Decision; Renewing the Northwest Power Planning Council's Fish and Wildlife Program*, at 3 (discussing issues facing northwest region), *available at* <http://www.nwppc.org/yod_toc.htm> (last visited Mar. 27, 2000) [hereinafter *The Year of the Decision*]. The Council states that the issues facing the region and the fish and wildlife are complex and emotional. *See id.* "[T]he things that pose a threat to the survival of our fish and wildlife also make important contributions to our quality of life . . . [and] helped transform the Pacific Northwest into the vital, dynamic place it is today." *Id.*

75. *Return to the River*, *supra* note 65, at v (discussing effects of dams on Columbia River Basin habitat). The dams "severed the continuum of habitat, leaving very little riverine habitat left . . . and isolating other types of habitat." *Id.* Two key consequences of dam construction is the "reduction in the biodiversity of native salmon stocks and the proliferation of non-native species." *Id.*; *see also* Bender, *supra* note 12, at 192 (discussing effects of dams on salmon populations). As a result of hydropower development, salmon populations in the region have been in decline since the dam building era began. *See id.*; *see also* Wood, *supra* note 55, at 741 (noting destruction of what was world's most abundant salmon resource caused by non-Indian industrialization and dam-building).

76. *Return to the River*, *supra* note 65, at v (discussing effects of dams on salmon populations).

77. *See* Federal Caucus, *supra* note 9, at 66 (discussing profound effects of hydropower development on Basin's fish). Smaller dams on the Basin's tributaries have blocked off additional spawning areas. *See id.* Numerous other impassable dams proliferate the Pacific Northwest, including the Condit Dam in Washington state, and the Elwha and Glines Canyon Dams on the Olympic Peninsula of Washington. *See* Bender, *supra* note 12, at 193 n.8 (providing examples of impassable dams).

78. *See Draft EIS*, *supra* note 1, at *How Fish Currently Pass the Dams* (noting dams as larger obstacle than any other encountered by fish).

Except for the time spent in ocean habitat, the hydropower system affects every life stage of the Columbia River Basin's fish.[79] Depending on hydropower demand, the system reduces river flows and alters flow timing.[80] As more water is stored in reservoirs, the amount of flow decreases.[81] Decreased Spring and Summer flows severely impact the Spring and Summer migration seasons.[82]

Changes in river flow rates also affect river temperature making fish more susceptible to disease.[83] The decreased flow and the increase in the width and the depth of the rivers at reservoirs affect river velocity, turbidity, and temperature. Travel time is thus increased, which in turn exposes fish to predators and lengthens migration times.[84]

Finally, the physical aspects of the lower Snake River dams block and kill fish.[85] The height difference between the river on one side and the reservoir on the other side is approximately one-hundred feet, making it nearly impossible for fish to traverse the dams without some artificial aid.[86] Juvenile fish do not use fish ladders to traverse the dams but must travel through bypass systems, turbines, or over spillways.[87] Juvenile fish that enter powerhouse intakes may be affected by pressure changes and turbulent water conditions and may experience trauma from striking the machinery.[88] After passing through dams, many juvenile fish suffer "indirect mortality" as a result of injury or stress from dam passage.[89] Fish that successfully traverse over spillways may incur injuries from the fall and may be harmed by the dissolved gases in the water.[90]

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79. *See* Federal Caucus, *supra* note 9, at 66 (discussing hydropower contributions to fish population decline).

80. *See id.* (discussing changes in river water patterns as result of different flow patterns needed for hydropower generation).

81. *See id.* (noting that by 1979, total storage capacity had reached nearly forty percent of Columbia River's annual average discharge).

82. *See id.* at 66-67 (discussing effect of seasonal storage of water).

83. *See id.* at 67 (discussing effect of altered flow conditions).

84. *See* Federal Caucus, *supra* note 9, at 67. Temperature changes in reservoirs also provide more ideal habitats for salmon predators. *See id.*

85. *See id.* (discussing how dams themselves physically block and delay fish migration).

86. *See Draft EIS*, supra note 1, at *How Fish Currently Pass the Dams* (noting physical characteristics of dams that are barriers to fish).

87. *See id.* (noting difference between adult and juvenile dam passage).

88. *See id.* (discussing effects of traveling through turbines on fish).

89. *See* Federal Caucus, *supra* note 9, at 67 (discussing dam contribution to fish decline).

90. *See id.*

These fish are also more visible to predators because of the turbulence below the spillways.[91]

The four lower Snake River dams are multi-use dams that provide hydropower, irrigation, and navigation.[92] Each dam provides fish passage facilities, wildlife habitat areas, and developed recreation areas.[93] The Corps provides transportation facilities at the dams and is currently investigating several new technological developments for improving juvenile fish passage at the dams.[94]

C. Past Attempts to Increase Native Salmon Populations

1. Ineffective Programs and Lack of Coordinated Effort

Many configuring and operational methods currently exist to enhance the survival rate of juvenile anadromous fish passage. These methods include: (1) increasing river flow in order to restore more natural flow patterns during times of juvenile and adult salmon migration; (2) spill; (3) juvenile transportation by barge and truck around dam sites; (4) minimum operating pools; (5) peak turbine efficiency guidelines; (6) bypass systems; and (7) a predator control program.[95]

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91. *See Draft EIS*, supra note 1, at *How Fish Currently Pass the Dams* (discussing effects of spillways on fish traveling over them).

92. *See id.* at *The Four Dams* (discussing utility of dams).

93. *See id.* (discussing characteristics of each lower Snake River dam).

94. *See id.* The Corps is looking at new surface bypass collectors, behavioral guidance structures (which aim to keep juvenile fish near the surface of the water and direct them to bypass structures and spillways rather than turbines), improvements to turbines (such as using smoother materials for turbines and changing operational efficiency), reduction of total dissolved gases (which can form bubbles in fish, injuring or killing them), and spillway flow detectors. *See id.*

95. *See generally* Bonneville Power Administration et al., *Multi-Species Biological Assessment of the Federal Columbia River Power System*, (December 21, 1999) (discussing hydropower system operational and configurational measures currently in place for benefit of listed species in Columbia River Basin); *see also* Federal Caucus, *supra* note 9, at 5 (listing dam operational and configurational effects on fish).

"Spill" allows fish to pass over dams without traveling through the turbines, and is thus used to decrease mortality of fish. *See* Bonneville Power Admin. et al., at 2-9. The amount of "spill" is the amount of water that flows over the dam and not through the turbines used to create power. Several dams have 24-hour spills, while others only have 6:00pm to 6:00am spills. *See id.* at 2-10, table 2-2.

Juvenile transportation programs also protect salmon from dam turbines. The fish are collected at specific dam sites and are transported by truck or barge downstream. *See id.* at 2-10.

Minimum operating pools are low reservoir levels that increase water velocity through reservoirs and dams, thus increasing salmon migration time and survival rates. *See id.* at 2-11. Operating at minimum pool levels directly conflicts with keeping high reservoir levels for power and irrigation needs. For example, at the John Day Dam on the Columbia River, the pool level is raised if irrigation pumping problems occur. *See id.*

Since the early 1980s, agencies have discussed the above methods and explored ways to improve them.[96] The onslaught of these programs began with the passing of the Northwest Power Act, which made the plight of the Pacific salmon and other anadromous fish a national environmental issue.[97] Despite the creation of the Northwest Power Act, minimal progress has been made to prevent further degradation of habitats or to restore natural fish and wildlife populations.[98] Sadly, fish in the Columbia River Basin continue to be listed as threatened and endangered under the ESA.[99]

Countervailing interests in the Pacific Northwest have spawned "[c]ountless programs . . . to maintain current uses of the river, change current uses of the river, exploit natural resources and conserve natural resources."[100] This is because the United States, including nine federal agencies, five states, Canada, and fourteen Tribes all share authority over fish and fish habitats in the Pacific

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Peak turbine efficiency guidelines help reduce fish mortality by requiring dam turbine operation at high efficiency, not maximum operation. *See id.* at 2-12.

Fish bypass systems include a variety of methods, such as screened turbine intakes with collection/bypass facilities, sluiceways (ice and trash), transportation (as previously discussed) and spill (as previously discussed). *See id.* Screened turbine intakes with collection/bypass facilities, and sluiceways are devices that prevent the fish from going through the turbines, with the hope of reducing fish mortality as a result of passing through the dam machinery. *See id.*

Predator control programs are designed to lessen the effects of predation on salmon. *See id.* at 2-13. Predators have flourished due to the reservoirs that provide habitat. Also, more juvenile salmon are subject to predation because of concentration of the fish after release from salmon hatcheries, fish congregation in reservoirs before passing through the dams, and congregation after passage through the dams. *See id.* Examples of predator programs include sport-reward fishery, designed to reward the harvest of predators, and site-specific fisheries in "problem areas", designed to encourage catching the predators around dams, and at hatchery release sites. *See id.* at 2-14. Relocation of hatcheries from areas prone to attract predators also works to decrease the effects of predation on juvenile salmon. *See id.*

96. See *infra* notes 102-45 and accompanying text.

97. *See Return to the River, supra* note 65, at 9-10, table 1.1 (listing eight recovery and enhancement plans created since 1990).

98. *See* Northwest Fisheries Service Council et al., *White Paper: Passage of Juvenile and Adult Salmonids Past Columbia and Snake River Dams*, (April 2000), at 1 (discussing history of recovery plans and strategies in pacific northwest). Throughout six decades, numerous structural configurations and operational strategies have been tested to improve survival of juvenile and adult salmonids passing through the Federal Columbia River Power System. *See id.*

99. See *supra* notes 65-68 and accompanying text; *see also Return to the River, supra* note 65, at 5-6 (discussing decades of failed efforts to curb diminishing fish populations).

100. Federal Caucus, *supra* note 9, at 20 (discussing Basin in institutional and regulatory context).

Northwest.[101] Several of these authorities recognize that the decline in fish stocks is the result of a lack of unified programs and coordination between groups to develop a regional recovery plan.[102] Although agencies, organizations, and other interested parties in the Pacific Northwest expend tremendous effort to develop a regional recovery plan, their fragmented research and conflicting perspectives have created a recovery "paralysis."[103]

a. The Columbia Basin Fish and Wildlife Program

In 1982, the Pacific Northwest Electric Power and Conservation Planning Council ("Pacific NW Council") promulgated the Columbia Basin Fish and Wildlife Program.[104] The Columbia Basin Fish and Wildlife Program in the past has had little or no success in improving the state of anadromous fish in the Columbia River Basin.[105] Pursuant to the Northwest Power Act, Congress directed the Pacific NW Council to request and obtain recommendations from state and regional fish and wildlife agencies, Indian tribes, power interests, and the general public.[106] Accordingly, the Pacific NW Council formed a Fishery Coalition ("Coalition") that proposed over two-hundred pages of recommendations to enhance the sur-

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101. *See id.* (noting laws, treaties, and regulations promulgated by governments and organizations that affect fish and wildlife in Basin).

102. *See id.* (discussing lack of coordination as cause of fish decline); *see also* Blumm et al., *supra* note 1, at 1009 (discussing divergent opinions on how to address salmon recovery problem). According to Blumm, "everyone" has agreed that the status quo is an unacceptable approach to the problem. *See id.*

103. *See The Year of the Decision*, *supra* note 68, at 3. The Council has recognized that problems have arisen as a result of agencies' divergent efforts. *See id.*; *see also Return to the River*, *supra* note 65, at 9, table 1.1 (providing table of recent plans and analyses of recent salmon population decline in Columbia River Basin). Eight reports or plans have been created since 1990. *See id.*

104. *See* Northwest Resource Info. Ctr., Inc. v. Northwest Power Planning Council, 35 F.3d 1371 (9th Cir. 1994)(discussing Council's efforts to create program under Northwest Power Act). The Council was established by Congress under the Northwest Power Act to guide the development and implementation of a remedial program that balances hydropower and the Columbia River Basin's fish and wildlife, essentially making fish and wildlife a "'co-equal partner' with the hydropower industry." *Id.* at 1378.

105. *See* Michael C. Blumm and Andy Simrin, *Article: The Northwest Power Act: Point & Counterpoint: The Unraveling of the Parity Promise: Hydropower, Salmon, and Endangered Species in the Columbia River*, 21 ENVTL. L. 657, 661 (Spring 1991) (noting failed Northwest Power Act attempts to prevent ESA listings). The Fish and Wildlife program created under the Act actually "damaged the fishery resource it was created to protect." *Id.*; *see also supra* notes 97-119 and accompanying text for a discussion of the Columbia Basin Fish and Wildlife Program.

106. *See* Blumm & Simrin, *supra* note 105, at 670 (introducing evolution of Columbia Basin Fish and Wildlife Program).

vival rate of juvenile fish.[107] The Coalition's recommendations included minimum flows required for survival, installation of juvenile bypass systems, and installation of interim spills at dams until bypass systems could be put in place.[108] One of the Coalition's main goals was the restoration of the Columbia River anadromous fish runs to levels that existed before the construction of the McNary Dam on the Columbia River in 1953.[109] The majority of the Coalition's recommendations focused on river flows.[110] The Coalition recommended month-by-month minimum flows at specific dams with a "sliding scale" plan which would accommodate hydropower, fish, and other needs in times of both low and high flows.[111]

Instead of adopting the Coalition's river flow recommendations, however, the Pacific NW Council created its own "Water Budget" based on its calculations and estimates of river flows and peak fish migration time.[112] Unfortunately, the Water Budget's shortcomings seriously affected many fish runs in the Columbia River Basin and, consequently, added additional fish to the ESA.[113] Disagreements between Water Budget managers and the Corps are credited for the Water Budget's failure to provide adequate flows for fish.[114] The parties disagreed about how to operate the dams, how to account for water use, and how to run the dams without

107. *See id.* at 670 (discussing creation of fishery coalition). The coalition was comprised of federal and state fish and wildlife agencies and Indian tribes. *See id.*

108. *See id.* at 671 (discussing 1981 coalition recommendations to Council). The coalition recognized, as early as 1981, that the dams had affected fish migration time, which in turn had significantly increased mortality. *See id.* It recommended certain river flows necessary for survival. *See id.*

109. *See id.* at 672. Although the McNary Dam was not the first dam built, the coalition compromised in order to minimize costs, and chose a population goal (the population prior to McNary Dam construction) that was more economically reasonable. *See id.* at 673 n.72.

110. *See id.* at 671-72.

111. *See* Blumm & Simrin, *supra* note 105, at 671-72 (discussing coalitions's flow recommendations). The coalition recommended that peak flows occur in May, and that its "share the wealth/share the shortage" plan would reduce specified flows by 25 percent in low flow years (to accommodate hydropower and other needs), and by 15 to 60 percent in high flow years (to accommodate divergent flow needs of fish, hydropower and other needs). *See id.*

112. *See id.* at 675 (discussing Council's adoption of Water Budget instead of coalition's proposals).

113. *See id.* at 676-77 (outlining problems with Water Budget resulting in fish runs later considered for protection under ESA). The Council's program not only failed with respect to the Water Budget, but also failed to set a deadline for installing bypass systems on the Corps of Engineers' dams throughout the Basin, and failed to set minimum interim spill rates (as were included in the coalition's recommendations). *See id.* at 677-78.

114. *See id.* at 689-90 (discussing Water Budget failure in light of later amendments to 1982 Program and attempts to improve fish flows).

violating the Columbia Program by giving water flow priority to energy sales and refilling reservoirs rather than to budget flows.[115]

The resulting 1982 Program, which studied fish losses from hydropower development and operations, proposed a mechanical bypass system to improve juvenile fish passage and the Water Budget, and to set goals for fish populations.[116] Four years later, however, those goals remained undefined.[117] Despite a series of amendments throughout the 1980s, the salmon and steelhead populations continued to decline.[118]

Finally, in 1989, the Bonneville Power Authority, regional fishery agencies, and Indian tribes signed a ten-year Fish Spill Memo-

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115. *See id.*

116. *See Northwest Resource Info. Ctr., Inc. v. Northwest Power Planning Council*, 35 F.3d 1371, 1380 (9th Cir. 1994) (discussing creation of 1982 Program).

117. *See id.* (noting lack of defined goals four years after creation of 1982 Program).

118. *See* Blumm & Simrin, *supra* note 105, at 679-98 (discussing five years of repeated attempts to improve the Council's Plan).

The 1984 amendments focused on improving fish passage survival by: (1) installing mechanical bypass systems to keep fish out of dams' turbines, (2) providing spills of water to pass fish around the dams, (3) increasing flows to accelerate fish travel through reservoirs, and (4) transporting fish by barges and trucks around the dams and reservoirs. The amendments also called for new improvements for habitat projects and new hatchery projects. *See id.* at 679-81. The 1985 and 1986 amendments were unscheduled, but were necessitated by the program's deficiencies. *See id.* at 682. In 1986, the Council agreed to review the deficiencies in the Plan's spill provisions, at the request of states and tribes. *See id.* at 683. When presented, however, with a recommendation from state agencies and tribes, the Council rejected it. *See id.*

Ultimately, the 1986 amendment pushed the Army Corps of Engineers, fishery agencies, and tribes to set criteria guaranteeing sufficient spill at certain dams to protect eighty percent of typical downstream migrations. *See id.* at 684. The flaw with the 1986 amendment was that it did not require the different groups to *agree* on a spill program. *See id.* Thus, the program failed to require any coherency between different agencies' attempts to protect the anadromous fish in the Columbia River Basin. *See id.*

In 1987 the Council tried, once again, to improve its Program. The Council continued to reject recommendations of fishery agencies and tribes, believing that it could produce biological results similar to the scientific knowledge and expertise of the fishery agencies and tribes. *See id.* at 689-90. By rejecting the recommendations of fishery agencies and tribes, the Council instead established its own water accounting system, asserting that it would be just as biologically effective as those systems proposed by biologists, and that it would cost less. *See id.* at 690. "The Council thus seemed to have anointed itself a super fish and wildlife agency, in defiance of congressional will." *Id.* Further, its approach to the plan in 1987, like in previous years, was to flatly reject any recommendations that would impose costs on the region's hydroelectric system. *See id.* The Council failed to recognize that increasing spill sizes at dams was critical to increasing the fish run sizes; investing in habitat and hatchery improvements alone would not suffice if the fish continued to perish at the dams. *See id.*

randum of Agreement ("Fish Spill Agreement").[119] The Fish Spill Agreement secured adequate spills, thus resolving one of the shortcomings of the Pacific NW Council's Program.[120] The Pacific NW Council adopted the Fish Spill Agreement even though it was promulgated by the tribes, fishing agencies, and various power interests, and not by the Pacific NW Council itself.[121]

In 1992, the Pacific NW Council adopted a four-phase process to amend the fish and wildlife program.[122] The first three phases are collectively known as the "Strategy for Salmon."[123] The Strategy for Salmon called for immediate and intermediate-term actions, such as "increased river velocities, dam screens, water spills, reduced predation, and downstream barge transportation of juveniles."[124] These actions, however, are no different than those specified in prior versions of the plan.[125] Furthermore, the Ninth Circuit held in *Northwest Resource Information Center v. Northwest Power Planning Commission*[126] that the Pacific NW Council violated section 839b(h)(7) of the Northwest Power Act by failing to explain its basis for rejecting the recommendations of state agencies and tribes in its Columbia Program.[127]

One can make several observations from this brief history of the Pacific NW Council's Fish and Wildlife Program. First, in balancing the interests of hydroelectricity and urban development against fish and wildlife preservation, this federal agency clearly chose the path of least resistance; it chose to accede to the flourishing development in the area and to give little to no deference to

119. *See id.* at 699 (discussing ratification of Spill Agreement). The agreement requires development of an annual spill plan, which would govern spills during the Spring and Summer migration seasons, and be integrated with the agencies' and tribes' smolt monitoring program. *See id.*

120. *See id.* at 700.

121. *See* Northwest Fisheries Service Council et al., *supra* note 91, at 4 (discussing failed efforts to develop comprehensive plan). This plan would help meet the spill operation goals that the agencies and tribes believed were necessary to meet the Program's goals. *See id.*

122. *See id.*

123. *See id.*

124. Northwest Resource Info. Ctr., Inc. v. Northwest Power Planning Council, 35 F.3d 1371, 1382 (9th Cir. 1994).

125. *See* Blumm & Simrin, *supra* note 105, at 679-80 (describing improvements to Council's Plan, which included mechanical bypass systems, increased water spill over dams, increased river flows, and barging and trucking fish).

126. 35 F.3d 1371 (9th Cir. 1994).

127. *See id.* at 1386. The court instructed the Council to comply with § 839b(h)(7) of the Act and provide a written explanation of its deviation from the recommendations and expertise of state agencies and Indian tribes that have unique experience with fish and wildlife. *See id.* at 1386-88.

fish and wildlife specialists. Second, the need for almost annual amendments to the plan signals that operational and mechanical strategies employed to decrease fish mortality at the dams accomplished very little. Third, by ignoring the recommendations of Tribes, the Pacific NW Council effectively cut off any recognition of tribal treaty rights and ignored the government's trust obligation to the Native Americans. Finally, the Pacific NW Council quashed any cooperative efforts between groups and agencies, leading to major criticism of the Pacific NW Counsel and of other salmon recovery efforts in the Pacific Northwest.

With several new comprehensive plans on the horizon and increased national attention on the plight of the aquatic species in the Columbia River Basin, there is hope that the Year 2000 Amendments to the Columbia Program will recognize that new and potentially drastic steps need to be taken in order to improve the fish population within the Columbia Basin.[128]

b. National Marine Fisheries Service Biological Opinions

While Pacific NW Council members battled over spill provisions and transportation strategies under the Northwest Power Act, the NMFS wrote biological opinions ("BiOps") in response to potentially harmful hydroelectric activities under the ESA.[129]

Under § 7 of the Endangered Species Act,[130] agencies must "consult" with the NMFS before pursuing actions that affect endangered species of anadromous fish.[131] NMFS publishes its conclu-

128. *See* Northwest Power Planning Council, *Notice of Request for Recommendations to the Northwest Power Planning Council's Fish and Wildlife Program* (requesting public comments for year 2000 Amendments to Plan), *available at* <http://www.nwppc.org/2000-1.htm> (last visited Mar. 27, 2000).

129. *See generally* Michael C. Blumm & Greg D. Corbin, *Salmon and the Endangered Species Act: Lessons From the Columbia Basin*, 74 WASH. L. REV. 519, 548 (July 1999) (discussing NMFS Biological Opinions of 1990's). Pursuant to the ESA "consultation" requirement, the NMFS and FWS issue biological opinions that determine whether proposed agency actions will have an adverse effect on threatened or endangered species. *See id.* at 548-49. Section 1536(a) of the ESA provides several "consultation" requirements for federal agencies. *See* 16 U.S.C. § 1536(a). For the text of the ESA consultation provisions, see *infra* note 122 to 131.

130. 16 U.S.C. § 1536.

131. *See* 16 U.S.C. § 1536(a) (setting forth required federal agency actions and consultations). Under § 1536(a)(1), "Federal agencies shall, in consultation with and with the assistance of the Secretary [of the Interior], . . . carry out programs for the conservation of endangered species and threatened species . . . ." 16 U.S.C. § 1536(a)(1). Section (a)(2) provides further consultation requirements: "Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure any action authorized, funded, or carried out by such agency [ ] is not likely to jeopardize the continued existence of any endangered species or

sions, as to the effects of agency actions on listed species, in BiOps.[132] NMFS must discuss reasonable and available alternatives to particular agency actions that pose a danger to the listed species.[133] In fulfilling the consultation requirements under the ESA, federal agencies must use the "best scientific and commercial data available."[134]

The first NMFS BiOp was issued in 1992 as a result of the ESA listing of Snake River sockeye and chinook in 1991.[135] This BiOp did not report any damage to the listed fish runs due to hydropower operations because the Columbia Basin Fish and Wildlife Program promised to improve survival rates.[136]

In 1993, the NMFS issued another BiOp that was rejected by a federal district judge in Oregon.[137] In *Idaho Department of Fish & Game v. National Marine Fisheries Service*,[138] Judge Marsh held that the NMFS BiOp was flawed because it focused on:

> relatively small steps, minor improvements and adjustments - when the situation literally cries out for a major overhaul. Instead of looking for what can be done to protect the species from jeopardy, NMFS and the other action

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threatened species . . . ." 16 U.S.C. § 1536(a)(2). Sections (a)(3) and (4) contain additional specific consultation requirements. *See* 16 U.S.C. §§ 1536(a)(3) and (4); *see also* Blumm et al., *supra* note 1, at 1032 (discussing consultation required under ESA and NMFS conclusions made in BiOps); Blumm & Corbin, *supra* note 124, at 548-49 (discussing ESA provisions to protect listed species through consultation process). BiOps provide "the means by which the ESA's principal substantive directives - to avoid species jeopardy or adverse modification to critical habitat - are carried out." Blumm and Corbin at 549. The consultation procedure ensures that the 'best available' science is employed by the NMFS or FWS to evaluate proposed agency actions, rather than delegating the decision making authority to federal agencies that may set in place actions adversely affecting listed species. *See id.*

132. *See* Blumm & Corbin, *supra* note 129, at 548 (introducing consultation procedure and NMFS method of complying by using biological opinions).

133. *See id.* at 549 n.218 (discussing "jeopardy" BiOp which must contain discussion of "reasonable and prudent" alternatives).

134. 16 U.S.C. § 1536(a)(2).

135. *See* Blumm & Corbin, *supra* note 129, at 550.

136. *See id.* at 550 (indicating reliance on alternate programs that would allegedly alleviate danger to salmon living in Basin).

137. *See id.* at 551 (discussing federal district judge's holding that BiOp standard was arbitrary and that NMFS's two-part jeopardy test was flawed).The NMFS's two-step analysis required improved survival rates over a baseline period from 1986 to 1990, and hydropower operations that, "in combination with all other human effects on salmon, were reasonably likely to reduce mortalities so that, in the long-term, salmon populations would stabilize." *Id.* at 550. Idaho and Oregon argued that the BiOp violated the ESA because it was neither "factually accurate nor biologically sound." *Id.* at 551.

138. 850 F. Supp. 886 (D. Or. 1994).

agencies have narrowly focused on what the establishment is capable of handling with minimal disruption.[139]

One major flaw in the 1993 BiOp was NMFS's failure to employ the "best available" scientific information, as required under section 1536(a)(2) of the ESA.[140] The NMFS needed to rely on the scientific research provided by state and tribal fishery biologists, who were more qualified scientists than the scientists associated with the NMFS, to meet the requirement under section 1536(a)(2).[141]

The NMFS next issued the 1994-98 BiOp which called for lowering reservoirs, increasing river flows, and transporting fish by barge and truck to minimize the effects of hydropower operations on fish.[142] While environmental groups staged challenges to the BiOp due to the BiOp's reliance on transportation, the NMFS began drafting the 1995-99 BiOp.[143] In the 1995-99 version, the NMFS recognized for the first time that hydropower operations jeopardized the salmon populations,[144] and that transportation alone would not rebuild the salmon populations.[145] The 1995-99 BiOp called for dropping down lower Snake River reservoirs to near natural river levels and reserving larger volumes of water in Canadian reservoirs to supplement river flows when needed in the Columbia River Basin.[146] The final 1995-99 BiOp, however, ne-

139. *Id.* at 900 (discussing flawed aspects of NMFS BiOp).

140. *See id.* (discussing ESA requirement that agencies use "best available" information from scientists and biologists). Judge Marsh pointed out comments from state agencies, tribes and environmental organizations that committed time, energy, and staff members to generate information pertinent to the BiOp, but were then left out of discussions and conclusions. *See id.*

141. *See id.* Several treaty tribes intervened in the case in support of Idaho and Oregon, including the Confederated Tribes of the Warm Springs Reservation, the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, and the Yakama Indian Nation. *See id.* at 887.

142. *See* Blumm & Corbin, *supra* note 129, at 552-53 (discussing 1994-98 BiOp for hydropower operations).

143. *See id.* at 553. The 1995-99 BiOp revised the 1994-98 version. The NMFS reinitiated consultation on the 1994-98 BiOp, realizing that the BiOp would require revisions in order to withstand environmentalists' challenges. *See id.*

144. *See id.* at 554 (discussing 1995-99 "jeopardy" opinion, NMFS' suggested alternative operations and NMFS' new definition of "jeopardy"). NMFS began to refine its definition of "jeopardy" to distinguish between salmon survival and recovery, recognizing that a high probability of survival does not equal a high probability of recovery. *See id.*

145. *See id.* at 553; *see also Return to the River*, *supra* note 65, at 5 (recognizing that technological methods cannot serve as substitute for lost ecosystem functions).

146. *See* Blumm & Corbin, *supra* note 129, at 553 (noting provisions in drafts for rebuilding salmon populations).

glected to include reservoir storage requirements which are nominally required by agencies to meet seasonal average flow objectives.[147] Instead, the 1995-99 BiOp relied, once again, on transportation as a major component of any survival and recovery program.[148] Nevertheless, the 1995-99 BiOp promised to revisit the transportation issue in 1999 in order to determine whether transportation alone could recover salmon or whether more drastic steps, such as dam breaching, would be necessary.[149]

The NMFS BiOps, like the Pacific NW Council's amended Fish and Wildlife Program, failed to make any drastic proposals that would alter the current operations of the Federal Columbia River Power System. The NMFS BiOps stubbornly adhered to the old methods of fish transportation, spill and flow management, and other bypass configurations. The BiOps also suppressed attempts to consolidate efforts to recover endangered fish and failed to recognize tribal fishing treaties, as well as the federal government's fiduciary duties, to the tribes.[150]

c. Dam Breaching Proposals in the 1990s

Within the last decade, various wildlife, fishing, government, and Tribal groups have recognized that dam breaching may be necessary to save endangered fish.[151] Army Corps of Engineers consul-

147. *See id.* at 554-56.

148. *See id.* The BiOp also set a "dual probability standard" for proposed actions by agencies. *See id.* The BiOp states, "proposed actions must demonstrate a 'high likelihood' of species survival, but only a 'moderate' likelihood of species recovery." *Id.*

149. *See id.* at 556 (discussing promise to revisit transportation issue in 1999). Later BiOps supplemented the 1995 BiOp. *See id.* (discussing later harvest, hatchery, ocean, and land management BiOps); *see also* Federal Caucus, *supra* note 9, at 67-68 (discussing 1995 and 1998 BiOp measures to reduce fish mortality in hydropower corridor). Ultimately, the 1995 and 1998 BiOps provided several key strategies such as flow management to draft water from reservoirs and increase Spring and Summer flows. *See id.* at 67.

150. See *supra* notes 25-56 and accompanying text for a discussion of the government's trust obligations to the tribes. Rejection of the 1993 BiOp in *Idaho Dep't of Fish and Game v. Nat'l Marine Fisheries Serv.*, was based in part on the NMFS' failure to recognize tribal and state biology expert opinions. *See* Idaho Dep't of Fish and Game v. Nat'l Marine Fisheries Serv., 850 F. Supp. 886, 900 (D. Or. 1994) (stating that many of these recommendations have fallen on deaf ears).

151. *See* Blumm et al., *supra* note 1, at 1012 (noting studies by scientific groups that call into question efficacy of truck and barge transportation to save fish); *see also* Barker, *supra* note 13 (quoting Will Stelle, NMFS Regional Director, who recognized that any alternative to save salmon must be based on biology, and that biology points to dam breaching). The Director stated, "[t]he biological information we have is very pessimistic for most stocks over the long term [if dams are not breached]." *Id.*; *see also Endorsement List to Retire Lower Snake River Dams* (listing over 700 organizations and individuals that support breaching four lower

tants called dam breaching, or the "natural river flow alternative," the "'biological option of choice if salmon and ecosystem restoration is the primary goal.'"[152]

Four independent scientific reports prepared by federal and state fishery agencies between 1993 and 1998 acknowledged that the transportation of fish is unlikely to halt or prevent the extinction of salmon species in the Snake River.[153] The documents endorsed natural river flows and recognized that although the existing transportation program may maintain fish at a state of survival, the overall survival rate is not sufficient to recover the salmon species.[154]

An inter-agency group created by the 1995 NMFS BiOp known as The Plan for Analyzing and Testing Hypotheses ("PATH") confirmed, in a Preliminary Decision Analysis Report and Weight of Evidence Workshop, that permanent lowering of the Snake River reservoirs would give the salmon the "best chance of recovery."[155] Similarly, the fishing tribes of the Columbia Basin that were party to

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Snake River dams), *available at* <http://www.taxpayer.net/snake/groups.html> (last visited Mar. 10, 2000).

152. Blumm et al., *supra* note 1, at 1011 (quoting Harza Northwest, Inc., *Final Report: Salmon Decision Analysis: Lower Snake Feasibility Study* 1-16 (1996)).

153. *See id.* at 1012-20 (discussing conclusions of individual plans). Those plans are: 1) The Detailed Fishery Operating Plan, prepared in 1993 by federal and state fishery agencies and treaty Indian tribes through the Columbia Basin Fish and Wildlife Authority; 2) The Independent Peer Review of Transportation, prepared in 1994 by representatives of the NMFS, FWS, state fisheries agencies, and treaty Indian tribes; 3) The National Research Council Report, prepared in 1995 by the Council's Committee on Protection and Management of Anadromous Salmon; and 4) The Idaho Department of Fish and Game Report, issued in 1998. *See id.*

154. *See id.* The Detailed Fishery Operating Plan concluded that transportation was not an adequate substitute for natural river conditions, and could not overcome the depleted river conditions. *See id.* at 1013.

The Independent Peer Review of Transportation concluded that trucking and barging fish were not likely to halt the continued decline and extinction of listed species. *See id.* at 1014.

The National Research Council Report endorsed a both a long-term approach to rely on natural river conditions and a short-term approach to rely on selected technology. *See id.* at 1015-16.

Finally, the Idaho Department of Fish and Game concluded that natural river conditions are necessary to achieve adequate fish recovery and that transportation "is unlikely to provide recovery." *Id.* at 1019.

155. *See id.* at 1020-23 (discussing PATH Workshop). PATH is a program of "formulating and testing hypotheses involving the fundamental biological issues surrounding recovery of ESA-listed salmon and steelhead species in the Columbia River Basin." Bonneville Power Administration et al., *supra* note 88, at 1-9. PATH scientists conducted studies following strict procedures which were peer reviewed, and, in August 1998, used computer models to determine that natural river drawdown would result in a close to 100% likelihood of recovery in 50 to 100 years. *See* Blumm et al., *supra* note 1, at 1021.

treaties independently prepared a salmon restoration plan in 1995 that advocated dam breaching.[156] The restoration plan, discussed in further detail in Section V, refused artificial transportation of juvenile salmon, and instead, aimed to achieve "mean historical flows" which would restore ecosystem functions in an attempt to recover endangered salmon species.[157]

The Independent Scientific Group ("ISG") also prepared a study that urged the Northwest Power Planning Council to address the possibility of dam breaching.[158] This report, published in 1996, is entitled *Return to the River*.[159] The ISG was formed by the Northwest Power Planning Council in 1994 in order to insulate a group of scientists from political pressure and allow them to analyze the information underlying the Council's fish and wildlife program.[160] The report analyzed data and fish maintenance measures currently included in the Council's fish and wildlife program and drew conclusions based on the ISG's scientific findings.[161]

The ISG concluded that the Pacific NW Council's Fish and Wildlife Program "reflects the dominant paradigm that has governed fisheries management and recovery efforts in the Pacific Northwest for most of this century."[162] That paradigm contains two flawed principles: 1) that fish populations can be managed independently of the ecosystem, and 2) that technology can solve the alterations to the ecosystem.[163] The ISG recognized that technology will still be necessary in the recovery of the ecosystem, but it must work with the "natural physical and biological processes of the

156. *See* Blumm, et al., *supra* note 1 at 1016 (outlining treaty fishing tribes "Wy-Kam-Ush-Mi Wa-Kish-Wit" restoration plan). For further discussion of the tribes' restoration plan, see *infra* notes 262-268 and accompanying text.

157. *See id.* at 1016. To achieve these goals the tribal plan called for permanent reservoir drawdowns. *See id.*

158. *See id.* at 1016-19 (discussing ISG report); *see also Return to the River, supra* note 65, at i (providing background of ISG, formed by Northwest Power Planning Council to provide clear and authoritative analysis of salmon and steelhead recovery efforts in Columbia River Basin).

159. *Return to the River, supra* note 65, at i.

160. *See* Blumm et al., *supra* note 1, at 1016-17 (discussing ISG report's critical opinion of Council's program and ultimate conclusions favoring "restoration of river flows as close as possible to the hydrograph that existed in the predam era").

161. *See Return to the River, supra* note 65, at i (introducing ISG's duties to perform biennial review of science underlying Columbia River Basin recovery efforts, and provide a clear, scientific, impartial analysis). The report does not make specific recommendations, rather it is in place to "provide the scientific foundation for public policy to be developed by the Council and other decision-making bodies." *Id.*

162. *Id.* at 506. For a discussion of the two principles on which this paradigm is based, see *infra* notes 163-165 and accompanying text.

163. *See id.* at 507 (noting major scientific flaws in Fish and Wildlife Plan).

salmonid-bearing ecosystem rather than attempting to circumvent it."[164]

Although the ISG failed to specifically suggest dam breaching as the best solution to the problem, it did set forth specific conclusions to restore normative ecosystem conditions that may only be reached through drastic changes in the management of the Basin's current operations.[165] The ISG recommended implementing several actions, such as restoring the natural habitat, re-regulating flows through the Columbia and Snake Rivers, reducing sources of mortality in the hydropower system, and re-establishing core salmon populations at "strategic locations" in the Basin.[166]

The critical analyses of existing transportation systems and the evolving proposals for dam breaching set the stage for the comprehensive studies and proposals published at the end of 1999. If enacted, these studies should change the state of affairs in the Pacific Northwest at the start of the new millenium.

IV. NEWEST DEVELOPMENTS AND RECOMMENDATIONS - AT LONG LAST, REMEDIES FOR THE PACIFIC NORTHWEST IN THE YEAR 2000?

In response to the significant extinction risks for Snake River salmon and steelhead, several major cooperative efforts led to the publication of two papers in December 1999: the Federal Caucus' *Conservation of Columbia Basin Fish: Building a Conceptual Recovery Plan*,[167] and the U.S. Army Corps of Engineers' *Summary: Improving Salmon Passage: Draft Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement* ("EIS").[168] Governments and decision-makers in the Northwest have also established a

164. *Id.* at 507. The use of technology in conjunction with the natural ecosystem will result in *different* ways of approaching and using such technology. *See id.*

165. *See id.* at 510-11 (listing three specific conclusions of ISG). The Group first criticized the Fish and Wildlife Program as causing, in part, the lack of progress in recovering the salmon, because of its "lack of an explicitly defined conceptual foundation based on ecological principles." *See id.* at 510. Second, the ISG concluded that the social, economic and biological tradeoffs from increasing normative conditions in the Basin are not well known, and need to be studied. *See id.* Finally, it concluded that *Return to the River*'s restoration approach at least offers "an opportunity to move from the status quo of continuing decline and begin to realize progress toward recovery of salmon." *Id.* at 511.

166. *See Return to the River*, *supra* note 65, at 511-20 (discussing key actions necessary to restore normative conditions in Basin).

167. Federal Caucus, *supra* note 9, at 12.

168. *Draft EIS*, *supra* note 1, at *The Four Dams.*

basin-wide project called the Multi-Species Framework.[169] These three efforts provide the most recent and comprehensive recommendations for ensuring the survival of the anadromous fish in the Columbia River Basin.[170] These projects propose that dam breach-

169. *See* Multi-Species Framework, *Overview* (discussing collaborative effort of Northwest Power Planning Council, Columbia River Basin's Indian Tribes, and United States Government), *available at* <http://222.nwframework.org/overview.html> (last visited Mar. 7, 2000).

170. *See id.* The Federal Caucus and Army Corps of Engineers Draft documents were both published in December, 1999, while the Multi-Species Framework is a work-in-progress that began in October 1998. *See* Northwest Power Planning Commission, *Alternatives for Framework Analysis*, June 1999, *available at* <http://www.nwframework.org/alts215599.htm> (last visited Jan. 28, 2000) [hereinafter *Alternatives for Framework Analysis*].

In addition to the three efforts discussed above, the recent report by the Bonneville Power Administration, the U.S. Bureau of Reclamation, and the U.S. Army Corps of Engineers entitled *Multi-Species Biological Assessment of the Federal Columbia River Power System*, presented to the NMFS and U.S. FWS in accordance with the Section 7 consultation requirement of the ESA, seeks to address the current plight of the salmon and steelhead in the region. *See generally* Bonneville Power Authority et al., *supra* note 88. Pursuant to section 1536(c) of the ESA, any federal agencies that propose an action that may be affected by such action must prepare a biological assessment. *See* 16 U.S.C. § 1536(c). That section states:

> [E]ach Federal agency shall, with respect to any agency action . . . request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action. If the Secretary advises, based on the best scientific and commercial data available, that such species may be present, such agency shall conduct a biological assessment for the purpose of identifying any endangered species or threatened species which is likely to be affected by such action.

Id. The purpose of the Biological Assessment was to reinitiate consultation on the Federal Columbia River Power System with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service, pursuant to section 7 of ESA, 16 U.S.C. section 1536, as well as to describe ongoing and proposed future actions within the FCRPS. *See* Bonneville Power Authority, et al., *supra* note 88, at 1-1 (discussing purpose of biological assessment and background of required "consultation" under ESA). Under Section 7 of the ESA, all Federal agencies have a responsibility to participate in furthering the purposes of ESA. *See* U.S. Fish and Wildlife Service and National Marine Fisheries Service, *Endangered Species Consultation Handbook:* Procedures for Conducting Consultations and Conference Activities Under Section 7 of the Endangered Species Act, GPO 024-010-00718-4 (March 1998), *available at* <http://endangered.fws.gov/consultations/57hndbk/ch1-3.pdf>. Section 1536(a)(2) states:

> Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species . . . .

16 U.S.C. section 1536(a)(2).

The three "action agencies" responsible for the BA recognized that an immediate course of action based on the existing operations of the hydropower system is necessary. *See* Bonneville Power Authority, et al., *supra* note 88, at 4-1 (addressing Action Agencies' adaptive management framework for immediate future changes to FCRPS operations). Because the agencies recognized that continued FCRPS operations may likely affect the survival of listed anadromous fish, they recom-

ing may be the only alternative.[171] Further, the Framework Project, together with the All-H Paper scientific research and the Army Corps of Engineers' Draft EIS, represents the ecosystem-targeted, collaborative effort needed to effect a positive change in the region.[172]

A. The All-H Paper

In December 1999, the Federal Caucus published a draft recovery plan for the Columbia River Basin fish, entitled *Conservation of Columbia Basin Fish: Building a Conceptual Recovery Plan* ("Plan").[173] The Plan outlines the alternatives among which the people of the Pacific Northwest must choose if the salmon are to survive.[174] The Plan should also help the Pacific Northwest "develop a recovery plan that results in better regional coordination and a unified regional direction."[175]

The Federal Caucus is comprised of nine organizations including the Bonneville Power Administration, the Bureau of Indian Affairs, the EPA, and the NMFS.[176] The plan focuses on four human

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mended various modifications to the current river and dam operations including: "new turbine designs, surface collectors at dams for juvenile fish, improved barge transportation, and changes in water storage project operations and configurations to benefit fish through . . . dissolved gas abatement." Northwest Power Planning Council, *Fact Sheet: Multi-Species Biological Assessment of the Federal Columbia River Power System* (on file with author).

171. *See* Testimony of Roy Sampsel, Project Manager, Columbia River Basin Multi-Species Framework Project to the Committee on Energy and Natural Resources Subcommittee on Water and Power, United States Senate, June 9, 1999, (proposing that Framework project is different than past efforts), *available at* <http://www.nwframework.org/roytest.htm> (last visited Mar. 3, 2000). Sampsel urged the Framework Project to look at alternatives to promote and protect the entire ecosystem. *See id.* He also urges that this project, unlike past planning projects managed by a single agency, bring states, federal agencies, and tribes together in a single effort. *See id.*; *see also* Testimony of Donna Darm (1999) (stating organizations are finally working together in "Columbia River Basin Forum"), *available at* <http://www.nwframework.org/testim1.htm> (last visited Mar. 5, 2000).

172. *See id.*

173. *See* Federal Caucus, *supra* note 9, at 12. The Federal Caucus consists of nine organizations that seek to propose a recovery plan for the Columbia River Basin. For a list of these organizations, see *infra* note 166.

174. *See* Federal Caucus, *supra* note 9, at 11 (proposing that nature and purpose of paper was to outline fundamental choices that face region if salmon recovery is to succeed).

175. *Id.* at 20 (noting that some have observed that lack of unified restoration plan and coordination among efforts in basin is one of causes of decline of anadromous fish).

176. *See id.* at 21 (setting forth differing authorities and jurisdictions for salmon recovery with respect to nine federal agencies). The nine groups that make up the Federal Caucus are the Army Corps of Engineers, the Bonneville

activities, known as the four "H's", that have affected the salmon species: habitat, harvest, hatcheries, and hydropower.[177] None of these alternatives is preferred, nor is the list intended to be exhaustive of the possibilities.[178] A brief overview of the individual "H" options will clarify the combined alternatives.[179]

1. Individual "H" Options

a. Habitat Options

The Federal Caucus presents three options to respond to the effects of deteriorated habitat conditions on the fish and wildlife in the Columbia River Basin:[180] 1) a measurable increase in federal action, habitat assessments, and planning efforts using federal funds; 2) a significant increase in regional planning, including cooperation of federal, state, tribal, and local entities supported by increased federal funds; and 3) an increase in regional planning with increased federal agency regulation under the Clean Water Act and the ESA.[181]

Power Administration, the Bureau of Indian Affairs, the Bureau of Land Management, the Bureau of Reclamation, the Environmental Protection Agency, the Fish and Wildlife Service, the Forest Service, and the National Marine Fisheries Service. *See id.*

177. *See id.* at 11 (noting that four "H's", resulting from economic development in Basin, have caused decline of fish).

178. *See* Federal Caucus, *supra* note 9, at 11 (noting that alternatives are aimed at stimulating dialogue in hope of reaching decisions on how to successfully recover salmon).

179. *See id.* at 27-78 (presenting ranges of options for each "H", how each contributed to decline of species, and how each option met certain goals).

180. *See id.* at 28-44 (discussing causes of degradation to habitat). During the last 150 years, "[f]orestry, farming, grazing, road construction, hydropower development, mining and urbanization have radically changed the historical habitat conditions of the basin." *Id.* at 28. Anadromous fish return to their natal streams (streams of birth) to spawn (reproduce) thus the habitat's effects on stream conditions greatly affects fish populations. *See id.* Several significant factors that have contributed to habitat decline are: 1) water quality of streams, that has been degraded by human activities; 2) temperature alterations, which has affected fish metabolism, growth rate, disease resistance, timing of adult migrations, fry emergence, and smoltification (the changes that anadromous salmonids and trout (born in freshwater streams) undergo which allows them to live in the ocean)); 3) pollutants, including excess nutrients, fine sediments, low levels of dissolved oxygen, heavy metals, and pH changes; 4) water quantity; 5) blockages to fish migration, of which the primary culprit is hydropower dams; and 6) land ownership, which directly affects pollutant discharge, reduced riparian vegetation, and stream temperatures. *See id.* at 28-29.

181. *See id.* at 3 (discussing habitat options). The Federal Caucus asserts several objectives it seeks to reach under these options: prevention of further degradation of tributary and estuary habitat conditions and water quality, protection of existing high-quality habitats, and restoration of habitats by priority. *See id.* Without improved habitat throughout the area, the attempts to improve conditions in harvest, hatchery and hydropower will be undercut. *See id.* Currently, federal,

b. Harvest Options

Harvest options are closely related to the United States' responsibility to provide harvest opportunities for Indian tribes in the region.[182] The Federal Caucus recognized the federal government's trust obligation to tribal resources and rights when preparing the All-H Paper.[183] In recent years, the total harvest numbers have decreased significantly due to reduced harvest rates and severely reduced numbers of fish.[184] Fish conservation efforts have had a significant impact on tribal fishing rights.[185] When determining harvest options, the parties are governed not only by environmental issues and the need for conservation, but also by tribes' treaty rights and the harvest sharing principles defined in *United States v. Oregon.*[186]

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state and local programs manage activities that degrade both the land and the water in the Columbia River Basin. Lack of funding may present a major obstacle to many habitat restoration and recovery efforts and the enforcement of state and local regulations. *See id.* at 31. Efforts are also affected by lack of technical assistance, planning, implementation and monitoring. *See id.* (presenting current management schemes for habitat recovery plans). The habitat options, therefore, rely on the efforts of different governments, agencies and individuals to participate in the assessments, planning and implementation required under each option.

The options focus on several weaknesses of past attempts to recover the anadromous fish runs in the Basin: lack of coordination between governments, agencies, and tribes, and insufficient federal regulation/federal intervention to ensure adequate programs are being carried out. Option 1 requires the least coordinated effort between federal and non-federal groups, focusing instead on funding and implementation of habitat recovery on federal lands. *See id.* at 35-36. Options 2 and 3, however, require either that the federal, state, and local governments and parties cooperate, or that federal regulation of nonfederal activities is stepped up to arrest continued degradation of habitats. *See id.* at 36-37 (discussing habitat options in detail). Option 3 is in place only if Option 2 cannot be developed due to lack of coordination with state and local governments. *See id.* at 37.

182. *See* Federal Caucus, *supra* note 9, at 48 (indicating one harvest program objective is to provide tribes with fishing opportunities which comport with trust obligations). Tribal harvest of salmon in the Columbia River Basin prior to European intrusion was a conservative 4.5 to 5.6 million per year. *See id.* at 44. Commercial fishing developed rapidly in the late 1800's, and the number of fish commercially "landed" was at a low 68,000 fish in 1995. *See id.* at 44-45.

183. *See id.* at 21 (discussing U.S. government trust responsibility that includes protection of natural resources).

184. *See id.* at 47 (discussing current management and issues regarding harvest of Columbia River Basin fish).

185. *See id.* (noting that precipitous decline in fish numbers is particularly evident at Columbia River Basin Indian fisheries). Many in-river fisheries have been constrained for almost 30 years. *See id.* Some Indian commercial fishing has been halted completely. *See id.*

186. 699 F. Supp. 1456 (D. Or. 1988). Management plans adopted in response to this case have expired, and the parties are involved in difficult negotiations as a result of numerous uncertainties related to the development and future implementation of an all-inclusive plan such as the All-H Plan. *See* Federal Caucus, *supra* note 9, at 48.

The harvest options were developed to further two objectives: 1) to provide a fish harvest even while fish numbers are depressed, and 2) to manage fisheries in such a way that prevents over-harvest and increases salmon productivity.[187] The options range from liberal to conservatively detailed limitations on harvest rates and schedules for adjusting or freezing harvest rates, depending on salmon survival and reproduction rates.[188]

c. Hatcheries Options

Hatcheries were created to replace fish that were lost due to the construction of the Federal Columbia River Power System and non-federal dams in the Basin.[189] Hatcheries are methods of artificial propagation, where humans facilitate the reproduction and rearing of fish.[190] Hatcheries are generally an efficient method of providing fish for harvest and social purposes.[191] Despite all of the benefits, however, there are potential negative impacts of artificial propagation on wild salmon populations.[192]

The All-H Paper outlined three options for minimizing the adverse effects of hatcheries on wild fish. These options mitigate the lost fishing opportunities that result from decreased populations, conserve genetic variability among wild fish populations, and rebuild natural fish populations.[193] The options range from maintaining the status quo (using currently planned programs), to more stringent programs that increase the preservation of wild fish ge-

187. *See* Federal Caucus, *supra* note 9, at 48. Adult salmon are required for spawning, thus perpetuating the runs. *See id.* Increased harvest allowances, however, have depleted the number of adult salmon and thus prevented a productive capacity in the runs. *See id.* The objectives set forth in the All-H Paper include both recovery of the runs, and compliance with tribal trust obligations while sustaining fishing objectives for all citizens. *See id.* at 48.

188. *See id.* at 49 (explaining harvest options).

189. *See id.* at 52 (discussing purpose of hatcheries). Today approximately 150 million fish are produced in about 100 anadromous fish hatcheries. *See id.* Hatcheries are located on the Columbia and Snake Rivers, their tributaries, and surrounding ponds. *See id.* at 54-57, figures 3-7 (showing locations of hatcheries and hatchery satellites).

190. *See id.* at 90, 95 (providing definitions of "Hatchery" and "Artificial propagation").

191. *See id.* at 58.

192. Federal Caucus, *supra* note 9, at 58-59 (discussing adverse effects of hatchery fish on wild populations). Hatchery programs can create weaker stocks of fish that are inbred and generally weaker than wild fish. *See id.* The interaction between wild fish and hatchery fish could also cause predation of hatchery fish on wild fish, competition for food, and transmission of disease. *See id.* at 59.

193. *See id.* at 59-60 (setting forth objectives for hatcheries).

netic variability and decrease reliance on hatcheries for harvestable fish.[194]

d. Hydropower Options

The development of the Federal Columbia River Power System has significantly harmed salmon and steelhead runs in the Columbia River Basin.[195] The goal underlying the Federal Caucus' hydropower options is the adequate survival and maintenance of healthy fish migrating through the hydropower system. To accomplish its goal, the Federal Caucus will provide the environmental conditions necessary for the survival of the resident fish and other aquatic species, such as adequate water temperatures and appropriate dissolved gas concentrations.[196]

Current management attempts to reduce fish mortality through the hydropower corridor include flow management to restore more natural flow conditions, transportation of juvenile fish, and provisions for spill.[197] Although these mitigating measures have helped increase salmon survival, there are still uncertainties relating to indirect mortality rates and the association between dams and mortality rates.[198] According to the Federal Caucus, "[t]his is one of the key uncertainties the region faces in deciding whether it will try to recover Upper Columbia and Snake River salmon and steelhead without removing dams."[199]

The objectives for the three proposed options are to provide adequate survival of adult and juvenile fish throughout the hydropower corridor and to ensure adequate instream and reservoir environmental conditions for the survival of other aquatic species.[200]

194. *See id.* at 61-62 (presenting three hatchery options entitled "Currently Planned Programs," "Increased Conservation Programs," and "Increased Conservation Programs and Significantly Decreased Mitigation Programs").

195. *See id.* at 66-67 (discussing effects of hydropower on fish populations). For further discussion of the effects of dams on fish, see *supra* notes 8-13 and accompanying text.

196. *See* Federal Caucus, *supra* note 9, at 68 (providing Federal Caucus' objectives for hydropower options). As discussed in Section 3.4.2 of the All-H Paper, inadequate water temperatures and high levels of dissolved gases such as nitrogen can be lethal to fish. *See id.* at 66-67.

197. *See id.* at 67 (discussing in Section 3.4.3 current management strategies employed to reduce salmon mortality at dams).

198. *See id.* at 67-68 (discussing methods of measuring fish mortality rates). It is easier for federal agencies to measure direct mortality resulting from dams, but harder to measure indirect mortality because the fish may die later, for example, from injuries incurred while going through the dam, and agencies cannot connect the mortality with a particular cause. *See id.* at 68.

199. *Id.* at 68 (discussing uncertainty relating to various recovery methods).

200. *See id.* (outlining objectives for proposed plans).

Option 1 recommends maintaining the status quo by continuing with ongoing improvements and utilizing the current annual level of federal funding.[201]

Option 2, the "Aggressive Program," recommends maintaining the current program for improving fish passage facilities but requires increased federal funding.[202] The program includes increased river flows and spills, particularly on the Snake River, to bring river flows closer to natural levels.[203]

The most drastic option, Option 3, recommends breaching the lower Snake River dams once Congress authorizes and appropriates the measure.[204] No additional investments would be made to improve the fish facilities at the lower Snake River dams if this option is selected.[205] After breaching, Columbia River configuring and operational measures would continue and additional water, if needed, would be taken from reservoirs to augment and moderate the lower Snake River natural flow.[206] The biological analyses used in this

201. *See* Federal Caucus, *supra* note 9, at 69 (outlining Option 1). Although the Army Corps of Engineers would continue to improve existing fish passage facilities at several dams on the Columbia River, the existing measures on the Snake River would remain relatively the same, with continued use of reservoir volume to increase river flow for spring and summer migration. *See id.* at 69-70.

202. *See id.* at 70 (outlining option 2). This option corresponds to the Multi-Species Framework Alternative 5. *See id.* For discussion on Framework Alternatives, see *infra* notes 240-249 and accompanying text.

203. *See id.* (outlining aspects of Aggressive Program). Additional configuration measures at Snake River facilities would include spillway deflectors, surface bypass, modifications to juvenile fish facilities, and two to five additional barges for transportation. *See id.* at 71. Operational measures on the Snake would also be increased: additional spill at three federal projects, and additional water would be sought for temperature control and to augment flow to more closely simulate natural river flow conditions. *See id.* However, these configurations and, particularly, operational measures, assume that federal agencies will comply with flow and spill measures, where federal agencies have clearly proceeded in activities in the face of NMFS BiOp measures. *See* Blumm et al., *supra* note 1, at 1034 (noting agency actions "failing to undertake mitigation measures specified by . . . BiOp[s]"). Although agencies are not technically bound by BiOps, courts have enjoined agency actions as "arbitrar[y] and capricious[ ] and contrary to law" for departing from BiOp directives. *Id.* at 1035.

204. *See* Federal Caucus, *supra* note 9, at 71 (outlining hydropower option 3). Even if Congress decided to breach the dams, it would take several years to implement. *See* testimony of Donna Darm, *supra* note 162 and accompanying text. Thus, an operational plan would still be needed in the interim. *See id.* The Federal Caucus did not examine removal of dams on the Columbia River because no feasibility studies were performed on the removal of those dams. *See* Federal Caucus, *supra* note 9, at 68.

205. *Compare* Federal Caucus, *supra* note 9, at 71 *with* testimony of Donna Darm, *supra* note 162 (discussing need for interim operations plan if breaching were selected). An operations plan would require funding. *See id.* at 74.

206. *See id.* at 71 (recognizing that some operational measures would need to continue after breaching).

study indicate that Option 3 will be the most effective option.[207] Its effectiveness depends on the indirect mortality rates of the studied Snake River salmon species.[208]

The All-H Paper recognizes the many social, economic, ecological, and tribal effects of these Options.[209] Under Options 1 and 2, tribal access to fish runs would continue to be limited.[210] Option 3 would increase productivity of certain salmon species to "an unknown degree" and possibly revive tribal cultural resources that were buried by the creation of man-made reservoirs.[211]

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207. *See id.* at 72 (discussing findings of PATH and CRI analyses). The PATH and CRI analyses were also used by the Army Corps of Engineers. *See infra* notes 225-226 and accompanying text.

208. *See id.* at 71-72 (evaluating effectiveness of all three options). The two different biological analyses used were PATH and CRI. *See id.* at 71. The two analysis methods, CRI and PATH, were developed by different groups to scientifically estimate risks of certain actions on fish. *See id.* at 79. CRI was developed by the Northwest Fisheries Science Center of NMFS, and PATH was developed by state fishery agencies, federal agencies and tribes. *See id.*

The two analytical methods reach different conclusions on the dam breaching option - PATH assumed it would be more effective because the PATH method took into consideration indirect mortality. PATH simulated how each hydropower option would affect the current fish populations. Under the current hydropower system, only one-half of the PATH simulations met the Federal Caucus' 48-year salmon recovery standards. *See id.* at 71. Under option 2, PATH determined that there would be less chance of meeting the recovery standards because reliance on mitigating techniques, such as transportation, raises the potential for indirect mortality rates. *See id.* When PATH simulated breaching the dams, 100 percent of the simulations met the recovery standards. *See id.* at 72.

CRI focused more closely on survival in post-juvenile life stages. Analysis of option 1 indicated that then required Awaiting until we learn more about extra mortality or delayed mortality" associated with the option carries a higher risk of extinction both short term (10 years) and long term (100 years). *See id.* at 71. Option 2 also fails to avoid a high risk of extinction. CRI analysis predicted that only a population growth rate of approximately one percent would be realized, and a rate of approximately twelve percent is needed to prevent extinction. *See id.* at 72. Finally, CRI analysis revealed that dam breaching, alone, would only result in a population growth rate increase of approximately five percent, which is not sufficient to prevent extinction. *See id.* Additional improvements to estuary conditions would also be required. *See id.*

209. *See* Federal Caucus, *supra* note 9, at 73-75 (discussing social and economic effects, ecological effects, and effects on tribal rights of three hydropower options).

210. *See id.* at 75 (noting that dams, if left in place, would continue to affect tribal resources due to migration blockage and depressed populations in certain areas).

211. *See id.* For additional discussion of the effects of the dams on tribal fishing rights, see *infra* notes 251-54 and accompanying text. For discussion on tribal attempts to promote dam breaching, see *infra* notes 255-71 and accompanying text.

2. Integrated Alternatives

The Federal Caucus presents four integrated alternatives determined by using available scientific analyses such as Cumulative Risk Analysis ("CRI") and PATH that combine the four "H's".[212] Application of these analyses to the Snake River salmon and steelhead species determined the effects of combining different options into "all-H" alternatives.[213] Two of the four alternatives involve breaching the dams: Alternative A, the Dam Removal Alternative, and Alternative D, the Maximum Protections Alternative.[214] Alternative A relies on dam breaching (hydropower Option 3) as the primary factor in recovering the Snake River fish.[215] The remaining habitat, harvest, and hatchery options involve the most limited efforts and expenditures.[216] Alternative D, on the other hand, represents a comprehensive overhaul of all four areas, habitat, harvest, hatchery, and hydropower, while implementing maximum efforts to rebuild the stocks and increase productivity.[217]

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212. *See* Federal Caucus, *supra* note 9, at 79-84 (discussing scientific analyses available to Federal Caucus to evaluate and construct integrated alternatives). *See supra* note 146 for background information on PATH.

213. *See* Federal Caucus, *supra* note 9, at 83 (explaining biological considerations taken in creating integrated alternatives). Although the paper does not present analyses of all basin ESUs, other analyses (i.e. Columbia River ESUs) are underway. *See id.*

214. *See id.* at 82-84 (outlining integrated alternatives and showing that only two involve dam breaching). Alternatives B and C are non-breach alternatives. Alternative B, the Harvest Constraints alternative, involves maintaining the current hydropower system, and coordinating federal actions to respond more cohesively to the problems in the Pacific Northwest, while significantly increasing conservation efforts and reducing the amount of fish that can be harvested, allowing fish populations to recover and build in number. *See id.* at 84. Alternative C is a more aggressive non-breach approach. On the hydropower front, flows and spill would be increased, habitat protection levels would increase, harvest rates would be held at the 1999 levels until stocks recover, and additional fish would be brought into the hatchery programs to help build fish populations. *See id.*

215. *See id.* at 82 (discussing alternative A). Under this alternative, there is little effort to improve habitat resources, increase hatchery conservation programs, or restrain harvest - as the numbers of fish increase, harvest is allowed to increase. *See id.*

216. *See id.* (noting that Alternative A relies on option 1 for all three: habitat, harvest, and hatchery).

217. *See* Federal Caucus, *supra* note 9, at 84 (outlining selected options for Alternative D). Alternative D would involve habitat option 2 - coordinating regional plans, harvest option 3 - conservation fishery levels to allow maximum run recovery, hatchery option 3 - increased conservation programs and significant decrease in mitigation programs, and hydropower option 3 - dam breaching. *See id.*

B. Draft Lower Snake River Juvenile Salmon Migration Feasibility Report/Environmental Impact Statement

The 1995 NMFS BiOp directed the U.S. Army Corps of Engineers to perform a detailed study of how its dams in the Columbia River Basin impact fish and what alternatives are available to rebuild the fish populations.[218] Like the All-H paper, the Draft EIS makes no technical recommendation.[219] Instead, it is an overview of the effects of the four alternatives for improving salmon migration through the Corps-operated dams on the lower Snake River.[220] Those alternatives are: 1) continuing existing dam operations; 2) maximizing juvenile salmon transportation; 3) making system improvements; and 4) breaching the four dams.[221] The alternatives were studied for their effects on salmon and other native species, transportation, power generation, Native Americans, and surrounding communities.[222]

1. The Alternatives

Alternatives 1 and 2 focus primarily on artificial means of increasing salmon survival and preventing any major impact on the hydropower generation, navigational activity, irrigation, and water supply provided by the dams.[223] "Alternative 1 is the baseline or no action' alternative."[224] This alternative makes no major changes to the existing fish passage systems.[225] Presently, only eighty percent of the salmon traveling through the four Snake River dams survive, and a mere forty-five to sixty percent survive all eight Columbia/Snake River dams.[226] Additional plans that would accompany the

218. *See Draft EIS, supra* note 1, at *Feasibility Study* (discussing genesis and focus of study). The Army Corps of Engineers will accept comments on the draft through March 31, 2000, then will issue a supplemental report with its selected alternative in late summer or fall. *See id.*

219. *See id.* at *Introduction* (recognizing that other agencies and public at large should have opportunity to review information presented before alternative is selected).

220. *See id.*

221. *See id.* at *Possible Actions/Effects: Four Alternatives* (presenting discussion of all four alternatives and their effects).

222. *See generally id.* (discussing effects of alternatives).

223. *See id.* (indicating continued hydropower, navigation and irrigation supply under alternatives 1 and 2).

224. *Id.* (discussing Alternative 1).

225. *See Draft EIS, supra* note 1, at *The Four Dams* (discussing Alternative 1); *see also supra* note 86 and accompanying text (discussing current facilities at four Corps dams).

226. *See Draft EIS, supra* note 1, at *Fish Passage: What We Have Already Achieved* (discussing current operations and project survival rates). More than fifty percent of the fish traveling through the lower Snake River are diverted and collected for

status quo would be turbine improvements, structural modifications, new fish barges, fish attraction and separator modifications, cylindrical dewatering screens, and more or improved spillway flow detectors.[227]

Alternative 2 increases the transport of juvenile salmon and decreases voluntary spill at dams.[228] According to the Corps, this alternative would decrease extinction risks for listed stocks.[229]

Alternative 3 involves a slightly more proactive approach by implementing major improvements to the current system.[230] A full-length surface bypass collector at the Lower Granite Dam (the first dam encountered by juvenile fish) would minimize the number of dams, bypass systems, and reservoirs that juvenile fish would encounter.[231] Additional modifications would improve the collection and bypass systems at the Lower Monumental and Ice Harbor dams.[232]

Finally, Alternative 4, the most proactive, requires breaching the dams, thereby creating a 140-mile stretch of free-flowing river.[233] The need for fish collection or bypass systems would be obsolete, but the effects on the hydropower and navigational systems would be immense.[234] Employees at the dams would lose their jobs, but others would gain recreational activity.[235]

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transport by truck or barge, and the survival rates discussed in the text represent the percentages of fish that remain in the river and pass through the dams. *See id.*

227. *See id.* at *Possible Actions/Effects* (discussing Alternative 1).

228. *See id.* (discussing Alternative 2).

229. *See id.* (presenting effects of Alternative 2). Compare this finding to the dam breaching proposals discussed in section C.1.c of this comment that conclude transportation is inadequate to improve survival and recovery of salmon species. For additional information on the transportation of salmon, *see supra* notes 142-57 and accompanying text.

230. *See id.* (discussing Alternative 3).

231. *See Draft EIS, supra* note 1, at *Possible Actions/Effects* (emphasizing increased collection technology that would maximize transport programs at dams). Compare this alternative, which maximizes transportation, with scientific studies indicating that transportation cannot effectively recover fish species. *See supra* notes 144-45 and accompanying text.

232. *See Draft EIS, supra* note 1, at *Possible Actions/Effects.*

233. *See id.* (presenting system improvements and effects of dam breaching Alternative 4).

234. *See id.* (noting losses in hydropower generation, navigational capacity and transportation systems). Those losses would in turn result in increased electric rates and transportation costs, as well as effects on other modes of transportation currently available. *See id.*

235. *See id.* at *Effects on Communities* (discussing effects of each alternative on communities surrounding dams). The communities upriver of the dams may benefit from increased recreation and tourism, but the communities adjacent to the four lower Snake River reservoirs may experience a dip in employment at the dams themselves, and at farms that would be affected by the loss of irrigation. Farms

2. Effects of Dam Breaching on Salmon Populations

Although Alternative 4 requires the most extensive changes, studies performed by NMFS using PATH and CRI analytical methods indicate that dam breaching is most likely to achieve survival and recovery of the ESA-listed species.[236] The CRI analysis determined that dam breaching would be sufficient for recovery if survival below the Bonneville Dam on the Columbia River increases by at least twenty percent as a result of dam breaching.[237] If survival does not increase by twenty percent, then breaching alone may be inadequate.[238]

Dam breaching also has drawbacks.[239] Elevated suspended sediment may bury the rearing habitat of fish, which would delay adult migration for several years during and following the dam breaching.[240] In addition, breaching the dams may affect the quality of spawning habitats.[241]

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would also incur additional expenses for transportation, storage and handling of agricultural products. *See id.*

236. *See id.* at *Effects on Salmon* (discussing analytical methods used to determine effectiveness of alternatives in meeting survival and recovery criteria for listed fish). The PATH analysis develops models to predict the likely survival and recovery rates of the listed Snake River stocks under each alternative. "CRI [Cumulative Risk Initiative] analysis estimates the likelihood of extinction of listed stocks, under each alternative, that would occur within specified time periods." *Id.* It performs two functions: 1) compares how certain actions will affect the chance of listed stocks meeting the NMFS acceptable level of risk of extinction, and 2) evaluates what the effects of delaying implementation of certain actions would have on the chances of stocks going extinct. *See id.*

The CRI analysis determined that Alternative 1 carries a high risk of extinction for several species, and the long-term risk of extinction for all fish evaluated ranged from 33 to 93 percent (the ranges varied by species). Similarly, the PATH analysis found that "under existing conditions, there is only a 65 percent chance of meeting NMFS survival criteria and only a 50 percent chance of meeting NMFS recovery criteria for the listed fish." *Id.* The Draft EIS details the risks of extinction in more detail for different fish species. For more detail, *see id.*

Alternatives 2 and 3 only slightly reduced the chance of extinction over Alternative 1 based on both CRI and PATH analyses. *See id.* Alternative 4, however, presented the highest chance of meeting NMFS survival and recovery data based on PATH analysis. CRI recognized the improvement over the other Alternatives, but still suggested that dam breaching alone may not be sufficient to reduce the risk of extinction to certain fish in the Snake River. *See id.*

237. *See Draft EIS, supra* note 1, *Effects on Salmon.*

238. *See id.* at *Effects on Salmon* (discussing details of CRI analysis).

239. *See id.* (recognizing that not all beneficial effects of dam breaching would be immediate and that after several years adverse effects could occur).

240. *See id.* The adverse effect from elevated suspended sediment and particles in the river may not occur for two or three years after dam breaching. *See id.*

241. *See id.* at *Effects on Salmon.* Although spawning habitat may be affected at first, once sediment levels in the river stabilize, spawning habitat would again increase in the river. *See id.*

C. Multi-Species Framework

The Multi-Species Framework Project ("Framework Project") is a cooperative effort by state, tribal and federal governments, environmental groups, and representatives from Northwestern industries.[242] The Framework Project, established in mid-1998, aims to "restore and protect the entire community of plants, animals and people in the Columbia Basin of which individual species are a part."[243]

There are two major features of the framework process that distinguish it as the key to successful recovery of salmon in the Columbia River Basin. First, the framework focuses on regional visions for the Basin.[244] Participating in the development of this regional vision are thirty-one environmental groups, ten utility companies, thirty-four agriculture and livestock organizations, sixty-three government organizations, fifteen industry groups, seven fishing groups, and twenty-three tribal governments and organizations.[245]

Second, the Framework Project is unique because it emphasizes ecological relationships rather than the effects of alternatives on individual species.[246] The Project recognizes that fish, plants, people, and other animals all live and thrive together in the ecosystem. Thus, the impact on the interactions between different species and populations and on biological diversity may indicate whether one alternative benefits one species at the expense of the entire ecosystem.[247]

The Framework Project is a scientific and systematic process involving eight "steps," some of which are complete.[248] The first

242. *See News Release: Industries, environmentalists, governments begin project to develop range of salmon recovery options*, Nov. 12, 1998 (announcing new, collaboratively managed effort working to develop range of fish and wildlife recovery plans), *available at* <http://www.nwframework.org/nws11-12.htm> (last visited Jan. 28, 2000).

243. *See The Year of the Decision, supra* note 68, at 5 (introducing Framework's integrated approach to region's fish and wildlife recovery efforts).

244. *See Alternatives for Framework Analysis, supra* note 161 (presenting framework's consideration of broad relationships and how different activities affect and constrain Basin ecosystem). One of the questions that the Framework is intended to address is: "'what kind of Columbia River Basin would we like to see 25 or 50 years from now?'" *Id.*

245. *See The Year of the Decision, supra* note 68, at 5-7 (listing organizations that participated in original Framework Project conference).

246. *See Alternatives for Framework Analysis, supra* note 161 (recognizing need to evaluate entire ecosystem as system, not individual components).

247. *See id.* (discussing need for new, broader measures of effects of particular choices made to improve survival and recovery of ecosystem).

248. *See The Year of the Decision, supra* note 68, at 6 (indicating first four steps of Framework process are already complete).

four steps entail: 1) developing a collaborative Framework *concept* and scientific foundation for recovery actions; 2) initial workshops and regional public meetings to develop and refine the resulting seven alternatives; 3) analysis of the seven alternatives by two scientific work groups to determine their feasibility; and 4) revisions and addition of detail to the seven alternatives to reflect scientific work group comments and concerns.[249] The remaining four steps seek to further refine the alternatives through scientific and statistical analyses and regional meetings and workshops.[250] The result is a final report used by the Council and federal agencies "to guide the future of fish and wildlife recovery efforts."[251]

The "heart" of the Framework Project is the Ecosystem Diagnosis and Treatment System ("EDT") that separates it from all past recovery efforts in the region.[252] Rather than focusing on individual ESUs and species, the system focuses on the alternatives' effects on the overall ecosystem.[253] EDT will produce numerous data that will predict the outcomes of implementing the different framework alternatives.[254]

Step 5 of the Framework Project begins the analysis of the alternatives: application of the alternatives to the EDT system to determine the expected ecological outcome of each alternative.[255] The first three alternatives envision ecologically healthy species in a self-sustaining ecosystem, with significantly reduced power generation and transportation in the lower Snake River.[256] All three alter-

249. *See id.* (presenting Framework Project's eight steps toward final, comprehensive report).

250. *See id.* (indicating remaining four steps of Framework Project still to be completed).

251. *See id.* (discussing ultimate goal of Framework Project).

252. *See id.* at 8 (discussing EDT system). The EDT system accomplishes three things: 1) it evaluates the current conditions in the ecosystem; 2) it uses the "best available scientific knowledge" to examine the changes in the ecosystem that are likely to result from the different framework alternatives; and 3) it predicts how the species in the ecosystem will respond to those changes. *See id.*

253. *See The Year of the Decision*, *supra* note 68, at 8 (stating "EDT is all about ecosystems - the places where fish and wildlife live and the ways they interact with their environment").

254. *See id.* at 9-10 (outlining fundamental scientific assumptions used by EDT system to generate data and predict outcomes of certain changes made to ecosystem).

255. *See id.* at 6 (indicating that step five, determination of expected outcomes of alternatives, is next step in framework project process).

256. *See Alternatives for Framework Analysis*, *supra* note 161 (presenting summaries of all seven alternatives); *see also The Year of the Decision*, *supra* note 68, at 15-17 (presenting summaries of alternatives 1, 2 and 3).

natives rely on dam breaching to return natural seasonal flow patterns to the Snake River.[257]

Alternative four undertakes a ten to twelve-year experimental program, which will evaluate key hypotheses associated with the recovery of fish and wildlife in the basin before any major dam reconfiguration.[258] The experimental program will test hypotheses including the effectiveness of drawdown, additional flow volumes, and different measures to enhance harvest and habitat restoration.[259] Alternatives 5 through 7 use a variety of measures to achieve harvest objectives while preserving the multi-purpose dams.[260]

Although still deep in the analytical stages, the Framework Project is a major step toward creating a manageable, successful survival and recovery strategy for the Columbia River Basin region. Not only does the project represent a collaborative effort among agencies, governments, and tribes,[261] but it also focuses on public participation in the development of a strategy to meet the entire region and ecosystem's needs.[262] These aspects of the project will

257. *See The Year of the Decision, supra* note 68, at 15-17 (noting one strategy for first three alternatives is dam breaching). Although the alternatives appear similar, the biological and human effects objectives differ for each. *See id.* All three alternatives seek to eliminate fish barging as an alternative means of salmon recovery; alternatives 2 and 3 continue to rely, however, on other means hatchery and habitat recovery, while alternative 1 represents the most aggressive approach to phasing out artificial means of recovery. *See id.*

258. *See Columbia River Basin Multi-Species Framework Summary of Draft Alternatives*, at 4, June 1999 (presenting alternative 4), *available at* <http://www.nwframework.org/PDF/altssum6-10.pdf> (last visited Mar. 16, 2000) [hereinafter *Summary of Draft Alternatives*].

259. *See id.* Specifically, the experimental program would test hypotheses such as:

> [T]he effectiveness of drawdown in recreating mainstem habitat; effectiveness of additional flow volumes in enhancing juvenile salmon migration; effectiveness of hatcheries in mitigating for lost habitat; effectiveness of ocean harvest reductions in increasing adult returns; delayed effects of dams on salmon survival; and effectiveness of watershed-based tributary habitat restoration.

Id.

260. *See id.* at 5-7 (presenting Alternatives 5, 6, 7). All three alternatives focus on maintaining the hydropower system, and current uses of the river, but use different strategies to meet harvest objectives. *See id.* For example, Alternative 6 would require the use of supplemented stocks to meet tribal harvest objectives. *See id.* at 6. However, under Alternative 7, the Indian tribes would agree to limit their harvests to known stocks, and non-Indian commercial harvest would be replaced by artificial production of fish. *See id.* at 7.

261. *See* Testimony of Donna Darm, *supra* note 162 (discussing collaboration of different groups forming Columbia River Basin Forum).

262. *See Return to the River, supra* note 65, at 7 (stating, "[t]he framework process was designed to be collaborative, and to the greatest extent possible, open to public participation.")

hopefully result in an educated congressional decision concerning the crisis in the years to come.

V. THE FUTURE FOR THE SNAKE RIVER SALMON - MAKING THE CASE FOR DAM BREACHING

The failed attempts of past recovery programs and fish and wildlife plans indicate that major changes are needed to successfully recover the salmon in the Columbia River Basin, particularly in the Snake River.[263] In 1996, the Independent Scientific Group stressed the need to restore the Basin's ecosystem to its natural state.[264] The ISG recognized that "[d]espite decades of effort, the present condition of most populations in the Columbia River Basin demonstrates the failure of technological methods to substitute for lost ecosystem functions. Normative conditions, which provide critical habitat functions in the natural-cultural landscape, must be restored, not mitigated."[265]

A successful recovery program, however, will depend on the willingness of governments and citizens to make difficult decisions.[266] The dams on the Snake River, for example, provide ap-

263. *See* Federal Caucus, *supra* note 9, at 1 (discussing need for major changes in "wide range of activities that cause harm to [salmon and steelhead] if salmon recovery is to be successful"); *see also* Northwest Power Planning Council, Letter to Northwest Citizen, January 12, 2000 (discussing important changes to fish and wildlife program in 21st Century), *available at* <http://www.nwppc.org/2000-1.htm> (last visited Mar. 4, 2000). The Council is seeking recommendations from citizens to improve the fish and wildlife plan "in a way that will improve results significantly." *See id.* In 1994, one tribal leader made a plea to Congress for federal protection of salmon in the Columbia River Basin:

> My ancestors understood that we are only borrowing this Earth and its resources from our children . . . . Yet today, less than 140 years after the signing of the Treaty, the salmon are almost extinct. Some species are already gone forever. Our economic base has been devastated and my people are suffering . . . . The rivers in the Western United States, and the life that depends on them, are in a crisis state . . . . It is almost impossible to describe in words the pain and suffering this has caused my people. We have been fishermen for thousands of years. It is our life, not just our economy.

Wood, *supra* note 55, at 741-42.

264. *See Return to the River, supra* note 65, at 510 (recognizing loss of population diversity and declines in salmon productivity as result of human development in Basin). The ISG concluded that "life history and population diversity can be reestablished and declines in salmonid populations can be reversed by management actions that restore more normative conditions throughout the ecosystem." *Id.*

265. *Id.* at 5-6.

266. *See* Verhovek, *supra* note 57, at 1 (noting political decision that government leaders and citizens must make between losing the fish and benefits of dams).

proximately four percent of the region's electricity.[267] Thus, the ultimate question is whether saving the salmon outweighs the economic benefits of the dams.[268] Congress is expected to decide whether to breach the dams in the year 2000.[269] Breaching the dams is the best hope for saving the lower Snake River salmon.[270]

A. Continuing on the Path of Coordinated Effort

As illustrated by several decades of fish and wildlife plans and biological opinions,[271] planning and management in the Columbia River Basin requires a major overhaul to truly reverse the effects of human development and recover the threatened and endangered species.[272] The three most recent proposals and projects represent a new approach to solving this problem and call for the cooperation of states, regions, tribes, and industries to recover the entire ecosystem.[273] Agencies and organizations rely on the studies and reports of others; and the states of Idaho, Oregon, Washington, and Montana, almost all Indian tribes, and many Federal Departments

267. *See id.* (noting that breaching dams would signal "remarkable shift in national priorities"); *see also Return to the River*, *supra* note 65, at 511 (recognizing need for vigorous program and significant monitoring to restore ecosystem).

268. *See Return to the River*, *supra* note 65, at 510-511 (noting that potential social, economic, and biological tradeoffs accompanying significant increases in normative conditions throughout Columbia River bearing salmon are unknown).

269. *See* Natalie Pawelski, *Lower Snake River named most endangered U.S. waterway* (Mar. 13, 2000) (stating that while Congress intended to decide fate of dams last year, decision is now expected during Summer of 2000) <http://www.cnn.com/2000/NATURE/03/13/endangered.river/index.html> (last visited March 16, 2000).

270. *See* Environmental News Network, *Federal Report Supports Removal of 4 Snake Dams* (Dec. 22, 1999) (stating that breaching lower Snake River dams is best way to recover endangered salmon), *available at* <http://www.cnn.com/19. . . URE/12/22/snake.dam.enn/index.html> (last visited March 16, 1999).

271. For a discussion of the Northwest Power Planning Council's ineffective Fish and Wildlife Program and the NMFS' similarly ineffective Biological Opinions, *see supra* notes 97-141 and accompanying text.

272. *See* Federal Caucus, *supra* note 9, at 11 (confirming that major changes are required to wide range of activities that harm fish if fish recovery is to succeed).

273. *See id.* (noting nine federal agencies examined new opportunities for salmon recovery in region in 1999).

The Army Corps of Engineers' Draft EIS represents over four years of collaborative work by scientists, engineers, and technicians in the Pacific Northwest. *See Draft EIS*, *supra* note 1, at 1. Numerous federal agencies, including the U.S. Fish and Wildlife Service, the NMFS, and the EPA each provided essential input to researchers' work. *See id.* Additionally, the Northwest Power Planning Council, taking the lead in the Multi-Species Framework Project, is the region's voice in fish and wildlife decisions. *See id.* at 3-4. It has taken the lead in "seeking the balance that best serves the broad public interest while keeping an eye on how public and electricity ratepayer dollars are spent." *Id.* Many groups have provided input to develop the framework alternatives. *See The Year of the Decision*, *supra* note 68, at 5-7 (listing groups involved in the framework project).

recently signed a "Memorandum of Understanding" to create the Columbia River Basin Forum.[274] Using the Forum for discussion and debate, the parties intend to review the alternatives presented in the Multi-Species Framework Project and the Federal Caucus' All-H Paper to determine how best to proceed.[275]

The need for teamwork is implicit in the ESA.[276] A federal statute entitled "Interagency *cooperation*," requires consultation with the Secretary of the Interior before undertaking actions likely to jeopardize the continued existence of threatened or endangered species.[277] Section 1536(a)(2) requires that "each agency . . . use the best scientific and commercial data available."[278] Enforcement of this section requires consultation with biological experts from states and tribes, and as a result, increased cooperation among agencies, scientists, and tribes is likely to continue in the future.[279]

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274. *See* Testimony of Donna Darm, *supra* note 162.

275. *See id.* (noting that work of Framework and Caucus will be discussed at Forum).

276. *See* 16 U.S.C. 1536(a)(1)(1994). Title 16 U.S.C. 1536(a)(1) provides in its entirety:

> The Secretary shall review other programs administered by him and utilized such programs in furtherance of the purposes of this chapter. All other federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered species and threatened species listed pursuant to ['] 12533 of this title.

Id.

277. *See id.* (requiring federal agency cooperation and consultation in developing plans of action); *see also* U.S. Fish and Wildlife Services and National Marine Fisheries Service, *Endangered Species Consultation Handbook: Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act*, GPO 024-010-00718-4 (March 1998) (discussing ESA philosophy that guides consultation process under § 1536), *available at* <http://endangered.fws.gov/consultations/57hndbk/ch1-3pdf> (last visited Feb. 28, 2000). The handbook states that "Section 7 is a cooperative process" and requires that biologists reviewing federal agency plans under § 1536 of the ESA should "[a]ctively seek the views of the action agency and its designated representatives and involve them . . . in the development of . . . alternatives . . . ." *Id.* at 1-2, 3. Therefore, biologists that review federal agency plans submitted under § 1536 must cooperate with federal agencies to develop the most reasonable and prudent alternatives and measures to minimize impacts on threatened and endangered species. *See id.* at 1-2, 3.

Not only are federal agencies required to seek the best available scientific data, but ESA biologists must also diligently reconsult new data as it becomes available. *See id.* at 1-7. According to the handbook, "biologists should seek out available information from credible sources such as listing packages, recovery plans, active recovery teams, species experts, State/tribal wildlife and plant experts, universities, peer-reviewed journals and State Heritage programs." *Id.*

278. 16 U.S.C. § 1536(a)(2) (requiring use of best scientific and commercial data).

279. *See* Idaho Dep't of Fish and Game v. Nat'l Marine Fisheries Serv., 850 F. Supp. 886, 900 (D. Or. 1994) (stating "ESA does impose substantive obligations

1. Effects of Dam Breaching

Breaching the lower Snake River dams will improve tribal quality of life.[280] "Salmon provide to Indian people in a way that is timeless, in spirit, health and prosperity."[281] Restoring healthy salmon runs will provide opportunities for tribes in both traditional and non-traditional occupations, such as fishing, biology, and management.[282] Healthy salmon runs will also enable the federal government to honor the treaties it signed with the tribes of the Pacific Northwest 150 years ago.[283]

Breaching the dams, likewise, will have positive effects on fish and other wildlife.[284] "[D]ams kill salmon by delaying their migration to the sea - exposing them to predation and disease - and creating obstacles for the adult salmon that return to spawn in the rivers. . . . [R]emoving the four lower Snake dams is the only way to ensure that the salmon populations will recover."[285] The NMFS acknowledges that dam removal alone may restore fall chinook and steelhead, significantly contribute to the recovery of spring/summer chinook, and provide substantial benefits for all stocks listed in the ESA.[286]

However, breaching the dams carries with it negative effects as well.[287] In its decision to breach the dams, Congress must balance the country's demand for hydroelectric power with the country's

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with respect to an agency's consideration of significant information and data from well-qualified scientists such as the fisheries biologists from the states and tribes").

280. *See* The Columbia & Snake Rivers Campaign, *State, Tribal, Federal Scientists Conclude Partial Dam Removal Needed for Snake River Salmon Recovery* (Oct. 10, 1999) (holding partial dam removal as best recovery option), *available at* <http://www.removedams.org> (last visited Mar. 9, 2000).

281. Oregonian Front Page, *Article shows significant economic benefits from bypassing the 4 Lower Snake River Dams* (stating that restoring healthy salmon runs will benefit tribes not only by providing source of food, but also in providing jobs), *available at* <http://www.removedams.org/> (last visited Feb. 27, 2000).

282. *See id.* (stating that healthy salmon runs will lead to jobs).

283. *See* Blumm et al., *supra* note 1, at 1045 (noting that because Columbia River treaty tribes possess aboriginal fishing rights under 1855 and 1856 treaties, their in-stream flow water rights carry a priority date of "time immemorial").

284. For a further discussion of the positive effects of breaching dams, *see infra* notes 296-97 and accompanying text.

285. Environmental News Network, *supra* note 281.

286. *See* Environmental News Network, *Paper Outlines Options for Northwest Salmon Recovery* (Nov. 19, 1999) [hereinafter *Paper Outlines Options*] (outlining the beneficial effects of dam removal), *available at* <http://www.cnn.com/NATURE/9911/19/salmon.enn/index.html> (last visited Mar. 16, 2000).

287. *See* Verhovek, *supra* note 57, at 1 (noting potential high costs of breaching dams).

need for healthy salmon stocks.[288] Like all of the other plans to save the salmon, breaching the dams will be costly.[289] The dams' hydroelectric generators would close down, eliminating approximately five percent of the Pacific Northwest's electricity, and causing electric bills to rise by $1 to $5 a month.[290] Breaching the dams would also end barge traffic on the Snake River, forcing farmers to find another method to transport their crops.[291]

2. Consequences of Failing to Breach the Lower Snake River Dams

Although opponents to dam breaching argue that the economic cost of removing the lower Snake River dams is prohibitive, proponents of dam breaching assert that the economic cost of maintaining the four dams is also significant.[292] While the Corps estimates overall costs for breaching the dams, as well as preventing damage along the reservoirs, to range from $500 million to $850 million, the Bureau of Reclamation estimates the cost of maintaining the dams to range from $151.3 million to $1.3 billion.[293] Derivation of this high cost results from the possibility that Congress may opt not to breach the dams, forcing the Pacific Northwest to acquire one million acre-feet of water from Idaho irrigators in order to improve river conditions.[294] This process would eliminate approximately 6,500 jobs.[295] Dam breaching proponents also argue that the Army Corps of Engineers ignored the estimated annual cost of $125 million to bring the lower Snake River dams in compliance with the Clean Water Act.[296]

288. *See id.* (noting extreme complexity of issue requires weighing fish survival against costs of removing dams, which includes potential increase in electricity costs to region).

289. *See* Associated Press, *supra* note 261 (citing Corps of Engineers' estimate of $500 million to $850 million for dam breaching). One tribal official cited a more conservative estimate of $160 million. *See id.*

290. *See* Pawelski, *supra* note 280 (noting dam supporters' argument against closing down dams).

291. *See id.* (illustrating adverse effects of breaching dams).

292. *See* Columbia & Snake Rivers Campaign, *Federal Documents Show That Partial Removal of the 4 Lower Snake River Dams Makes Sense: Alternatives are Uncertain and Costly* [hereinafter *Federal Documents*] (Dec. 17, 1999) (stating that Army Corps of Engineers' economic analysis excludes significant costs of maintaining dams), *available at* <http://www.removedams.org/SOS-site/info/viewitem.cfm?ArticleID-/8> (last visited Jan. 16, 2000).

293. *See id.* (revealing monetary cost of breaching dams); *see also Price is right, supra* note 261 (citing Army Corps of Engineers' $500 to $850 million estimate).

294. *See Federal Documents, supra* note 303 (stating that maintaining dams despite need for this amount of water could also cost 4,203 to 6,530 jobs).

295. *See id.* (highlighting maintenance of dams' effect on employment rates).

296. *See id.* (stating that Corps also ignores cost for additional juvenile fish passage measures if dams remain).

Failure to breach the dams will lead to salmon extinction and fewer fishing jobs.[297] If the salmon become extinct, the federal government exposes itself to repercussions for abrogating tribal treaties.[298] One estimate predicts that tribes may recover up to $10 billion in compensation claims if the salmon become extinct.[299] To guard against extinction, the government will be forced to promulgate new restrictions on logging, fish harvests, the deepening of shipping channels, and irrigation.[300]

Leaving the dams in place will damage sport fishing businesses and commercial fisheries from Alaska to California.[301] Meanwhile, supporters of the lower Snake River dams continue to argue that the structures offer valuable hydroelectric resources for humans.[302]

3. Federal Intervention is the Key

There are two significant reasons why the federal government should intervene to help the Snake River and the entire Columbia River Basin.[303] First, a congressional act providing an alternative for the recovery of the salmon would end decades of ineffective programs and court disputes over insufficient standards under the ESA.[304] Second, federal intervention is necessary to end the decades of violations of the government's trust responsibility to Indian treaty tribes.[305] In the Columbia River Basin, trust violations are

297. *See id.* (stating that decline in fishing jobs will result from fifty to seventy-five percent reduction in harvests that NMFS says will be necessary if dams are not breached).

298. *See id.* (observing that unless the Federal government removes dams, it will be unable to restore healthy Snake River salmon runs as required by law and treaty).

299. *See Federal Documents*, *supra* note 303.

300. *See Paper Outlines Options*, *supra* note 297 (indicating that new legislation in absence of dam breaching would be more costly and less effective).

301. *See* Pawelski, *supra* note 280 (arguing against dam supporters' position that dams provide valuable economic resources to humans).

302. *See id.* (stating dams provide 5 percent of region's electricity).

303. *See* Brian Richard Ott, *Indian Fishing Rights in the Pacific Northwest: The Need for Federal Intervention*, 14 B.C. ENVTL. AFF. L. REV. 313, 340 (1987) (arguing that Congress should undertake management of fish resources in Pacific Northwest).

304. *See* Blumm et al., *supra* note 1, at 1051 (noting that "[t]he existing method of preserving the salmon runs, a barging and trucking program transporting juvenile salmon around the dams, has, over the course of two decades, failed to stem the decline of the species."). In 1995, the NMFS argued that its fish and wildlife plan gave salmon a "moderate to high probability of survival." Barker, *supra* note 13 at 1a. However, [s]ince then, salmon numbers have continued to plummet. *See id.*

305. *See* Wood, *supra* note 55, at 782 (discussing long-standing trust violations in Columbia River Basin).

entrenched as political and economic interests are institutionalized within a "regime of wildlife destruction."[306] It may require a major overhaul by Congress to undo the decades of trust violations.[307] As President Clinton vowed to American Indian and Alaska Native Tribal Leaders on April 29, 1994, "I pledge to fulfill the trust obligations of the Federal Government."[308] Both the ESA and Indian treaty rights should force the region to deal with the salmon crisis before the salmon become extinct.[309]

One commentator cites four additional reasons for the constant struggle between fish and power interests and the need for federal intervention.[310] First, increased fish flows require power tradeoffs.[311] The market for power is in the Fall and Winter. Therefore, water storage occurs during the Spring and Summer when the migrating fish need increased flows.[312] Second, without a stronger push from federal agencies like the Pacific NW Council, there is little incentive for power managers to consider accommodating the biological needs of fish.[313]

Third, the ambiguous language of the Northwest Power Act has failed to strengthen the fish advocates' position or require en-

306. *See id.*

307. *See id.*; *see also* WATER SPREADING HEARING, Subcommittee on Oversight and Investigations of the House of Representatives Committee on Natural Resources (1994) (testimony of Antone Minthorn, Chairman, Confederated Tribes of the Umatilla Indian Reservation) (discussing treaty of 1855 and subsequent near extinction of salmon only 140 years later).

308. Wood, *supra* note 55, at 735. At the White House ceremony on April 29, 1994, President Clinton signed a directive "requiring all federal agencies and departments to implement their programs in a 'sensitive manner respectful of tribal sovereignty.'" *Id.* at 736-37 (citing President William J. Clinton, Policy Concerning Distribution of Eagle Feathers for Native American Religious Purposes, 59 Fed. Reg. 22,953 (May 4, 1994)). The directive required agencies to consult tribes when federal actions were likely to affect tribal lands or resources. *See id.* at 737. This directive was certainly timely considering the Ninth Circuit's decision in *Idaho Dep't of Fish and Game v. Nat'l Marine Fisheries Serv.*, 850 F. Supp. 886 (9th Cir. 1994), which scolded the NMFS for failing to respond to tribal and state biologists' recommendations. *See supra* notes 129-132, 141 and accompanying text.

309. *See* Barker, *supra* note 13 at 1a (quoting Mary Christina Wood, who feels ESA and treaty rights will cause region to take action and move in right direction).

310. *See* Blumm & Simrin, *supra* note 98, at 711 (noting four reasons for necessity of federal intervention result from failure, by 1991, of Northwest Power Planning Council's Fish and Wildlife Program to provide adequate fish flows for salmon).

311. *See id.* (discussing how fish flows require different flow timing than hydropower).

312. *See id.* Power operators will resist meeting fish flows in order to meet economic and hydropower needs. *See id.*

313. *See id.* (discussing NWPPC's lack of interest or attention regarding fishery agency and tribal expert pleading that increased flows are biologically necessary).

forcement of the NWPPC's Fish and Wildlife Program.[314] Section 839b(h)(1)(A) requires that the design of the Pacific NW Council's fish and wildlife program "to the greatest extent possible . . . deal with the river and its tributaries as a system."[315] Section 839b(h)(11)(A)(ii) directs the federal and non-federal agencies managing and operating the hydroelectric facilities in the region to take the fish and wildlife program into account only "to the fullest extent *practicable*."[316] Thus, when faced with opposing interests, the Pacific NW Council may concede to economic pressures as it has in the past.[317] The ESA counters the ambiguity in the NPA because it requires all federal departments and agencies to "seek to conserve endangered species and threatened species and [to] utilize their authorities in furtherance of the purposes of [the] Act."[318] Since Congress approved the ESA, "the most unequivocal environmental law ever written," commentators feel that Congress and the courts may require that drastic steps be taken to save the salmon.[319]

Lastly, Congress has failed to authorize those who are more scientifically capable of making deliberate, informed decisions to reconcile conflicting fish and power interests.[320]

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314. *See id.* at 712 (noting that Northwest Power Act language actually weakens fishery advocates' position).

315. 16 U.S.C. § 839b(h)(1)(A) (1994).

316. 16 U.S.C. § 839b(h)(11)(A)(ii)(1994).

317. *See* Blumm and Simrin, *supra* note 98, at 712 (discussing ambiguous statutory language and Council's weakened resolve to advocate for fish in face of opposition by utilities and federal water managers).

318. 16 U.S.C. § 1531(c)(1)(1994). Section 1531(b) sets forth the purposes of the ESA: "The purposes of this Chapter are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species,. . ." 16 U.S.C. § 1531(c)(1)(1994).

319. *See* Barker, *supra* note 13, at 1a (noting that Supreme Court has already once stopped construction of dam to protect snail darter). The Ninth Circuit also recently held that the ESA requirements override water rights of irrigators in the Pacific Northwest. *See generally* Klamath Water Users Protective Assn. v. Patterson, 191 F.3d 1115 (9th Cir. 1999) (recognizing operator of dam has responsibilities under ESA as federal agency). In that case, irrigators sought to enforce a contract that provided them with water from operation of the Link River Dam in California. *See id.* at 1119. The irrigators argued that the operator of the dam has no obligation to comply with the ESA, and that Indian treaty rights were irrelevant to the dispute over water rights. *See id.* at 1122. The court struck down both arguments, first recognizing that the U.S. Bureau of Reclamation has the authority to direct the operators of the dam to comply with the ESA, and second, that tribal water rights are senior to the Irrigators' water rights. *See id.* at 1123.

320. *See* Blumm and Simrin, *supra* note 98, at 712-13 (recognizing Congress's vesting of authority for fish and wildlife program under Northwest Power Act in "a new institution composed of members with no biological expertise and a high turnover rate."). The NWPPC has consistently devoted more of its attention to hydroelectricity than to its fish and wildlife responsibilities, possibly because of the

4. Tribal Reaction to Dam Breaching

Tribal approval of dam breaching is of the utmost importance due to the tribes' constitutionally-protected right to fish.[321] Congress may take no drastic measures that will deprive the tribes of their treaty right to "tak[e] fish in all the streams . . . running through or bordering" their reservations.[322] Conversely, Congress may not abrogate the treaty right to fish through inaction.[323] Congress must choose a plan that will most likely restore ecosystem functions and recover the listed and endangered species.[324]

Of the year 2000 recommendations for Pacific Northwest fish and wildlife recovery, the tribes most vigorously support dam breaching to save the salmon that played a significant role in their cultures for centuries.[325] Litigious tribal attempts to recover damages for the dams' effects on fish supplies are evidence of the tribes' opposition to hydroelectric dam construction throughout the United States.[326] In a current suit, the Skokomish Tribe seeks $5.8 billion in damages, claiming it sustained seventy-five years of "'ruthless economic and human damage' from the Cushman Hydroelec-

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difficult issues involved. *See id.* This permitted the federal and non-federal agencies operating their dams to continue uninhibited, implementing only small changes to their operations and avoiding major changes that would be economically taxing. *See id.* at 713.

321. See *supra* notes 21-44 and accompanying text for a discussion of the Indian treaty right to fish.

Federal power over the tribes is not absolute. *See* Comment: *Indian Fishing Rights in the Pacific Northwest: The Need for Federal Intervention*, 14 B.C. ENVTL. AFF. L. REV. 313, 319 (1987) [hereinafter *Comment*]. The federal government has a trust responsibility to the tribes to advance the tribes' best interests over the government's best interests. *See id.* Thus, the federal government must breach the dams if breaching is in the beneficiary tribes' best interests, and the government must subordinate its own interests, such as cost, to those of the tribes. *See id.* Furthermore, the government has a duty of loyalty to the tribes, and may not abandon its responsibilities to the tribes. *See id.* at 320.

322. *See* Northwest Indian Fisheries Commission, *New Millenium Agreement* (stating that as we move into new millenium, we must all remember that "the treaties and contracts we have with the Native American tribes are the law of the land, as defined by the Constitution of the United States. It is our responsibility to honor and respect these contracts we made more than a century ago."), *available at* <http://www.nwifc.wa.gov/current/index.htm> (last visited Feb. 25, 2000).

323. *See Comment*, *supra* note 251, at 320 (stating that federal government may not abandon its responsibilities to tribes). One of these responsibilities is ensuring that Congress does not abrogate the Indian treaty right to fish through inaction which results in salmon depletion or extinction. *See id.*

324. *See id.*

325. See *infra* notes 251 through 254 and accompanying text for a discussion of tribal support for dam breaching.

326. See *infra* notes 257 through 259 and accompanying text for a discussion of suits brought by tribes for damages caused by hydroelectric dams.

tric Project" in Tacoma, Washington.[327] In another suit, the Nez Perce tribe sought monetary damages for Idaho Power Company's interference with their fish runs.[328] The Tribe cited damages to Fall and Spring chinook and steelhead resulting from the negative effect of the power company's construction and maintenance of three dams on the Snake River.[329] The Tribes made it clear that they will fight the construction of any man-made additions such as marinas and irrigation systems, as well as activities such as logging, which disturb the ecosystem in which the salmon flourish.[330]

Tribes also evidenced their support for breaching the dams with their own dam-breaching proposals.[331] The Columbia River Inter-Tribal Fish Commission ("CRITFC") represents the Yakama, Umatilla, Warm Springs, and Nez Perce tribes.[332] Spirit of the Salmon, the CRITFC's Columbia River Anadromous Fish Restoration Plan, supports an integrative alternative.[333] It advocates breaching the lower Snake River dams, changing land-use practices that degrade habitat, and utilizing hatcheries as tools for rebuilding salmon stocks.[334] The Spirit of the Salmon's exclusive goal is to

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327. *See Skokomish Tribe Seeks $5.8 Billion in Damages,"* Northwest Indian Fisheries Commission Newsletter, Vol. XIV, No. 3, Fall 1999 (stating that only way tribe can restore its river is to breach dam), *available at* <http://www.nwifc.wa.gov/newsletter/Fall99/9.asp> (last visited Feb. 25, 2000). The tribe named the federal government in its suit as well as the City of Tacoma because the tribe claims that the federal government failed to perform its trust duty to the tribe by protecting the tribe's treaty rights. *See id.*

328. *See generally* Nez Perce Tribe v. Idaho Power Co., 847 F. Supp. 791 (1994) (stating that monetary damages are not available for diminished salmon runs, but leaving room for monetary damages for extinction); *see also generally* Winters v. United States, 207 U.S. 564 (1908) (seeking injunction for plan to divert waters of Milk River).

329. *See id.* at 794.

330. *See generally* Muckleshoot Indian Tribe v. Hall, 698 F. Supp. 1504 (W.D. Wash. 1988) (seeking preliminary injunction enjoining construction of 1200-slip marina which would interfere with tribal treaty right to fish); United States v. State of Washington, 506 F. Supp. 187 (W.D. Wash. 1980) (stating that tribes have right to protect fisheries from man-made despoliation by timber companies, hydroelectric development, and irrigation).

331. *See* Associated Press, *Price is right to breach dams on Snake, says tribal official* [hereinafter *Price is right*] (1998), *available at* <http://www.idahonews.com/012898/THE_WEST/12971.htm> (last visited Aug. 5, 2000).

332. *See* Columbia River Inter-Tribal Fish Commission (stating that tribes are seeking to implement salmon restoration in conjunction with other local, state and federal government), *available at* <http://www.crifc.org/text/TRP.HTM> (last visited Nov. 21, 2000).

333. *See id.* (focusing its alternative on "strategies and principles that rely on natural production and healthy river runs").

334. *See id.* (stating "[d]am breaching will not single-handedly restore the Snake River salmon.").

"put the fish back into the rivers."[335] The plan is characterized by its aggressiveness; it "not only makes recommendations, but more importantly begins to provide a context for decision making: scientific and legal justifications, directions for implementation, and analyses of expected outcomes are provided."[336] The plan completely rejects artificial transportation of juvenile salmon and instead calls for permanent reservoir drawdowns.[337] It not only advocates breaching the dams, but also sets forth a formula to accomplish its goal.[338]

Cost estimates for breaching the dams are encouraging.[339] The Tribes feel that while prior estimates in the billions of dollars were excessive, recent estimates in the millions of dollars are manageable.[340] While Tribes urge that "calculating foregone hydroelectric cost is not the only measure of the salmon's worth,"[341] a recent report by leading Northwest economists shows that removing the lower Snake River dams will provide significant short and long-term economic benefits to the Northwest.[342] The report urges that restoring healthy salmon runs will boost the economy by providing thousands of new jobs in the fishing, transportation, and construction industries.[343]

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335. *See id.* (stating that putting fish back in rivers has become increasingly difficult because of decades of poor fish management policies).

336. *Id.* (describing that plan will re-establish United States' duty to honor treaty and trust obligations). In addition to meeting tribal ceremonial, subsistence, and commercial requirements, the plan would also benefit the non-Indian public by increasing the number of harvestable salmon and re-creating a healthy, natural river. *See id.*

337. *See* Columbia River Inter-Tribal Fish Commission (stating that to achieve its long-term goal of "mean historical flows," permanent reservoir drawdowns are necessary), *available at* <http://www.crifc.org/text/TRP.HTM> (last visited Mar. 9, 2000).

338. *See id.* (setting forth CRITFC's goals and timetable to accomplish its objectives, as well as economic, legal, cultural, and historical contexts in which to work).

339. *See Price is right*, *supra* note 261 (noting cost estimate for breaching that is much lower than previous estimates of $500 million to $850 million).

340. *See id.* (estimating cost of breaching four lower Snake River dams at $160 million, according to Nez Perce Tribe official). According to the United States Army Corps of Engineers, the body responsible for operating the dams, overall costs for breaching the dams, as well as for preventing damage along the reservoirs, range from $500 million to $850 million. *See id.*

341. *See* Columbia River Inter-Tribal Fish Commission, *supra* note 262 (recognizing economic consequences on tribal revenues and economies due to salmon depletion).

342. *See* The Columbia & Snake Rivers Campaign, *available at* <http://www.removedams.org/> (visited March 9, 2000).

343. *See id.* (stating that instead of criticizing costs of dam breaching, leaders must seize this opportunity to both restore salmon and improve local economies). *See also* Columbia River Inter-Tribal Fish Commission (stating that benefits will ac-

VI. CONCLUSION

Economics and the media appear to support breaching the lower Snake River dams. While breaching the dams would be costly, failure to breach the dams would cause greater, irreparable damage.[344] Not only would the United States Government completely fail to uphold its treaty obligations to the Indians if it opts to maintain the status quo, but it would also destroy what was once a vast and bountiful salmon population.[345] Web-sites, legal commentary, and newscasters have covered the plight of the salmon in the Pacific Northwest and the dam breaching issue. Ultimately, one of three things must inevitably occur: (1) the salmon will become extinct; (2) a federal judge will, pursuant to the ESA, order that the dams be breached, pressuring the region's economy but upholding the purposes of the ESA; or (3) "political leaders will step forward with a realistic plan that meets the law."[346] Hopefully, science will lead the way, and the comprehensive, scientifically-based studies and plans discussed herein, coupled with the collaborative efforts of the Columbia River Basin Forum, will encourage the federal government to move from discussion to action and make the year 2000 truly "the Year of the Decision."

Karen Richardson
Jennifer Bello

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crue not only to commercial, tribal, and sport fisherman, but also to "a broader spectrum of related economic interests, such as fish processing, fishing gear manufacturing, retail outlets, and hotel/motel industries."), *available at* <http://www.crifc.org/text/TRP_leg.htm> (last visited Mar. 9, 2000).

344. *See supra* notes 308-09 and accompanying text.

345. *See* Federal Caucus, *supra* note 9, at 44 (citing salmon harvest in 1800s of up to 5.6 million annually).

346. Barker, *supra* note 13, at 1a (discussing options for dealing with salmon problem). Barker quoted Will Stelle, National Marine Fisheries Service regional director, who said, [t]he region will have to decide, are we prepared to make these decisions ourselves, or are we more comfortable letting a court decide?" *Id.*