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Dam Removal in the Pacific Northwest: Lessons for the Nation

Michael Blumm
Lewis & Clark Law School

Andrew B. Erickson
Lewis & Clark Law School

ARTICLES

DAM REMOVAL IN THE PACIFIC NORTHWEST: LESSONS FOR THE NATION

BY

MICHAEL C. BLUMM* AND ANDREW B. ERICKSON**

Over the past dozen years, a number of large dams in the Pacific Northwest have been removed in an effort to restore riverine ecosystems and dependent species like salmon. These dam removals provide perhaps the best example of large-scale environmental remediation in the twenty-first century. This restoration, however, has occurred on a case-by-case basis, without a comprehensive plan. The result has been to put into motion ongoing rehabilitation efforts in four distinct river basins: the Elwha and White Salmon in Washington and the Sandy and Rogue in Oregon. In all, nine significant dams have been removed, and four more—in the contentious Klamath Basin of Oregon and California—are slated for removal within the next decade. This Article surveys both the successful and proposed removals in order to draw lessons both within and beyond the Pacific Northwest. We identify a number of factors that determine both the speed and success of dam removal efforts, including the availability of the federal licensing process under the Federal Power Act, the existence and organization of local opposition, the amount and sources of funding, and the support of federal and state resource agencies and well-positioned members of Congress. These factors suggest that the promised removal of the Klamath dams—as well as calls for removing four federal dams on the Lower Snake—face significant odds.

* Jeffrey Bain Faculty Scholar and Professor of Law, Lewis & Clark Law School.

** J.D. expected 2013, Lewis & Clark Law School.

I. INTRODUCTION

The Pacific Northwest stands at the forefront of a new era in dam removal and river restoration. For over twenty years, the government has studied, and river advocates have championed, a policy of breaching dams that block salmon passage to spawning streams in Washington, Oregon, and California.[1] Recently removed dams and several scheduled removals indicate that long-fought efforts to remove certain dams and restore their rivers are bearing fruit.[2]

For most of the twentieth century, dam construction dominated the rivers of the Pacific Northwest.[3] Throughout the region's major river basins, dams produced hydropower, irrigation, flood control, and opportunities for recreation.[4] Yet the benefits of the dams came at high environmental costs.[5] Salmon and other anadromous fish that return from the ocean to spawn in freshwater streams encounter dams that often prevent their passage.[6] The high mortality rates caused by dams led to the listing of a number of salmon species under the Endangered Species Act (ESA).[7] Inadequate fish ladders,

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1 *See* OFFICE OF HYDROPOWER LICENSING, FED. ENERGY REGULATORY COMM'N, DRAFT ENVIRONMENTAL IMPACT STATEMENT: GLINES CANYON AND ELWHA HYDROELECTRIC PROJECTS, WASHINGTON 2-16 to -17 (1991), *available at* http://ia700507.us.archive.org/29/items/draftenvironment00fede/draftenvironment00fede.pdf [hereinafter GLINES AND ELWHA DRAFT EIS]; Michael T. Pyle, Note, *Beyond Fish Ladders: Dam Removal as a Strategy for Restoring America's Rivers*, 14 STAN. ENVTL. L.J. 97, 98–99 (1995) (discussing Congress's decision to remove two dams on the Elwha River in Washington and predicting increased future dam removal).

2 *See* Editorial, *Rethinking Dams*, N.Y. TIMES, July 6, 1999, at A16 (discussing the Edwards Dam removal in 1999); Matthew Preusch, *Rogue River Near Reversal of Fortune*, OREGONIAN, June 8, 2008, at B1 (describing removal of the Elk Creek and Chiloquin Dams in 2008); Scott Learn, *With a Boom and a Flash of Light, Condit Dam is Breached and White Salmon River Unleashed*, OREGONIAN, Oct. 26, 2011, http://www.oregonlive.com/environment/index.ssf/2011/10/with_a_boom_and_a_flash_of_lig.html (last visited Nov. 18, 2012) (discussing the Condit Dam removal in 2011); Lynda V. Mapes, *Elwha Dams' Historic Removal Begins*, SEATTLE TIMES, Sept. 15, 2011, http://seattletimes.com/html/localnews/2016222879_dams16m.html (examining the removal of the Elwha and Glines Canyon Dams in 2011 and 2012) (last visited Nov. 18, 2012).

3 *See, e.g.*, Michael C. Blumm, *The Amphibious Salmon: The Evolution of Ecosystem Management in the Columbia River Basin*, 24 ECOLOGY L.Q. 653, 657 (1997) (discussing the Northwest's era of dam building beginning in the 1930s and the subsequent ecosystem transformations).

4 *See* Larry Hittle et al., *Pacific Northwest Power Generation, Multi-Purpose Use of the Columbia River, and Regional Energy Legislation: An Overview*, 10 ENVTL. L. 235, 238–39 (1979).

5 *See* 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, 1006–07 (1998).

6 F. Lorraine Bodi, *Protecting Columbia River Salmon Under the Endangered Species Act*, 10 ENVTL. L. 349, 369 (1980). The fish blocked include not only salmon, but also steelhead, which are technically trout, but which share anadromous characteristics with salmon. Michael C. Blumm et al., *Practiced at the Art of Deception: The Failure of Columbia Basin Salmon Recovery Under the Endangered Species Act*, 36 ENVTL. L. 709, 711 n.1 (2006).

7 Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2006 & Supp. IV 2011); *e.g.*, Michael C. Blumm & Greg D. Corbin, *Salmon and the Endangered Species Act: Lessons from the Columbia Basin*, 74 WASH. L. REV. 519, 522–23 (1999); John M. Volkman & Willis E. McConnaha,

changed hydraulic conditions, and the difficulties of downstream fish passage around the dams led many to claim that saving and replenishing salmon resources depended on removing barriers to free-flowing rivers and restoring the rivers' natural hydrology.[8]

Serious public attention turned to the prospect of removing dams in the 1990s.[9] In 1992, Congress authorized the federal purchase of the Elwha and Glines Canyon Dams in Washington State for $29.5 million.[10] The Elwha Act directed the Department of the Interior to study and implement complete restoration of the Elwha River ecosystem, including the removal of the two dams.[11] Two years later, in 1994, the Federal Energy Regulatory Commission (FERC) issued a policy statement interpreting section 3 of the Electric Consumers Protection Act[12]—which requires FERC to give equal consideration to environmental and economic factors when licensing dams[13]—concluding that the agency could order removal of dams at the dam owner's expense.[14] Inherent in FERC's dam removal policy was the recognition that in some cases the balance of environmental and economic considerations tipped in favor of removing dams.[15] FERC used this power for the first time in 1997 when it ordered the removal of the Edwards Dam in Maine.[16] Consequently, in 1999, for the first time in 160 years, the Kennebec River flowed unimpeded to the ocean, allowing the free passage of fish from the Atlantic to spawn upstream in headwaters tributaries.[17]

The success of the Edwards Dam removal led to increased interest in dam removal and an accelerating number of proposals for river restoration

Essay, *Through a Glass, Darkly: Columbia River Salmon, The Endangered Species Act, and Adaptive Management*, 23 ENVTL. L. 1249, 1250 (1993).

8 *See* Blumm et al., *supra* note 5, at 1051–54; Rollie Wilson, *Removing Dam Development to Recover Columbia Basin Treaty Protected Salmon Economies*, 24 AM. INDIAN L. REV. 357, 393–94, 396–98, 417–19 (2000) (examining the detrimental effects of dams on salmon habitat and calling for dam removal to restore necessary water flows). *See generally* STEVEN HAWLEY, RECOVERING A LOST RIVER: REMOVING DAMS, REWILDING SALMON, REVITALIZING COMMUNITIES (2011) (arguing for dam removal on the Snake River and discussing the dam removal trend in the Pacific Northwest).

9 *See* Pyle, *supra* note 1, at 98–99 (discussing Congress's decision to remove dams on Washington's Elwha River, a subsequent FERC policy statement indicating further dam removal in the future, and also noting the increased public support in favor of dam removal).

10 Elwha River Ecosystem and Fisheries Restoration Act, Pub. L. No. 102-495, § 3(b), 106 Stat. 3173, 3174 (1992).

11 *Id.* §§ 3, 4, 106 Stat. at 3174–76.

12 Electric Consumers Protection Act of 1986, Pub. L. No. 99-495, 100 Stat. 1243 (codified as amended in scattered sections of 16 U.S.C.).

13 Project Decommissioning at Relicensing; Policy Statement, 60 Fed. Reg. 339, 339–40 (Jan. 4, 1995) (codified at 18 C.F.R § 2.24).

14 *Id.* at 340.

15 *See* Peter J. Carney, *Dam Removal: Evolving Federal Policy Opens a New Avenue of Fisheries and Ecosystem Management*, 5 OCEAN & COASTAL L.J. 309, 316–17 (2000); Blumm et al., *supra* note 5, at 1052 (concluding that economic benefits of dam removal sometimes outweigh economic benefits of leaving dams in place).

16 *See* Carney, *supra* note 15, at 324–25.

17 *Id.*

in the Pacific Northwest.[18] But removing dams and restoring rivers is quite complex. Aside from the physical practicalities of engineering safe dam breaches[19] and restoring ecosystems,[20] legal and political factors affect the speed and success of removal efforts. Some dam removal projects have proceeded relatively quickly from proposal to completion.[21] Other projects experience conflict, political wrangling, and serious delay.[22] This paper examines the factors that affect the outcome of dam removal proposals, including the size of the removal, the FERC relicensing process, local opposition, political support, and funding.

We examine several dam removals and proposed removals in the Pacific Northwest in order to analyze the factors that contribute to successful and speedy dam removal. Part II of this Article begins by investigating the Elwha and Glines Canyon Dams on the Elwha River near Olympic National Park in western Washington. The federal government purchased both dams in 2000 and began the removal process in the fall of 2011.[23] The government aims to restore the natural ecosystem near the national park over the next thirty years.[24]

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18 Scott Learn, *Hydropower Dam Removal Ramps Up in the Northwest This Fall*, July 25, 2011, http://www.oregonlive.com/environment/index.ssf/2011/07/hydropower_dam_removal_ramps_u.html (last visited Nov. 18, 2012). In 2009, old dams were being removed at a rate of 40 per year. Matthew Preusch, *Dams go Down, Uncorking Rivers for Kayakers*, N.Y. TIMES, Aug. 9, 2009, at TR3. Between 2000 and 2010, 410 dams were removed across the country, mostly in the East and Midwest. *Go With the Flow: Removing Old Dams Benefits America's Rivers Economically and Ecologically*, ECONOMIST, Oct. 1–7, 2011, at 35. There are approximately 84,000 operational dams in the United States. *See id.*

19 *See* N. Leroy Poff & David D. Hart, *How Dams Vary and Why it Matters for the Emerging Science of Dam Removal*, 52 BIOSCIENCE 659, 665–66 (2002).

20 *See* Angela T. Bednarek, *Undamming Rivers: A Review of the Ecological Impacts of Dam Removal*, 27 ENVTL. MGMT. 803 (2001).

21 *See* David H. Becker, *The Challenges of Dam Removal: The History and Lessons of the Condit Dam and Potential Threats from the 2005 Federal Power Act Amendments*, 36 ENVTL. L. 811, 832 n.135 (2006). The Gold Hill and Gold Ray dams were removed within a few years of the initial proposal. *See infra* Part V. Portland General Electric removed the Little Sandy and Marmot Dams near Mt. Hood eight and nine years after the initial proposal, respectively. *See infra* Part IV.

22 *See* Philip M. Bender, *Restoring the Elwha, White Salmon, and Rogue Rivers: A Comparison of Dam Removal Proposals in the Pacific Northwest*, 17 J. LAND RES. & ENVTL. L. 189, 219–30 (1997) (discussing conflicts associated with removal of Elwha and Glines Canyon Dams). Removing the Elwha and Glines Canyon Dams was proposed for over a quarter-century, beginning in 1984. Removal finally began in 2011 and will continue until the end of 2012. *See infra* Part II.B. Discussions of removing dams in the Klamath have been ongoing for over a decade, with dam removal not expected to begin until at least 2020. *See infra* Part VI.B; Dow A. Davidson, Comment, *Who Wants Some Water: The Ongoing Battle for the Klamath River Basin and the Need for Moderate Institutional Change to End the War*, 34 CUMB. L. REV. 531 (2004) (discussing the conflicts over water rights in the Klamath River Basin). It took 12 years to remove the Condit Dam after a settlement calling for dam removal. *See infra* Part III.

23 *See* Lynda V. Mapes, *Dams' Removal Promises Unique Chance to Start Over on a Grand Scale*, SEATTLE TIMES, Sept. 17, 2011, http://seattletimes.com/html/localnews/2016083904_elwhaoverview18m.html (last visited Nov. 18, 2012); Bureau of Reclamation, *Elwha and Glines Canyon Dams, Elwha River near Port Angeles, Washington*, http://www.usbr.gov/pmts/sediment/projects/ElwhaRiver/ElwhaGlinesCanyon.htm (last visited Nov. 18, 2012).

24 *See infra* Part II.C.

Part III addresses the removal of the Condit Dam on the White Salmon River in southern Washington. The Condit removal was a result of a 1999 settlement between the Yakama Nation and other tribes, the dam's owner-operator PacifiCorp, federal agencies, and environmental groups, regarding salmon access to traditional fishing areas upstream. PacifiCorp faced the choice of implementing expensive modifications to allow fish passage at the Condit or agreeing to pay for a complete removal. In October 2011, a dozen years after the settlement, PacifiCorp removed the dam and in 2012 began remediation activities, including the removal of the dam remnants.[25]

Part IV turns to the removals of the Marmot and Sandy Dams near Mt. Hood outside of Portland, Oregon. These two small-scale hydroelectric dams—owned and operated by Portland General Electric (PGE)—required extensive repairs and upgrades in order to modernize fish passage facilities and comply with fish passage prescriptions under the Federal Power Act (FPA).[26] PGE opted for removal rather than paying for the expensive repairs, and removed the dams without much fanfare in 2007 and 2008, respectively.[27]

Part V examines the Rogue River watershed in southern Oregon. The Rogue Basin once featured eight major dams that provided irrigation water and flood control. But between 2008 and 2010, local governments removed three of the dams—the Gold Hill, Savage Rapids, and Gold Ray Dams—and the U.S. Army Corps of Engineers notched a fourth—the Elk Creek Dam. At the time of removal, none of the dams provided hydroelectric power, and the extensive maintenance costs and new irrigation options contributed to the various decisions to remove the aging dams and not complete the Elk Creek Dam.[28]

Part VI proceeds to consider proposals for dam removal in the Klamath River Basin in southern Oregon and northern California. The Klamath Basin now has seven major dams, all owned by PacifiCorp, all but one of which provide significant sources of hydroelectric power.[29] In 2010, two major settlements in the Klamath Basin established a goal of removing four of these dams on the mainstem of the Klamath River by 2020.[30] The Klamath restoration would be the largest dam removal project in history, but resolving the contentious issues of funding for removal and allocating water rights remain significant hurdles before beginning the restoration.

The Article concludes by assessing the prospects for future dam removals and investigating how lessons from the Pacific Northwest can be

25 *See* Shannon Dininny, *Crews Breach Condit Dam in Washington*, SEATTLE TIMES, Oct. 26, 2011, http://seattletimes.com/html/localnews/2016617309_apwadamremoval7thldwritethru.html (last visited Nov. 18, 2012).

26 *See* Federal Power Act, 16 U.S.C. § 811 (2006); Portland General Electric, *Protecting Fish: Sandy River*, www.portlandgeneral.com/community_environment/initiatives/protecting_fish/sandy_river/default.aspx (last visited Nov. 18, 2012).

27 *See infra* Part IV.B.2.

28 *See* Preusch, *supra* note 2.

29 *See* PacifiCorp, *Klamath River: Project Overview*, http://www.pacificorp.com/es/hydro/hl/kr.html (last visited Nov. 18, 2012).

30 *See infra* Part VI.B.

applied to other regions.[31] The experiences of dam removal in the Pacific Northwest—including restoration projects as monumental as the dams they will replace—provide useful examples for other regions struggling to break down the complex legal, political, and concrete barriers to restoring free-flowing rivers.

II. THE ELWHA RIVER: REMOVAL OF THE ELWHA AND GLINES CANYON DAMS

The Elwha River's headwaters are in the Bailey Range of the Olympic Mountains in western Washington. The river flows north to the Strait of Juan de Fuca, halfway between the Pacific Ocean and Puget Sound.[32] Glaciers that once covered the Olympic Peninsula during the Pleistocene shaped the hydrology of the Elwha watershed, creating a rapid river that descends 4,500 feet in just forty-five miles.[33] Before construction of the dams, the Elwha River supported a highly productive fishery, regarded as one of the most prolific in the Pacific Northwest.[34] The Elwha watershed provided spawning habitat for every species of anadromous fish native to the Pacific Northwest,[35] including massive Elwha River chinook salmon that often weighed more than a hundred pounds.[36] For over 2,700 years, the Elwha River's fisheries had helped sustain the survival and livelihoods of the native inhabitants of the area.[37]

A. Damming the Elwha River

The growth of non-native settlement on the Olympic Peninsula near the end of the nineteenth century led to drastic changes in the human economy of the region as well the Elwha River ecosystem. Since 1914, the Elwha and

31 *See infra* Part VII.

32 *See* Jeffrey J. Duda et al., *Baseline Studies in the Elwha River Ecosystem Prior to Dam Removal: Introduction to the Special Issue*, 82 NW. SCI. (SPECIAL ISSUE) 1, 4 (2008); Russell W. Busch, *Tribal Advocacy for Elwha River Dams Removal on Washington's Olympic Peninsula*, 2 GOLDEN GATE U. ENVTL. L.J. 5, 5 (2008).

33 *See* ROWLAND W. TABOR, GUIDE TO THE GEOLOGY OF OLYMPIC NATIONAL PARK 85–86, 92–93, 95 (1975). The Elwha River is a glacial-fed stream from the glaciers in the Olympic Mountains. *See* Duda et al., *supra* note 32, at 3–5; *Tearing Down the Elwha River Dam*, POPULAR MECHANICS, Feb. 10, 2006, http://www.popularmechanics.com/science/environment/water/2294301 (last visited Nov. 18, 2012).

34 Robert C. Wunderlich et al., *Restoration of the Elwha River Ecosystem*, FISHERIES, Aug. 1994, at 11–12.

35 Anadromous fish native to the Northwest include spring-and summer-fall-run chinook (*Oncorhynchus tsawytscha*), coho (*O. kisutch*), chum (*O. keta*), pink (*O. gorbuscha)*, and sockeye salmon (*O. nerka*); and summer- and winter-run steelhead (*O. mykiss*), sea-run cutthroat trout (*O. clarki*), Dolly Varden or sea-run native char (*Salvelinus malma*), and bull trout (*S. confluentus*)). *Id.* at 12–13.

36 *See* BRUCE BROWN, MOUNTAIN IN THE CLOUDS: A SEARCH FOR THE WILD SALMON 63 (1982); Michael L. Goodman, Comment, *Preserving the Genetic Diversity of Salmonid Stocks: A Call for Federal Regulation of Hatchery Programs*, 20 ENVTL. L. 111, 120 (1990).

37 The Elwha River's human history begins with the first inhabitants, the Lower Elwha Klallam Tribe. *See* LYNDA V. MAPES, BREAKING GROUND: THE LOWER ELWHA KLALLAM TRIBE AND THE UNEARTHING OF TSE-WHIT-ZEN VILLAGE 25–26 (2009).

Glines Canyon Dams produced hydroelectric power that facilitated the growth in cities and industries throughout the peninsula. Yet almost immediately after the dams' construction, the river's salmon fishery virtually disappeared, and the ecology of the Elwha River entered a steep and long-term decline.

1. Construction of the Elwha and Glines Canyon Dams

In 1910, the Olympic Power and Development Company began construction of a hydroelectric dam in the Elwha Gorge, five miles upstream from the river's mouth.[38] Engineers built an eighty-foot concrete gravity dam across the river by anchoring each side of the dam to the canyon walls, suspending the retaining wall down to the riverbed.[39] After the first design failed and flooded downstream communities, the reconstructed Elwha Dam was completed in 1913, standing 105-feet tall and creating a 267-acre reservoir, Lake Aldwell.[40]

The success of lumber mills and the growing economy of the peninsula led to increased demand for electricity and more hydroelectric development.[41] In 1925, construction of a second dam began about eight miles upstream from the Elwha in Glines Canyon.[42] Workers completed Glines Canyon Dam, a 210-foot concrete arch dam, in 1927, creating a new reservoir on the Elwha River: Lake Mills.[43] Hydroelectric power generated at the Glines Canyon Dam and a significant water diversion, totaling more than 150 cubic feet per second from the Elwha River, supplied lumber mills in Port Angeles, Washington.[44] Unlike the Elwha Dam, which was constructed before enactment of the 1920 Federal Power Act, the Glines Canyon Dam received a fifty-year permit from the Federal Power Commission in 1926 for hydropower production.[45]

Together, the Elwha and Glines Canyon Dams generated a significant amount of electricity for the Olympic Peninsula.[46] The dams produced over 28 megawatts (MW) of electricity and supplied power to lumber mills in Port

38 Nat'l Park Serv., *Dam Construction: History of the Dam Construction*, www.nps.gov/olym/historyculture/dam-construction.htm (last visited Nov. 18, 2012); BROWN, *supra* note 36, at 69.

39 *See* Nat'l Park Serv., *supra* note 38.

40 *Id.*; Bureau of Reclamation, *supra* note 23; Nat'l Parks Conservation Ass'n, *History of Hydropower on the Elwha River*, http://www.npca.org/protecting-our-parks/air-land-water/great-waters/elwha-dam-history.html (last visited Nov. 18, 2012).

41 *See* Nat'l Park Serv., *supra* note 38.

42 *See* ELIZABETH GROSSMAN, WATERSHED: THE UNDAMMING OF AMERICA 159 (2002). The Elwha Dam was built at river mile 4.9 and the Glines Canyon Dam at river mile 13.5. *Id.* at 158–59.

43 *See* Bureau of Reclamation, *supra* note 23; GROSSMAN, *supra* note 42, at 159.

44 *See* BROWN, *supra* note 36, at 94.

45 *See* GROSSMAN, *supra* note 42, at 160.

46 Nat'l Parks Conservation Ass'n, *supra* note 40.

Angeles and cities up to sixty miles away.[47] Over their 100-year history, the dams changed ownership multiple times, reflecting their profitability and their importance as reliable sources of electricity to the industries in the region.[48]

Although the construction and operation of the dams garnered widespread public support, concerns about the effects on the Elwha's salmon fishery arose in the first years of construction.[49] The Elwha and Glines Canyon Dams were both built without fish passage facilities, in violation of Washington state law,[50] and early attempts at restocking the river with hatchery fish failed.[51] Since the closure of the original fish hatchery in 1922, the Elwha River's dams have operated without fish ladders, other fish passage devices, or even a hatchery.[52] Not until 1975 did the dam owners enter into a mitigation agreement with the Washington Department of Fish and Wildlife to fund a salmon rearing channel downstream from the Elwha Dam and to regulate river flows to facilitate salmon spawning in the lower river.[53]

2. The Decline of the Elwha River Ecosystem

The Elwha and Glines Canyon Dams completely blocked fish passage to crucial spawning habitat in the upper forty miles of the Elwha River and significantly altered the glacial-fed river's hydromorphology.[54] Almost immediately after the completion of the Elwha Dam, the river's salmon population dropped by 75%.[55] None of the nine species of anadromous fish that spawned in the upstream portions of the river and its headwaters managed to spawn in years after 1910,[56] and all but one species of salmon—

47 Elwha Watershed Info. Res., *History of Elwha and Glines Canyon Dams*, http://www.elwhainfo.org/elwha-river-watershed/dam-removal/history-elwha-and-glines-canyon-dams (last visited Nov. 18, 2012).

48 *See* GROSSMAN, *supra* note 42, at 161.

49 *See* GROSSMAN, *supra* note 42, at 158.

50 Act of Feb 11, 1890, § 8, 1889–1890 Wash. Sess. Laws 106, 107–08 (requiring fish passage facilities whenever an obstruction was placed in a river where "food fish are wont to ascend"). *See* BROWN, *supra* note 36, at 71; Busch, *supra* note 32, at 12.

51 *See* BROWN, *supra* note 36, at 71–72.

52 *See id.* The Lower Klallam Tribe operates a fish hatchery in coordination with the Washington Department of Fish and Wildlife on the lower Elwha River. *See* Elwha Watershed Info. Res., *supra* note 47.

53 Agreement Between Crown Zellerbach Corporation and Washington State Department of Fisheries, Covering Contribution Toward Cost of Construction and Operation of Salmon Rearing Pond and Appurtenant Facilities on Elwha River, Apr. 25, 1975, *available at* http://wdfw.wa.gov/conservation/habitat/planning/energy/mitigation/region6/ElwhaDams.pdf. *See* BROWN, *supra* note 36, at 108.

54 See BROWN, *supra* note 36, at 72. The Elwha Dam blocked fish passage to 93% of fish spawning habitat in the watershed. Lynda V. Mapes, *Lower Elwha Klallam Tribe Celebrates, Works to Help River Recover*, SEATTLE TIMES, Sept. 17, 2011, http://seattletimes.com/html/localnews/2016084054_elwhatribe18m.html (last visited Nov. 18, 2012).

55 *See* BROWN, *supra* note 36, at 72.

56 Wunderlich et al., *supra* note 34, at 11.

the fall chinook—were virtually eliminated from the Elwha ecosystem.[57] Even populations of fall chinook, which spawned in the lower stretches of the river below the dams, were significantly reduced due to changing river habitat.[58]

Although the Elwha and Glines Canyon Dams wreaked havoc on the downstream ecosystem, the upper reaches of the Elwha River remained in near-pristine condition.[59] In 1938, Congress created Olympic National Park, preserving nearly forty miles of the Elwha River, including Lake Mills up to the foundation of the Glines Canyon Dam.[60] After 1938, the Glines Canyon Dam continued to operate on the border of the national park in a special use zone, allowing the dam to generate electricity despite the park's preservation goals.[61]

B. FERC Relicensing, Political Compromise, and Dam Removal Efforts

The loss of wild anadromous fish and the adverse ecological effects on the Elwha River led to sustained efforts aimed at removing the dams and restoring the river's ecosystem. In 1937, the first proposal to require dam removal and river restoration on the Elwha River failed in the Washington state legislature.[62] Fifty years later, a challenge to the relicensing of the Glines Canyon Dam evolved into a broad political effort to force the removal of the dams.[63] Nearly a century after construction of the Elwha Dam, the removal of the dams is ongoing as of this writing; wild salmon are expected to return to the headwaters within a few years.[64]

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[57] *See* BROWN, *supra* note 36, at 72; Wunderlich et al., *supra* note 34, at 13.

[58] *See* NAT'L PARK SERV., FINAL ENVIRONMENTAL IMPACT STATEMENT: ELWHA RIVER ECOSYSTEM RESTORATION 18, 26 (1995) [hereinafter ELWHA RIVER RESTORATION FEIS], *available at* http://www.nps.gov/olym/naturescience/loader.cfm?csModule=security/getfile&PageID=136255.

[59] *See* American Rivers, *Elwha River Restoration: Background and History*, http://www.americanrivers.org/initiatives/dams/projects/elwha-river-background.html (last visited Nov. 18, 2012).

[60] *See* Robert W. Righter, *National Monuments to National Parks: The Use of the Antiquities Act of 1906*, 20 W. HIST. Q. 281, 291–92 (1989); Nat'l Park Serv., *The Elwha Watershed*, http://www.nps.gov/olym/naturescience/the-elwha-watershed.htm (last visited Nov. 18, 2012) (noting that 83% of Elwha's 70-mile watershed is "located within Olympic National Park, sheltering it and making it a particularly pristine river habitat").

[61] Glines Canyon Dam is located on a private property inholding within the boundaries of the park. *See* Charles Gowan et al., *The Role of Ecosystem Valuation in Environmental Decision Making: Hydropower Relicensing and Dam Removal on the Elwha River*, 56 ECOLOGICAL ECON. 508, 510 (2006) (noting that in 1938, "Congress established Olympic National Park (ONP) on lands surrounding the Glines project"); *see also* ELWHA RIVER RESTORATION FEIS, *supra* note 58, at 18.

[62] State Representative Francis Perkins introduced legislation in 1937 that would have required dam removal and restoration of the Elwha River. The legislation failed after the Washington Director of Fisheries declined to support the proposal. *See* BROWN, *supra* note 36, at 94.

[63] *See* Bender, *supra* note 22, at 223–29.

[64] *See* ELWHA RIVER RESTORATION FEIS, *supra* note 58, at 116; *see also* Lynda V. Mapes, *Big Kings Return to Reign in Elwha*, SEATTLE TIMES, Sept. 20, 2011, http://seattletimes.com/html/localnews/2016257709_chinook20m.html (last visited Nov. 18, 2012).

1. Relicensing the Dams

The ultimately successful campaign to remove the dams began in the 1970s as a challenge to the relicensing of the Glines Canyon Dam.[65] In 1973, the dam owners, whose fifty-year license would expire in 1976,[66] submitted an application to FERC to relicense the dam.[67] The application created a controversy over whether FERC possessed the authority to license the dam, now located on the border of Olympic National Park.[68] Opponents claimed that the relicensing conflicted with the park's preservation goals, especially because the reservoir, Lake Mills, flooded portions of the park.[69] Without a FERC license to operate, opponents claimed that the dam would have to be removed.[70]

In 1978, the Elwha Dam failed a federal safety inspection, causing alarm for downstream landowners and sparking increased interest in dam removal.[71] Out of concern for its reservation property downstream and the loss of traditional fisheries, the Lower Elwha Klallam Tribe became the first major advocate for complete dam removal and restoration.[72] In 1986, the tribe intervened in the licensing proceedings before FERC, requesting denial of the application and removal of the dams.[73] In the years after 1986, environmental organizations,[74] the U.S. Fish and Wildlife Service (FWS), the National Marine Fisheries Service (NMFS), and the National Park Service (NPS) joined the tribe in opposition to the dams' relicensing.[75]

In response to this opposition, FERC took the position that it possessed the authority under the Federal Power Act to relicense the Glines Canyon Dam.[76] Although Lake Mills was located within Olympic National Park, the

65 *See* GROSSMAN, *supra* note 42, at 161.

66 *See Id.* at 160–161.

67 GLINES AND ELWHA DRAFT EIS, *supra* note 1, at 2-1. At the time of the relicensing application, the James River Corporation owned both the Elwha and Glines Canyon Dams. The previous owner, Crown Zellerbach Corporation, had owned the Elwha Dam since 1919 and built the Glines Canyon Dam in 1926 before becoming James River Corporation. *See* BROWN, *supra* note 36, at 94; ELWHA RIVER RESTORATION FEIS, *supra* note 58, at 15.

68 *See* Bender, *supra* note 22, at 224–25.

69 James River II, Inc., Project Nos. 588-004, 2683-006, 53 FERC ¶ 61,096, 61,267 (Oct. 19, 1990) (vacating prior FERC order, 69 FERC ¶ 61,045, and citing 9th Circuit case law).

70 *See* Busch, *supra* note 32, at 17.

71 BROWN, *supra* note 36, at 107.

72 *See* Lower Elwha Klallam Tribe, *Dam Removal: History of Elwha Dam*, http://www.elwha.org/damremoval.html (click on the "Effect On the People" and "Dam Timeline" hyperlinks at the top of the page) (last visited Nov. 18, 2012) (providing a narrative of the Klallam Tribe's long opposition to the Elwha Dam); Busch, *supra* note 32, at 17. The Klallam Tribe was concerned about traditional fisheries because they had retained fishing rights on the Elwha River through the Point No Point Treaty. *See* Act of Jan. 26, 1885, 12 Stat. 933, *available at* http://www.fws.gov/pacific/ea/tribal/treaties/skallam.pdf.

73 *See* Gowan et al., *supra* note 61, at 512.

74 Olympic Park Associates, Friends of the Earth, Seattle Audubon Society, and the Sierra Club. *See Re* James River II, Inc., Project Nos. 588-005, 2683-007, 55 FERC ¶ 61,034, 61,088 (Apr. 5, 1991) (denying requests for rehearing and reconsideration).

75 *See* Busch, *supra* note 32, at 9.

76 James River II, Inc., Project Nos. 588-004, 2683-006, 53 FERC ¶ 61,096, 61,270 (Oct. 19, 1990) (vacating prior FERC order, 69 FERC ¶ 61,045.

dam and the land underneath the dam were located on private land;[77] therefore, FERC claimed it could grant the license to generate hydropower.[78] In a 1990 decision, FERC concluded that the agency had jurisdiction to relicense the dams and dismissed the intervenors' claims.[79] The tribe, environmental organizations, FWS, and NMFS appealed FERC's jurisdictional ruling to the Ninth Circuit.[80]

While litigation over FERC jurisdiction was working its way through the courts, support grew for the efforts to remove the dams.[81] Politicians from Washington State and across the country began to take notice of the controversy.[82] In a move that signaled his support for dam removal, Representative John Dingell of Michigan requested a General Accounting Office (GAO) study of whether FERC had jurisdiction to relicense the dams.[83] In 1991, FERC released a draft environmental impact statement (EIS) that concluded dam removal was feasible and could restore the Elwha River's fisheries.[84] The feasibility of dam removal, combined with the potential for a lengthy legal quagmire over the question of federal jurisdiction, eventually led to a compromise between the environmental interests advocating for dam removal and the dam owners and electricity customers arguing for relicensing.[85]

2. Political Compromise and Funding for Removal

The political compromise that resulted in the federal purchase and removal of the Elwha and Glines Canyon Dams was a product of Congressman Dingell and multiple stakeholders' efforts to end the legal stalemate over FERC jurisdiction.[86] Key stakeholders in the process were the advocates for dam removal and restoration, including environmental organizations, the tribe, FWS, NMFS, and the NPS.[87] Dam removal advocates hoped for the complete removal of the dams in order to restore the degraded Elwha River, producing a naturally flowing river with native fish populations.

The Elwha region's community, including the city of Port Angeles, Washington, ended up in the middle of the political fight. Testimony before

77 *Id.* ¶ 61,263.

78 *Id.* ¶ 61,269.

79 *Id.* ¶ 61,271.

80 Busch, *supra* note 32, at 18.

81 *See* Bender, *supra* note 22, at 225–26 (noting that "every federal agency involved supports dam removal").

82 *See* WILLIAM R. LOWRY, DAM POLITICS: RESTORING AMERICA'S RIVERS 141 (2003).

83 The GAO, now the Government Accountability Office, concluded that FERC lacked jurisdiction to license a hydroelectric dam located within the borders of a national park. *See* JEFF CRANE, FINDING THE RIVER: AN ENVIRONMENTAL HISTORY OF THE ELWHA 152 (2011).

84 GLINES AND ELWHA DRAFT EIS, *supra* note 1.

85 *See* Busch, *supra* note 32, at 19.

86 *Id.* (discussing the political compromise that resulted in the federal purchase and removal of the Elwha and Glines Canyon Dams); *see* CRANE, *supra* note 83, at 147–49 (discussing the pivotal efforts of Congressman Dingell in effectuating the compromise).

87 *Id.* at 9.

the U.S. Senate Committee on Energy and Natural Resources revealed the community's fears that major changes in the area would affect its economic stability, the city's water supply, and its general way of life.[88] In response to political negotiations over the future of the dams, Port Angeles formed the Elwha Citizens Advisory Committee, which eventually reached a consensus in support of dam removal.[89]

On the other side of the controversy, the dam owners, James River Corporation, and power consumers, like Daishowa American Paper Mill, opposed dam removal.[90] In the early 1990s, the Daishowa American mill operated one of the largest mills in Port Angeles,[91] relying on hydroelectric power from the Elwha dams to supply between 34% and 42% of the mill's electricity.[92] The mill received favorable rates from the dams and opposed dam removal, which allegedly would jeopardize the mill's economic viability.[93]

In 1992, advocates for dam removal reached a compromise with the James River Corporation and the Daishowa mill.[94] Both sides foresaw a lengthy and costly legal battle over the future of dam relicensing and agreed to a congressional compromise that promised favorable terms to both sides.[95] The ensuing 1992 Elwha River Ecosystem and Fisheries Restoration Act[96] authorized the Department of the Interior to purchase the Elwha and Glines Canyon Dams,[97] directed Interior to study the feasibility for removal and complete restoration of the ecosystem,[98] and provided a guarantee that the customers of Elwha hydroelectricity would receive power from other electricity providers at fair market rates.[99] The Elwha Act thus ended the conflict of FERC jurisdiction over relicensing by granting the dams

88 *Elwha River Ecosystem and Fisheries Restoration Act: Hearing on S. 2527 Before the S. Comm. on Energy and Natural Res.*, 102nd Cong. 120 (1992) (statement of James D. Hallett, Mayor, Port Angeles, Washington).

89 The advisory committee determined that the benefits of restoring salmon populations outweighed other concerns, such as property values and removal costs. *See* Harry Lydiard, *A Remarkable Grassroots Effort: The Work of the Elwha Citizens' Advisory Committee*, OLYMPIC PARK ASSOCS. NEWSL., June 1996, http://www.drizzle.com/~rdpayne/opa-news-v4n1.html (last visited Nov. 18, 2012).

90 *See* Bender, *supra* note 22, at 226.

91 *See Hearing on S. 2527*, *supra* note 88, at 111 (statement of Steve Taniguchi, Executive Vice President, Diashowa America Co.) (testifying that "Diashowa America is the second largest employer in Clallam County"); *see also* BROWN, *supra* note 36, at 72 (noting that the mill, then owned by Crown Zellerbach, used the power generated by the dam to run the first of the large lumber mills located in Port Angeles).

92 *Hearing on S. 2527*, *supra* note 88, at 117.

93 *See* Gowan et al., *supra* note 61, at 510 (stating that the primary benefit of the dams was their ability to provide electricity at less than half the rates charged by competitor electricity providers).

94 *See* Bender, *supra* note 22, at 226–27.

95 *See* Busch, *supra* note 32, at 18.

96 Elwha River Ecosystem and Fisheries Restoration Act, Pub. L. No. 102-495, 106 Stat. 3173 (1992) (codified at 16 U.S.C. §§ 796(2), 797a, 797c (2006)).

97 *Id.* § 3(a).

98 *Id.* §§ 3(c), 4.

99 *Id.* § 5(b).

permission to operate temporarily until the federal government appropriated funds to purchase the dams.[100]

Although the Elwha Act settled the conflict over the future of the dams, the appropriation of federal funds for the purchase and deconstruction of the dams created a new political controversy.[101] The Act authorized the Department of the Interior to purchase and remove the dams but left the appropriation of funds to future acts of Congress.[102] Initially, the Elwha Act received broad political support, from both Democrats and Republicans.[103] But in the years following the 1994 congressional elections, the political atmosphere changed.[104] An original supporter of the Elwha Act, Senator Slade Gorton (R-WA) withdrew his support for appropriations and later conditioned federal funding for the removal of the Elwha dams on guarantees that the federal government would not breach dams on the Snake River.[105] Senator Gorton proceeded to prevent passage of numerous appropriations bills in the Senate from 1992 to 2000, but in 2000 he eventually lost a reelection bid to Democrat Maria Cantwell.[106] In 1998, Congress appropriated $29.5 million for the Department of the Interior to buy both dams.[107]

Appropriations for the deconstruction of the dams occurred in stages from 2000 to 2010.[108] Champions of dam removal in Congress, including Representative Norman Dicks of northwest Washington, secured about $20 million per year in funding for the removal.[109] By 2004, funding for the Elwha restoration totaled $126.7 million, roughly half of the initial estimated

100 *See* Elwha River Ecosystem and Fisheries Restoration Act, 16 U.S.C. §§ 796(2), 797a, 797c (2006).

101 *See* Busch, *supra* note 32, at 20.

102 Elwha River Ecosystem and Fisheries Restoration Act, Pub. L. No. 102-495, § 9, 106 Stat. 3173 (1992).

103 *See* LOWRY, *supra* note 82, at 146.

104 *See generally* Gary C. Jacobson, *The 1994 House Elections in Perspective*, 111 POL. SCI. Q. 203 (1996) (describing the electoral victory of Republicans in 1994, which resulted in a new majority in the House of Representatives).

105 *See* LOWRY, *supra* note 82, at 146–47; Bender, *supra* note 22, at 228.

106 *See* LOWRY, *supra* note 82, at 149. The lack of funding for the Elwha restoration throughout the 1990s became known as the "lost decade." Adam Burke, *River of Dreams*, HIGH COUNTRY NEWS, Sept. 24, 2001, at 11.

107 ELWHA RIVER RESTORATION FEIS, *supra* note 58, at 186. The final purchase occurred in February 2000. *See* Burke, *supra* note 106. The federal government paid $29.5 million for both dams. John Kendall, *The Elwha Dams, Part 3—Fisheries, Dams Linked in 1980s*, PENINSULA DAILY NEWS, Sept. 13, 2011, http://www.peninsuladailynews.com/article/20110913/NEWS/309139992/0/SEARCH (last visited Nov. 18, 2012).

108 *See* Kim Todd, *Rebuilding a River as Washington's Elwha Dams Come Down*, HIGH COUNTRY NEWS, Sept. 19, 2011, at 18. Former Senator Bill Bradley stressed that the effort to remove the Elwha Dams resulted from a truly bipartisan effort in Congress, and was supported by Democrats and Republicans in Washington, D.C. and Washington State. *See* Senator Bill Bradley, Former U.S. Senator from N.J., Keynote Address at a Dinner Hosted by the Lower Elwha Klallam Tribe (Sept. 16, 2011) (on file with authors).

109 *See* Nat'l Park Serv., *Contractor Selected for Elwha Dam Removal*, http://www.nps.gov/olym/contractor-selected-for-elwha-dam-removal.htm (last visited Nov. 18, 2012); LOWRY, *supra* note 82, at 147–48.

removal cost of $246 million to $272 million.[110] Stimulus funding from the 2009 American Reinvestment and Recovery Act contributed an additional $54 million.[111] In April 2010, the National Park Service, which operated as lead agency in managing the Elwha dam removals and restoration, awarded the contract to conduct the removal of both dams, indicating that the total appropriation for complete removal and restoration was in hand.[112]

3. The Removal

The three-year process of removing the dams began during the summer of 2011. The first step involved the drawdown of both reservoirs, Lake Mills and Lake Aldwell.[113] On September 15, 2011, engineers began the removal of the Glines Canyon Dam by "notching" a top section of the dam and allowing the reservoir to drain out of the notched area.[114] The 173-foot dam will be notched in sections, creating temporary spillways and draining the reservoir until the entire concrete structure is removed.[115] On September 19, 2011, removal of the Elwha Dam began with the creation of a diversion around the dam.[116] Engineers created cofferdams to channel water into the diversion so that the concrete structure could be removed in pieces.[117] When both dams are completely removed in 2014, the stream channel will be restored to resemble pre-dam conditions.[118]

C. Restoring the Elwha River

The removal of two 100-year-old dams presented serious concerns about its positive and negative ecological effects to the Elwha ecosystem.[119] During the dam removal, the NPS will attempt to minimize the short-term

110 ELWHA RIVER RESTORATION FEIS, *supra* note 58, at 96. Revisions to this early estimate placed costs at around $325 million. Todd, *supra* note 108.

111 *See* Todd, *supra* note 108.

112 *See* Paul Gottlieb, *Dam Removal Contract Comes in $13 Million Under Estimate*, PENINSULA DAILY NEWS, Aug. 27, 2010, http://www.peninsuladailynews.com/article/20100827/NEWS/308279992/0 (last visited Nov. 18, 2012).

113 *See* Nat'l Park Serv., *Dam Removal Strategies*, http://www.nps.gov/olym/naturescience/dam-removal-overview.htm (last visited Nov. 18, 2012).

114 *See id.*

115 *Id.*

116 *See id.*

117 *See id.* For live video streams of the dam removal process, see Nat'l Park Serv., *Elwha River Webcams*, http://www.nps.gov/olym/photosmultimedia/elwha-river-webcams.htm (last visited Nov. 18, 2012). For photographs of the restoration process, see John Gussman, *ElwhaFilm.com*, http://www.elwhafilm.com/finalswitch (last visited Nov. 18, 2012).

118 *See Dam Removal Strategies*, *supra* note 113. In March 2012, engineers opened the upper stretches of the Elwha River to salmon for the first time in almost a century. Excavators removed enough of the Glines Canyon Dam to allow the river to flow through the remaining structure. Observers hope to see chinook salmon returning to the upper reaches within months. E-mail from Thomas C. Jensen, Partner, SNR Denton, to Michael C. Blumm (Mar. 17, 2012, 21:46 PDT) (on file with authors).

119 *See* ELWHA RIVER RESTORATION FEIS, *supra* note 58, at 4.

environmental effects by removing both dams slowly and in sections.[120] Project planners ruled out blasting the dams because of the potential for damage caused by the immediate release of 24 million cubic yards of sediment trapped behind the dams.[121] The NPS concluded that a slow removal, using natural hydrologic erosion to rebuild the river channel was the best option for restoration.[122]

After three years of dam deconstruction and engineering new channels on the footprints of the dams, scientists estimate that it will take about thirty years for the Elwha River to return to its normal flows and sediment loads.[123] In the long-term, scientists predict that the dam removals will have positive effects on the hydromorphology,[124] biology,[125] and overall ecology of the Elwha ecosystem.[126] Ecologists expect anadromous fish to return to spawn in upstream segments of the Elwha sometime in the next three years, marking the first time in over 100 years that wild salmon will spawn in the upper Elwha.[127]

III. THE WHITE SALMON RIVER: REMOVING THE CONDIT DAM

The White Salmon River flows south from its glacial headwaters on the slopes of Mount Adams in south central Washington to its confluence with the Columbia River on the Washington-Oregon border.[128] The forty-five mile long river cuts through canyons and confined valleys formed of basalt from historic volcanic eruptions and carries high sediment loads resulting from

120 *See Dam Removal Strategies*, *supra* note 113.

121 *See* Mapes, *supra* note 23; Tom Banse, *Elwha River Dam Removal Historic, But Not Explosive*, OR. PUB. BROAD., Aug. 23, 2011, http://news.opb.org/article/elwha_river_dam_removal_historic_but_not_explosive (last visited Nov. 18, 2012).

122 *See* Banse, *supra* note 121; Brian Clark Howard, *Bulldozers Tear Into Big Washington Dams*, NAT'L GEOGRAPHIC DAILY NEWS, Sept. 23, 2011, http://news.nationalgeographic.com/news/2011/09/110923-elwha-dam-removal (last visited Nov. 18, 2012).

123 *See Tearing Down the Elwha River Dam*, *supra* note 33; Howard, *supra* note 122.

124 *See* Ellen K. Mussman et al., *Predicting Secondary Reservoir Sediment Erosion and Stabilization Following Dam Removal*, 82 NW. SCI. (SPECIAL ISSUE) 236, 244 (2008) (concluding that erosion will restore the stream channel).

125 *See* Sarah A. Morley et al., *Benthic Invertebrates and Periphyton in the Elwha River Basin: Current Conditions and Predicted Response to Dam Removal*, 82 NW. SCI. (SPECIAL ISSUE) 179, 193 (2008) (predicting increases in habitat diversity and benthic invertebrate biodiversity after dam removal).

126 *See* Nat'l Park Serv., *Frequently Asked Questions*, http://www.nps.gov/olym/naturescience/Elwha-faq.htm (last visited Nov. 18, 2012).

127 *See* Mapes, *supra* note 64. The Lower Elwha Klallam Tribe has voluntarily agreed to not fish the river for five years following dam removal in order to promote recovery and reestablishment of fish populations. *See* Nathan Rice, *Fish Fight on the Elwha*, HIGH COUNTRY NEWS, Oct. 3, 2011, http://www.hcn.org/hcn/blogs/goat/fish-fight-on-the-elwha (last visited Nov. 18, 2012); Wash. Dep't of Fish & Wildlife, *Elwha River*, http://wdfw.wa.gov/fishing/washington/477 (last visited Nov. 18, 2012).

128 *See* NW. POWER & CONSERVATION COUNCIL, DRAFT WHITE SALMON SUBBASIN SURVEY 1 fig.1 (2000).

the erosion of deposits left by lahars,[129] which were common throughout the White Salmon watershed.[130] Anadromous fish, including chinook, coho, chum, steelhead, and sea-run cutthroat trout were once common in the lower reaches of the river and tributaries, which provided pristine spawning habitat and cold-water refuges for fish migrating up the Columbia River.[131] Until the construction of the Condit Dam near the mouth of the White Salmon blocked all but the lower three miles for anadromous fish passage, the area's first inhabitants, the Yakama Tribe, carried out a centuries-old tradition of fishing and sustaining themselves on salmon caught near Husum Falls.[132]

A. Condit Dam Construction

Population growth in the Columbia River Gorge at the beginning of the 1900s led to an increased demand for electricity to power the region's chief economic activity—paper mills.[133] In 1911, the Crown Columbia paper mill of Camas, Washington, one of the largest paper mills on the Pacific Coast, formed the Northwestern Electric Company in order to build a hydroelectric power facility to supply energy to the mill.[134] The White Salmon's exposed rock canyon walls, steep gradient, and high potential energy provided an ideal placement for a hydroelectric project.[135] In 1912, engineers completely diverted the river around the dam site 3.3 miles upstream from the river's mouth and used 30,000 cubic yards of concrete to construct the solid-

129 Lahars are volcanic debris transported by water. *See* JAMES W. VALLANCE, U.S. GEOLOGICAL SURVEY, BULLETIN NO. 2161, POSTGLACIAL LAHARS AND POTENTIAL HAZARDS IN THE WHITE SALMON RIVER SYSTEM ON THE SOUTHWEST FLANK OF MOUNT ADAMS, WASHINGTON 5 (1999); *see also* OFFICE OF HYDROPOWER LICENSING, FED. ENERGY REGULATORY COMM'N, FERC NO. 2342-005, CONDIT HYDROELECTRIC PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT 3–5 (1996), *available at* http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Condit/Final_Environmental_Impact_Statement_FEIS_1996.pdf [hereinafter CONDIT HYDROELECTRIC PROJECT FEIS] (stating that since 1913 more than 2 million cubic yards of sediment had accumulated in Northwestern Lake, the former reservoir above Condit Dam).

130 VALLANCE, *supra* note 129, at 1, 20.

131 *See* OFFICE OF HYDROPOWER LICENSING, FED. ENERGY REGULATORY COMM'N, DRAFT EIS: CONDIT HYDROELECTRIC PROJECT, FERC. NO. P-2342-005, at 6 (1996) (citing the National Oceanic and Atmospheric Administration's comments on the Condit dam); Joan Laatz, *Dam's Fate Lies on Salmon Issue*, OREGONIAN, Aug. 9, 1993, at A8. Husum Falls, a 15-foot waterfall located sixteen miles upstream from the confluence with the Columbia, formed a natural barrier for some, but not all migrating fish. *See* NW. POWER & CONSERVATION COUNCIL, *supra* note 128, at 2.

132 The Yakama Tribe ceded the land area adjacent to the White Salmon River to the federal government by treaty in 1855. The tribe retained the right to take fish from the "usual and accustomed places." Treaty between the United States and the Yakama Nation of Indians, art. III, June 9, 1855; *see also* Scott Learn, *A White Salmon River Free of Condit Dam is Monumental for Tribal Elder, Kayaker and a Fish Biologist*, OREGONIAN, Oct. 22, 2011, http://www.oregonlive.com/environment/index.ssf/2011/10/for_a_tribal_elder_a_kayaker_a.html (last visited Nov. 18, 2012).

133 *See* PACIFICORP, HISTORY OF THE CONDIT HYDROELECTRIC PROJECT 16 (2002), *available at* http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Condit/HAERReport.pdf.

134 *See id.* at 17.

135 *See id.* at 23.

concrete gravity dam.[136] The completed Condit Dam stood 125 feet tall, spanned 471 feet wide, and formed Northwestern Lake, a 2.3-mile long, 97-acre reservoir.[137]

The Condit Dam's power plant produced about 15 MW of electricity,[138] a significant source of power in the early 1900s. The Crown Columbia paper mill used only 20% of the electricity, so Northwestern Electric marketed the remaining 80% throughout the Columbia River Gorge, including to the cities of Portland, Oregon and Vancouver, Washington.[139] Completion of the Condit Dam coincided with a downturn in the area's economy from 1913 to 1915, which provided Northwestern an advantage in the electricity market because it could supply power from the Condit project more cheaply than its competitors.[140] In the first years of power production, Northwestern supplied one-third of the area's market share and was hugely profitable; the company later merged with the Pacific Power and Light Company in 1947, which became PacifiCorp in 1984.[141]

The Condit Dam completely blocked fish passage from the lower 3.3 miles of the White Salmon to the upper sections of the river and tributaries.[142] As part of the original design, the dam included wooden fish ladders; however, within the first few years after construction spring floods destroyed the wooden ladders, as well as their concrete replacements, which were not designed to withstand high water.[143] From 1917 until the dam's removal in 2011, the Condit Dam provided no fish passage facilities, resulting in a catastrophic decline in the river's native fish populations.[144] Prior to dam removal, migrating anadromous fish were no longer present in the upper White Salmon River, and most fish spawning in the lower 3.3 miles were hatchery fish.[145] By removing the Condit Dam, biologists estimated that an

136 *See id.* at 1, 31–32.

137 *See id.* at 9, 40.

138 *See* Becker, *supra* note 21, at 818.

139 *See* PACIFICORP, *supra* note 133, at 18–19.

140 *Id.* at 19.

141 *Id.* at 19–20.

142 *See* Becker, *supra* note 21, at 817. More than two-thirds of the White Salmon River is protected from development and degradation. *Id.* at 820. Over 27 miles of the upstream segments of the White Salmon have been designated as federally protected wild and scenic river. *Id.*; Upper White Salmon River Wild & Scenic Rivers Act, Pub. L. No. 109-44, § 2, 119 Stat. 443 (2005) (codified as amended at 16 U.S.C. § 1274(a)(167) (2006)). The lower 3.3 miles of river are within the Columbia River Gorge National Scenic Area. Columbia Gorge National Scenic Area Act, Pub. L. No. 99-663, § 13(c), 100 Stat. 427, 44294 (1986) (codified as amended at 16 U.S.C. § 1274(a)(61) (2006)).

143 Charlton H. Bonham, Comment, *The Condit Dam Removal and Section 18 of the Federal Power Act: A Coerced Settlement*, 14 J. ENVTL. L. & LITIG. 97, 110 (1999); CONDIT HYDROELECTRIC PROJECT FEIS, *supra* note 129, at 3-28.

144 *See* Becker, *supra* note 21, at 818; Bonham, *supra* note 143; CONDIT HYDROELECTRIC PROJECT FEIS, *supra* note 129, at 3-28 to 3-29

145 *See* CONDIT HYDROELECTRIC PROJECT FEIS, *supra* note 129, at 3-16 to 3-21; Bonham, *supra* note 143.

additional fourteen miles of salmon spawning habitat and thirty-three miles of steelhead habitat would be accessible in the upper river and tributaries.[146]

B. The Federal Power Act, Relicensing, and Dam Removal Efforts

Since completion of the Condit Dam preceded federal laws regulating the construction and operation of non-federal dams, the dam received its first twenty-year license in 1968,[147] after the U.S. Supreme Court interpreted the Federal Power Act of 1935 (FPA)[148] to reach non-navigable tributaries of navigable waters.[149] Near the expiration date of Condit's operating license, FERC began the dam relicensing process.[150] In 1996, FERC issued a final EIS on the license renewal that required the dam operator, PacifiCorp, to construct permanent fish passage facilities, making the continued operation and relicensing of the dam uneconomical.[151] As a result, in 1999, PacifiCorp signed a settlement agreement with the Yakama Tribe and environmental groups to withdraw the license renewal request and remove the Condit Dam.[152] For the next twelve years, a staggering complexity of federal and state bureaucracies, permitting requirements, and community opposition delayed the eventual removal of the dam.

1. The Federal Power Act and FERC Relicensing

Since 1920, the FPA has authorized FERC to license non-federally owned dams operating on the navigable waters of the United States.[153] Section 18 of the FPA requires every non-federal dam applying for licensing to provide for the "construction, maintenance, and operation by a licensee at its own expense of . . . such fishways as may be prescribed by" FWS or NMFS.[154] In 1986, Congress amended the FPA to require FERC to condition

146 *See* WASH. DEP'T OF ECOLOGY, DRAFT SUPPLEMENTAL EIS: CONDIT DAM REMOVAL 4.3-22 (2005) [hereinafter WASHINGTON DSEIS]; Becker, *supra* note 21, at 819. Since 1917, the Yakama Tribe has been unable to exercise their legal right to fish for salmon and steelhead at their "usual and accustomed" fishing sites. *See* Becker, *supra* note 21, at 820. Condit Dam also blocked recreational opportunities, including the potential for world-class white water kayaking and rafting. *Id.*

147 CONDIT HYDROELECTRIC PROJECT FEIS, *supra* note 129, at 3-29; *see* Bonham, *supra* note 143, at 99.

148 Federal Power Act, 16 U.S.C. §§ 791–828c (2006 & Supp. IV 2010).

149 Fed. Power Comm'n v. Union Elec. Power, 381 U.S. 90, 98 (1965).

150 Becker, *supra* note 21, at 824.

151 *Id.* at 824–26.

152 *See id.* at 826–27.

153 Federal Power Act, 16 U.S.C. § 797(e) (2006). Becker, *supra* note 21, at 821. FERC was known as the Federal Power Commission until 1977. Michael C. Blumm & Viki A. Nadol, *The Decline of the Hydropower Czar and the Rise of Agency Pluralism in Hydroelectric Licensing*, 26 COLUM. J. ENVTL. L. 81, 85 (2001).

154 Federal Power Act, 16 U.S.C. § 811 (2006). *See* Am. Rivers v. Fed. Energy Regulatory Comm'n, 201 F.3d 1186, 1207 (9th Cir. 2000) (FERC must include agency fishway recommendations as part of the dam's license). In 2005, Congress amended the FPA to provide new procedures for dam operators to propose alternatives to fish and wildlife protections or mitigation measures recommended by FWS or NMFS. *See* Energy Policy Act of 2005, Pub. L.

licenses on the implementation of measures recommended by federal and state wildlife agencies to protect and mitigate potential damages to fish and wildlife.[155] In addition to protecting fish and wildlife, state agencies may also impose water quality conditions on non-federal dam operators, and FERC must include the state water quality standards in the license.[156]

The first twenty-five year FERC license granted to the Condit Dam contained few fish requirements, although it did include a condition for maintaining minimal flows downstream from the dam.[157] In 1982, in anticipation of the expiration of the license and out of concern for the ESA-listed salmon and steelhead in the Columbia River Basin, the Northwest Power and Conservation Council (NPCC), an interstate compact agency charged by Congress with restoring Columbia Basin salmon runs,[158] adopted the position that any relicensing of the Condit Dam should include provisions for fish passage.[159] Soon after this first call for fish passage facilities, the Yakama Indian Nation, the Columbia River Inter-Tribal Fish Commission (CRITFC), and multiple environmental groups began advocating for removal of the Condit Dam or, at least, the installation of adequate fish passage to promote salmon recovery.[160] In 1991, PacifiCorp submitted an application for relicensing the Condit Dam, proposing to implement several changes to the license, including increasing the operating capacity of the power plant, establishing target flows to benefit fish habitat, and carrying out other projects to facilitate recreation and cultural preservation.[161]

Amid a charged political atmosphere concerning dam removal, FERC began work on a draft EIS on the relicensing of the Condit Dam.[162] FERC's

109-58, § 241(c), 119 Stat. 594, 675 (codified in scattered sections of 16 U.S.C.). Federal agencies must then make a final determination to accept or reject proposed alternatives, based on whether the proposal would adequately protect the resource. 16 U.S.C. § 832d(a) (governing reserved lands), § 832d(b) (governing fishways). This has led at least one author to conclude that the 2005 Federal Power Act Amendments may make it more time consuming and difficult for agencies to condition licenses on fish protection measures. Becker, *supra* note 21, at 867–68.

155 Electric Consumer Protection Act of 1986, Pub. L. No. 99-495, 100 Stat. 1243 (amending the Federal Power Act); *see* Becker, *supra* note 21, at 822.

156 Pub. Util. Dist. No. 1 of Jefferson Cnty. v. Wash. Dep't of Ecology, 511 U.S. 700, 722–23 (1994) (states may impose water quality conditions on dams under section 401 of the Clean Water Act); Am. Rivers v. Fed. Energy Regulatory Comm'n, 129 F.3d 99, 110–11 (2d Cir. 1997) (stating that FERC may not reject or modify the state water quality conditions issued under section 401); *see* Blumm & Nadol, *supra* note 153, at 107 n.176.

157 *See* Becker, *supra* note 21, at 824; Bonham, *supra* note 143, at 114 n.107.

158 NW. POWER & CONSERVATION COUNCIL, BRIEFING BOOK 7–9 (2010), *available at* http://www.nwcouncil.org/library/2010/2010-13.pdf.

159 NW. POWER & CONSERVATION COUNCIL, COLUMBIA RIVER BASIN FISH & WILDLIFE PROGRAM 7–11 (1982); *see* Becker, *supra* note 21, at 824. The original FERC license expired in 1993. *Id.* at 824 n.83.

160 *See* Becker, *supra* note 21, at 824; CHRIS WATSON, RELICENSING THE NORTHWEST: A STUDY OF THE CONDIT HYDROELECTRIC PROJECT 3 (1995); CONDIT HYDROELECTRIC PROJECT FEIS, *supra* note 129, at 4-59 to 4-60.

161 *See* CONDIT HYDROELECTRIC PROJECT FEIS, *supra* note 129, at 2-7. PacifiCorp's proposals included a total investment of almost $10 million in improvement and mitigation measures. *Id.* at C-1.

162 *See* Becker, *supra* note 21, at 825; WATSON, *supra* note 160, at 40.

final EIS in 1996 included the fishway prescriptions of the FWS and NMFS, conditioning the relicensing of the dam on the installation of upstream and downstream fish passage facilities.[163] In 1997, PacifiCorp requested that FERC stay a final decision on the relicensing application[164] because the cost of the required fish passage facilities, $30 million, made relicensing the Condit Dam uneconomical.[165] Instead of making the improvements and investments necessary to relicense the dam, PacifiCorp decided to pursue the most economically efficient alternative: dam removal.[166]

2. The 1999 Agreement, Federal and State Regulatory Approval, and License Forfeiture

In 1999, PacifiCorp entered into a settlement agreement with the Yakama Tribe, CRITFC, and several environmental groups, in which the company agreed to begin dam removal by October 2006.[167] The agreement capped removal costs at $17.15 million and allowed PacifiCorp to continue operating the dam until 2006.[168] The removal plan called for blasting the dam and leaving the sediments in place to minimize costs.[169] PacifiCorp submitted the agreement to FERC in 1999. However, the novel issue of whether FERC should construe the agreement as surrendering the operating license or modifying the application to renew the license occupied the agency for two years.[170] Finally, in 2002, FERC issued a supplemental EIS approving the removal plan and determining that the agency would treat the agreement as a license surrender, contingent on PacifiCorp receiving the necessary approvals from other federal and state regulatory agencies.[171]

The presence of at least five ESA-listed species of fish in the White Salmon ecosystem also necessitated consultation with the FWS and NMFS, and a determination that the removal plan would not adversely affect the listed species or their critical habitat.[172] In 2004, the FWS designated critical habitat for bull trout in the river, concluding in its biological opinion (BiOp)

163 *See* Becker, *supra* note 21, at 826; CONDIT HYDROELECTRIC PROJECT FEIS, *supra* note 129, at ix–xii, 2-35 to 2-38. FERC rejected PacifiCorp's $15 million proposal to "trap and haul" fish around the dam. *Id.* at I-71 to I-74.

164 *See* PacifiCorp Motion to Stay Proceedings in Application for New License at 1–2, Condit Hydroelectric Project, FERC No. P-2342-005 (Jan. 17, 1997), http://elibrary.ferc.gov/idmws/nvcommon/NVViewer.asp?Doc=8422819:0.

165 *See* Becker, *supra* note 21, at 826; CONDIT HYDROELECTRIC PROJECT FEIS, *supra* note 129, at I-71.

166 *See* Becker, *supra* note 21, at 826.

167 Condit Hydroelectric Project Settlement Agreement at 7, FERC Project No. P-2342-011 (Oct. 21, 1999), *available at* http://elibrary.ferc.gov/idmws/nvcommon/NVViewer.asp?Doc=146919.0.

168 *Id.* at 7–8; *see* Becker, *supra* note 21, at 827.

169 Condit Hydroelectric Project Settlement Agreement, *supra* note 167, at 7; *see* Becker, *supra* note 21, at 827.

170 *See* Becker, *supra* note 21, at 830–31.

171 *See id.* at 831.

172 Both FWS and NMFS signed the 1999 settlement agreement. Condit Hydroelectric Project Settlement Agreement, *supra* note 167, at 1.

that dam removal would benefit the species despite insignificant, short-term harms.[173] In 2006, NMFS reached the same conclusion concerning ESA-listed salmon.[174]

In addition to the time spent waiting for biological studies and federal agency approval, the Condit Dam removal suffered from delays due to state and local regulations.[175] Almost immediately after PacifiCorp announced that it intended to remove the Condit Dam, local opposition, particularly from the Washington counties of Klickitat and Skamania, made clear that local regulations and requirements would be used to delay or derail the dam removal proposal.[176] The counties objected to the dam removal project because of the possible negative effects on the aesthetic views of homeowners along the river, the loss of recreation on Northwestern Lake, and the remediation plan that called for leaving sediments in place.[177] The counties advised FERC and PacifiCorp that the project would have to satisfy local regulations, including requirements for floodplain, zoning, shoreline, noise, and road permits.[178] PacifiCorp appealed to FERC for relief from the counties' attempt to delay the dam removal process.[179] In 2006, FERC issued an order declaring that the FPA preempted state and local laws unless FERC chose to include such laws in the license or a license surrender order.[180]

The threat of a lawsuit from the counties prompted the state of Washington, a supporter of dam removal, to decide to conduct its own environmental analysis of the dam removal.[181] The state's Department of Ecology issued a state EIS in 2007, which acknowledged that water quality and fish would be negatively affected in the short term.[182] The state EIS included mitigation measures for some of the possible short-term effects that would occur due to blasting the dam and releasing massive amounts of water and sediments.[183]

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173 *See* Becker, *supra* note 21, at 839–40.

174 *See id.* at 840.

175 *See id.* at 839.

176 *See id.* at 840–41.

177 *See id.* at 828; Becky Blanton, *PacifiCorp, State and Federal Agencies Accused of Conspiracy*, SIERRA TIMES, Nov. 30, 2001 (On file with authors).

178 *See* Letter from Curt Dreyer, Klickitat County Planning Dep't, to Gail Miller, PacifiCorp 1–3 (Aug. 2, 2005), *available at* http://elibrary.ferc.gov/idmws/nvcommon/NVViewer.asp?Doc=10744978:0.

179 *See* PacifiCorp's Petition for Declaratory Order on Preemption at 12, Condit Hydroelectric Project, FERC No. P-2342-018 (Oct. 14, 2005), http://elibrary.ferc.gov/idmws/nvcommon/NVViewer.asp?Doc=10855144:0.

180 Order on Petition for Declaratory Order, PacifiCorp, 115 FERC ¶ 61,194 (2006).

181 *See* Becker, *supra* note 21, at 839, 841.

182 WASHINGTON DSEIS, *supra* note 146, at 1-12 to 1-18. *See* Washington State Environmental Policy Act, WASH. REV. CODE § 43.21C.030(2)(c) (2005) (requiring an EIS for proposed actions with significant environmental impacts).

183 WASHINGTON DSEIS, *supra* note 146, at 1-12 to 1-22. Washington continued to supplement the DEIS from 2007 to 2010. A final supplemental EIS was completed in January, 2010. WASH. DEP'T. OF ECOLOGY, CONDIT DAM REMOVAL FINAL SECOND SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT ii (2010), *available at* https://fortress.wa.gov/ecy/publications/publications/0912017.pdf.

Before beginning the dam removal, PacifiCorp needed a section 401 certification from the state of Washington to confirm that the project met the state's water quality standards under the Clean Water Act.[184] In 2003, Washington amended the state's water quality standards to include a short-term exemption for remediation projects.[185] The state concluded that the short-term harms of the dam removal project were outweighed by its long-term benefits, and in 2010, the state issued the required section 401 certification.[186]

After obtaining the section 401 certification, PacifiCorp received the final permits necessary from the U.S. Army Corps of Engineers, under section 404 of the Clean Water Act[187] and section 10 of the Rivers and Harbors Act.[188] In 2011, FERC accepted PacifiCorp's license surrender.[189] Twelve years after agreeing to removal, PacifiCorp had satisfied all of the federal and state procedures and received the necessary permits to begin removing the Condit Dam.

3. The Dam Removal Process

On October 26, 2011, the Condit Dam was breached, and the removal of the nearly century-old structure began.[190] Engineers cleared sediment and debris immediately upstream from the dam, and then drilled and blasted a thirteen-by-eighteen foot drain tunnel at the base of the dam.[191] The final blast sent a rush of water downstream at a rate of over 10,000 cubic feet per second into the lower White Salmon, releasing as much as 2.4 million cubic yards of sediment trapped upstream in the reservoir.[192] The reservoir drained through the tunnel in approximately six hours, opening space in the reservoir for engineers to begin remediation activities, including bank

184 Becker, *supra* note 21, at 838–39. *See* Federal Water Pollution Control Act, 33 U.S.C. § 1344 (2006).

185 *See* WASH. ADMIN. CODE § 173-201A-330(4)(a), 320(4)(a) (2011) ("[R]emediation of environmental or public health threats" is one of several factors to consider when deciding to lower water quality standards as part of a "temporary action necessary to protect the public interest.").

186 *See* WASH. DEP'T. OF ECOLOGY, CONDIT DAM DECOMMISSIONING PROJECT, 401 WATER QUALITY CERTIFICATION ORDER NO. 8049 at 1–3 (2010), *available at* http://www.ecy.wa.gov/programs/wq/ferc/existingcerts/conditcertdecomm.pdf.

187 33 U.S.C. § 1344 (2006).

188 Rivers and Harbors Appropriations Act of 1899, 33 U.S.C. § 403 (2006). U.S. ARMY CORPS OF ENG'RS, PERMIT NWP-2004-523 at 1, 20 (2011), *available at* http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Condit/20110513USACOE404PermitFrontMaterial.pdf.

189 Order on Rehearing, Denying Stay, and Dismissing Extension of Time Request, PacifiCorp, Project No. 2342-021, 135 FERC ¶ 61,064 (Apr. 21, 2011).

190 Wash Dep't. of Ecology, *Condit Dam Removal Project*, http://www.ecy.wa.gov/programs/wr/cwp/condit.html (last visited Nov. 18, 2012). For videos and photos of the blast and water release, see PacifiCorp, *Condit Dam: Videos*, http://www.pacificorp.com/about/newsroom/mr/cdmr.html (last visited Nov. 18, 2012).

191 PacifiCorp, *Condit: Project Overview*, http://www.pacificorp.com/es/hydro/hl/condit.html# (last visited Nov. 18, 2012) (click on "Decommissioning Activities" link at top of page).

192 *Id.*

stabilization and the excavation and removal of the dam structure.[193] Removals of the dam structure and the original cofferdam continue as of this writing.

C. Restoring the White Salmon River

Ecologists expect the negative short-term effects of the dam removal, including increased turbidity and downstream fish kills, to be outweighed by the long-term benefits within six to twelve months after removal.[194] In order to mitigate potential short-term adverse effects, biologists trapped 500 chinook salmon from the lower Columbia and White Salmon Rivers and transported them upstream.[195] After blasting the dam and releasing sediments from the reservoir, fishery biologists expect the increased salmon and steelhead habitat to benefit the fish populations and the entire ecosystem.[196]

IV. THE SANDY RIVER BASIN: DECOMMISSIONING THE BULL RUN HYDROELECTRIC PROJECT

The Sandy River drains the northwest slopes of Mt. Hood in western Oregon, flowing from its glacial headwaters over volcanic ash and rock deposits for more than fifty miles to the Columbia River.[197] The river and its tributaries receive water from high volumes of rain and snow precipitation in the Cascade Range, glacial melts, and groundwater recharge.[198] Large amounts of fine suspended sediment, glacial silt caused by the slow-grinding glacial erosion of underlying rocks, and sand deposits found throughout the basin contributed to the river's nomenclature.[199] The shallow gravel beds created ideal spawning habitat for the abundant populations of migrating salmon and steelhead that traveled upstream from the Columbia River to the Sandy River's headwaters.[200] Historically, the first inhabitants of the area, tribes from villages along the Columbia and Clackamas Rivers, used trails following the Sandy River to upland hunting and gathering grounds, and they fished the abundant salmon runs in the river and its tributaries.[201]

193 *Id.*

194 *See* WASHINGTON DSEIS, *supra* note 146, at 1-9.

195 *See* ROD ENGLE ET AL., U.S. FISH & WILDLIFE SERV., CAPTURE AND TRANSPORT OF LOWER COLUMBIA RIVER FALL CHINOOK SALMON PLAN, CONDIT HYDROELECTRIC PROJECT DECOMMISSIONING 2 (2011).

196 Becker, *supra* note 21, at 819–821.

197 *See* BARBARA TAYLOR, SALMON AND STEELHEAD RUNS AND RELATED EVENTS OF THE SANDY RIVER BASIN: A HISTORICAL PERSPECTIVE 5 (1998).

198 *See id.* at 8.

199 *See id.* at 10.

200 *See id.* at 12–13, 28.

201 *Id.* at 13–14; *see also* U.S. FOREST SERV., UPPER SANDY NATIONAL WATERSHED ANALYSIS 1 (1996).

A. The Little Sandy and Marmot Dams

In the late 1800s, population and industrial growth in Portland, Oregon produced widespread interest in using nearby rivers for water supplies and hydroelectricity.[202] Developers soon invested in small dams and diversions to bring water from the Bull Run River, a tributary of the Sandy River, to Portland, thirty miles west of the Bull Run and Sandy confluence.[203] In 1906, the Mt. Hood Railway and Power Company, which later became Pacific Gas Electric (PGE), constructed a powerhouse along the Bull Run River and a small diversion dam on the Little Sandy River, a tributary of the Bull Run.[204] The Little Sandy Dam stood sixteen feet high and completely blocked the flow of the Little Sandy River 1.7 miles upstream from its confluence with the Bull Run.[205] The dam channeled the Little Sandy River into a wood box flume diversion, which carried the water more than three miles to Roslyn Lake where the Mt. Hood Company stored the water for releases to generate electricity at the Bull Run powerhouse.[206] Completion of the Little Sandy Dam in 1912 blocked salmon passage to upstream sections of the Little Sandy River and drastically reduced downstream flows.[207]

The success of the Little Sandy Dam and Bull Run powerhouse led to an increased demand for water supplies to bolster hydroelectric output from the project. In 1913, the Mt. Hood Company constructed the Marmot Dam on the mainstem of the Sandy River.[208] The Marmot Dam diverted stream flows into tunnels and canals that transported the water north across the hydrologic divide that separated the mainstem of the Sandy River from the Little Sandy.[209] The series of diversion channels, including nearly mile-long tunnels bored underneath the mountains separating the two watersheds, transported water from the Sandy River into the Little Sandy, upstream of the Little Sandy Dam.[210] Since 1913, the Bull Run powerhouse supplied about 22 MW of electricity to consumers in the Portland area.[211]

The original Marmot Dam consisted of a wood frame structure filled with rock and sediment to divert stream flows into the diversion canals.[212] Engineers included a wooden fish ladder to allow salmon to travel upstream and, as a result, the dam never completely blocked upstream salmon passage to pristine spawning habitat above the dam.[213] In 1989, the current dam

202 *See* TAYLOR, *supra* note 197, at 15.

203 *See id.* at 22; *see also* City of Portland, *Bull Run Watershed*, http://www.portland oregon.gov/water/29784 (last visited Nov. 18, 2012).

204 *See id.*

205 *See id.* at 22, 39.

206 *See* Portland General Electric, *Marmot Dam Removal in 2007 Has Returned Sandy River to a Wild, Free-flowing River*, http://www.portlandgeneral.com/community_environment/ initiatives/protecting_fish/sandy_river/default.aspx (last visited Nov. 18, 2012).

207 *See* TAYLOR, *supra* note 197, at 39.

208 *Id.* at 22.

209 *See id.*

210 *See id.*

211 *See* Portland General Electric, *supra* note 206.

212 *See* TAYLOR, *supra* note 197, at 39.

213 *See id.* at 23.

owner, PGE, rebuilt the Marmot Dam by replacing the original thirty-foot wood frame and rocks with a forty-seven-foot concrete structure,[214] complete with modernized fish ladders.[215] However, problems with downstream passage of salmon continued to wreak havoc on the river's fish populations.[216] The diversion channels funneled downstream migrating salmon into the long tunnels and canals, killing them or depositing them in the Little Sandy River where they would face another dam and diversion to Roslyn Lake.[217] Beginning in 1951, fishery biologists attempted to prevent salmon from entering the diversions with screens and collection points within the canals and tunnels.[218] Despite these efforts, downstream passage remained perilous for migrating salmon.[219]

The Bull Run hydroelectric project (Little Sandy and Marmot Dams, their diversions, and the Bull Run powerhouse) caused significant environmental declines in the Sandy River watershed. Historic salmon runs totaled tens of thousands of coho, fall and spring chinook, and winter steelhead.[220] The dams and diversions reduced the Sandy River basin's fish population to between 10% and 25% of historic runs.[221] The hydroelectric project also drastically reduced stream flows in the Sandy and Little Sandy Rivers.[222] Although a 1973 agreement established minimum instream flows for the Sandy River below the Marmot Dam, the diversions continued to reduce flows and instream habitat for ten miles below the dams.[223]

B. The Settlement Agreement to Remove the Dams

The history of the Little Sandy and Marmot dam removals in the Sandy River basin contrasts significantly with the sagas that unfolded in the Elwha and White Salmon basins.[224] The Sandy River dams, like the Elwha, Glines Canyon, and Condit Dams, produced profitable hydroelectricity for urban areas.[225] Yet the operator of the Sandy River dams, PGE, decided early in the FERC relicensing process to surrender the license and remove the dams voluntarily.[226] A settlement agreement signed by PGE, federal agencies, environmental organizations, and state and local governments in 2002

214 *See id.* at 39.

215 *See id.* at 23.

216 *See id.* at 23–24.

217 *See id.*

218 *See id.* (demonstrating continued efforts to reduce salmon mortality).

219 OFFICE OF ENERGY PROJECTS, FED. ENERGY REG. COMM'N, DRAFT EIS: BULL RUN PROJECT, FERC PROJECT NO. 477-024, at 118 (2003) [hereinafter BULL RUN DEIS].

220 *See* TAYLOR, *supra* note 197, at 1.

221 *See id.* (comparing runs to 1890 levels).

222 PGE diverted up to 800 cubic feet per second of combined flow from the rivers. BULL RUN DEIS, *supra* note 219, at 7; TAYLOR, *supra* note 197, at 22.

223 *See* TAYLOR, *supra* note 197, at 9; BULL RUN DEIS, *supra* note 219, at 4, 5.

224 *See* Becker, *supra* note 21, at 832 n.135.

225 *See id.*; *cf.* TAYLOR, *supra* note 197, at 21–22 (describing how the need for low-cost hydropower led to the development of hydropower projects in the Sandy River basin).

226 *See* Application to Amend and Surrender License, Bull Run Hydroelectric Project, 1–2 FERC No. P-477-024 (Nov. 12, 2002).

coincided with PGE's license surrender to FERC.[227] River restoration work began less than six years later, with PGE paying for the complete removal of the dams and diversion channels.[228]

1. The Settlement Agreement and FERC License Surrender

The Little Sandy and Marmot Dams received their first FERC license in 1980,[229] authorizing the hydroelectric dams to operate for a thirty-year term that expired in 2004.[230] Near the end of the thirty-year period, PGE considered relicensing the project, but after studying the potential conditions and prescriptions associated with FERC relicensing, "PGE determined that the likely cost of environmental protection, mitigation, and enhancement measures associated with relicensing would make continued operation of the Project uneconomical."[231] In 1999, PGE notified FERC that the company did not intend to relicense the dams.[232] FERC responded by giving PGE until 2002 to develop a plan to surrender the current license and remove the dams.[233]

In 2001, PGE convened a meeting of stakeholders, including environmental organizations, federal agencies, and state and local officials, to discuss removing the dams.[234] The settlement agreement produced a timeline for removal and established that PGE would pay all costs of removal and restoration.[235] All parties agreed that the Bull Run hydroelectric project would remain operational until November 2007, and that the Marmot and Little Sandy Dams would be removed in the fall of 2007 and 2008, respectively.[236] In 2003, just eighteen months after entering the settlement

227 *See* Settlement Agreement Concerning the Removal of the Bull Run Hydroelectric Project, FERC No. P-477-024 (Oct. 24, 2002), *available at* http://digital.library.ucr.edu/cdri/?dam=Marmot_Dam (beginning on page 76 of the FERC-compiled document).

228 *See id.* at 71; *see also* Application to Amend and Surrender License, *supra* note 226, at 32–33.

229 FERC licensed the dams in 1980, effective as of 1974, which operated in the interim with annual licenses. Joint Explanatory Statement and Request for Approval of Decommissioning Settlement Agreement 3 (Nov. 12, 2002), *in* Portland Gen. Elec. Co., Application to Amend and Surrender License for Project #477 – Bull Run Hydroelectric Project, FERC Docket No. p-477-024, at 9, *available at* http://digital.library.ucr.edu/cdri/documents/p477_ApplicationtoAmendandSurrender.pdf; *Portland Gen. Elec. Co.*, 11 F.E.R.C. 62,145, 63,268 (1980). This was done after the Supreme Court's ruling in *Federal Power Commission v. Union Electric Co.*, 381 U.S. 90, 97 (1965), applied the FPA licensing requirement to dams on non-navigable tributaries of navigable rivers.

230 Request for Approval of Decommissioning Settlement Agreement, *supra* note 229.

231 *Id.*

232 *Id.*

233 *Id.*

234 *Id.* at 4. For a general discussion of this decommissioning project, see Julie A. Keil, *Bull Run Decommissioning: Paving the Way for Hydro's Future*, HYDROWORLD.COM, http://www.hydroworld.com/index/display/article-display/353949/articles/hydro-review/volume-28/issue-2/feature-articles/dam-removal/bull-run-decommissioning-paving-the-way-for-hydrorsquos-future.html (last visited Nov. 18, 2012).

235 Request for Approval of Decommissioning Settlement Agreement, *supra* note 229, at 4.

236 Application to Amend and Surrender License, *supra* note 226, at 30; Order Approving Decommissioning Plan, 119 FERC ¶ 62,224 (June 14, 2007).

agreement,[237] PGE secured the necessary environmental approvals for dam removal,[238] and FERC completed an EIS on decommissioning the Bull Run hydroelectric project.[239] FERC accepted PGE's license surrender for the Little Sandy and Marmot Dams, and approved the decommissioning plan in 2004.[240]

The process for approving dam removal in the Sandy River differed from projects on the Elwha and White Salmon Rivers in several respects. First, unlike the Elwha and White Salmon dams, the owner of the Sandy River dams agreed to pay for the complete removal without predetermined cost caps.[241] In 2002, PGE estimated that it would spend about $17 million on the dam removals and lose over $5 million because of decreased power production,[242] although the utility later adjusted the dam removal costs to $23.7 million in 2009.[243] Second, the state and local governments fully supported the Sandy River dam removals by signing the settlement agreement and supplying the necessary environmental authorizations in less than two years.[244] Oregon also lacked a state environmental policy act, which counties in Washington used to delay the Condit Dam removal.[245] Third, unlike the Condit Dam where local landowners objected to the removal of Northwestern Lake's recreational opportunities, the federal government owned much of the remote, unpopulated land surrounding the Sandy River dams, including the Mt. Hood National Forest and BLM lands.[246] Few private individuals owned land near the Sandy River dams, and the Forest Service and BLM supported dam removal.[247]

The removal process for the Sandy River dams also proceeded as a hydroelectric license surrender, not an amendment to a license renewal.[248] Once PGE submitted the surrender request, FERC responded according to

237 Becker, *supra* note 21, at 832 n.135.

238 OR. DEP'T OF ENVTL. QUALITY, CLEAN WATER ACT § 401 CERTIFICATION FOR THE DECOMMISSIONING OF THE BULL RUN HYDROELECTRIC PROJECT (FERC PROJECT NO. 477), at 1 (2003).

239 FED. ENERGY REGULATORY COMM'N, NO. 477-024 FINAL EIS: BULL RUN HYDROELECTRIC PROJECT, OREGON (2003).

240 *See* Order Approving Decommissioning Plan, *supra* note 236, at 3.

241 *See* Becker, *supra* note 21, at 832 n.135.

242 Application to Amend and Surrender License, *supra* note 226, at 32–33.

243 Portland Gen. Elec. OPUC Docketed Filings: Direct Testimony and Exhibits, Revenue Requirements 9 (Feb. 27, 2008), www.portlandgeneral.com/our_company/corporate_info/regulatory_documents/filings/docketed_filings/UE-197/default.aspx (click on the "Revenue Requirements" link).

244 *See* Becker, *supra* note 21, at 835 n.135.

245 *See* ENERGY FACILITY SITING TASK FORCE, STATE OF OR., COMPARISON OF THE ENERGY FACILITY SITING REQUIREMENTS OF OREGON, WASHINGTON, MONTANA, AND CALIFORNIA, *in* REPORT OF THE ENERGY FACILITY SITING TASK FORCE, at A-233, *available at* http://www.oregon.gov/ENERGY/SITING/docs/TFR/TFR_U.pdf.

246 Settlement Agreement Concerning the Removal of the Bull Run Hydroelectric Project, *supra* note 227, at 1–2

247 *See id.*

248 *See id.* at 2.

established regulations.[249] Unlike with the Condit Dam, where FERC struggled to determine how to treat an amendment for license renewal as a license surrender, with the Sandy River dam removals, the process of securing FERC approval occurred quickly in part because FERC now understood the procedures for license surrender.[250]

2. The Removal Procedures

In September 2007, engineers used explosives to breach the Marmot Dam, releasing water and sediments trapped behind the dam.[251] The explosion and sudden release of water washed much of the 900,000 cubic yards of sediment downstream, with the river eroding the remaining sediments in a matter of months.[252] The last coffer dam was breached on October 19, 2007, ending the diversions and returning the rivers to natural flows.[253] The final steps in the dam removal process—drainage of Roslyn Lake and removal of the Little Sandy Dam and diversion channels—occurred in May and September 2008, respectively.[254]

C. Restoring the Sandy River Basin

PGE donated all lands that the company owned for the Bull Run hydroelectric project to a conservation organization, the Western Rivers Conservancy, which in turn provided the lands to the BLM for restoration projects.[255] In the years following the Sandy River dam removals, the BLM engaged in restoration projects throughout the basin to return the ecosystem to its natural condition.[256] After removal of the dams, stream flows returned to natural levels, restoring 6.5 miles of salmon habitat in the upper Little Sandy River and 10 miles in the lower Sandy River below the former Marmot Dam.[257]

249 *See* 18 C.F.R. pt. 16 (2009) (governing takeover and relicensing requests); Order Granting Surrender Application, Adopting Proposed Terms, and Denying Application to Amend License, 107 FERC ¶ 61,158 (May 12, 2004).

250 *See* Becker, *supra* note 21, at 832 n.135; *supra* Part III.B.2.

251 *See* Michael Milstein, *River Proves There's Life After Dam*, OREGONIAN, July 30, 2008, at A1, A7.

252 *See id.*

253 Portland Gen. Elec., *supra* note 206.

254 *See* Keil, *supra* note 234.

255 *See* FINAL EIS: BULL RUN HYDROELECTRIC PROJECT, *supra* note 239, at 8, 178.

256 Bureau of Land Mgmt, *Sandy River Basin Plan: Final Plan Released for Sandy River Basin*, http://www.blm.gov/or/districts/salem/plans/sandy_river_index.php (last visited Nov. 18, 2012).

257 *See* BULL RUN DEIS, *supra* note 219, at 4–5.

V. THE ROGUE RIVER: RESTORING THE WILD AND SCENIC RIVER

The Rogue River flows west for over 215 miles from its headwaters near Crater Lake to the Pacific Ocean.[258] The river and its tributaries drain a significant land area in southwest Oregon,[259] cutting through three mountain ranges and across four climate zones.[260] For thousands of years before non-native settlement, the Rogue River's abundant fisheries sustained native tribes in the area, providing over 4,000 river miles of salmon habitat.[261] As non-native settlers populated the Rogue Basin in the nineteenth century, the river became widely known for plentiful wild salmon[262]—the largest population wholly in Oregon[263]—and recreational opportunities.[264] The narrow rock canyons and steep gradients through the Cascade Range make the Rogue River an extremely popular whitewater river.[265] In 1968, Congress designated the Rogue among the nation's first wild and scenic rivers, protecting eighty-four miles of the lower river from development and preserving habitat for the remaining wild salmon.[266]

A. Fragmenting the River: Dams Throughout the Rogue Basin

During the late 1800s and early 1900s, population growth and agricultural activities in the Rogue River Basin created a demand for water and power to supply the region's newest towns and farms.[267] The Rogue Basin currently contains over eighty dams, ranging in size from small diversion dams to massive hydroelectric projects.[268] Before dam removal on the Rogue began in 2008, returning adult salmon travelled over 107 miles from the Pacific Ocean in the near-pristine river before encountering their

258 Bureau of Land Mgmt, *The Rogue River*, http://www.blm.gov/or/resources/recreation/rogue/index.php (last visited Nov. 18, 2012); Joe S. Whitworth, *A Relic Dam Dislodged by a Dormant Doctrine: The Story of Beneficial Use and Savage Rapids Dam*, 5 U. DENV. WATER L. REV. 183, 189 (2001).

259 The basin drains an area of over 5,000 square miles. *See* OR. DEP'T OF ENVTL. QUALITY, ROGUE RIVER BASIN TOTAL MAXIMUM DAILY LOAD, at 1-2 (2008); Whitworth, *supra* note 258, at 187.

260 OR. DEP'T. OF ENVTL. QUALITY, *supra* note 259, at 1-2 to 1-3.

261 *See* Rogue River Keeper, *Rogue River Watershed*, http://rogueriverkeeper.org/who-we-are/watershed (last visited Nov. 18, 2012).

262 The designated wild and scenic river portion extends from 7 miles west of Grants Pass to 11 miles east of Gold Beach. Bureau of Land Management, *supra* note 258.

263 Whitworth, *supra* note 258, at 189.

264 *See generally* U.S. DEP'T OF AGRIC. & U.S. DEP'T OF THE INT., ROGUE RIVER FLOAT GUIDE: AMERICA'S GREAT OUTDOORS (2004) *available at* http://www.blm.gov/or/resources/recreation/rogue/files/FloatGuide04.pdf.

265 *Id.* at 1.

266 Whitworth, *supra* note 258, at 189 n.37; Rogue National Wild and Scenic River, Oreg., Notice of Revised Development and Management Plans, 37 Fed. Reg. 13,408 (July 7, 1972); Wild and Scenic Rivers Act, Pub. L. No. 90-542, 82 Stat. 906 (Oct. 2, 1968).

267 *See* Whitworth, *supra* note 258, at 189–90.

268 ARTHUR C. BENKE & COLBERT E. CUSHING, RIVERS OF NORTH AMERICA 571 (2005).

first dam at Savage Rapids.[269] About twenty miles upstream from the Savage Rapids Dam, the Gold Hill and Gold Ray Dams further segmented the river, hindering salmon passage to the upstream stretches and tributaries.[270] But since 2008, dam owners have removed the Savage Rapids, Gold Hill, and Gold Ray Dams,[271] and the U.S. Army Corps of Engineers has notched a fourth, the Elk Creek Dam, located upstream from the three mainstem dams on Elk Creek, a major tributary of the Rogue.[272]

1. Savage Rapids Dam

In 1921, the Grants Pass Irrigation District (GPID), a private irrigation organization in Jackson and Josephine Counties, Oregon, constructed the Savage Rapids Dam about five miles east of Grants Pass, Oregon.[273] Growing numbers of settlers in southern Oregon during the early 1900s demanded large amounts of water for irrigation, and the Savage Rapids Dam provided the means to divert Rogue River water into a series of irrigation canals for delivery to farms throughout the region.[274] The thirty-nine-foot concrete gravity and arch dam[275] created a small reservoir from which hydraulic turbines, a pumping plant, and gravity diversions channeled water into irrigation canals.[276] Although the original dam included fish ladders, fish screens, and a fish bypass system installed in the 1970s, these measures never succeeded in preventing downstream-migrating juvenile salmon from entrainment in the irrigation system.[277]

The high levels of fish mortality at the irrigation intake pump contributed to calls for the dam's removal.[278] In 1994, Oregon's Water Resources Commission granted an extension for the GPID's water right for withdrawal at Savage Rapids, but conditioned the extension on the GPID continuing to operate in a manner consistent with the public interest.[279] The

269 *See* WaterWatch, *Savage Rapids Dam Removal*, http://waterwatch.org/programs/freeing-the-rogue-river/savage-rapids-dam-removal (last visited Nov. 18, 2012).

270 *See* Kim Murphy, *Dam's Demise Lets the Rogue River Run*, SEATTLE TIMES, Oct. 10, 2009, http://seattletimes.com/html/localnews/2010036075_dam10.html (last visited Nov. 18, 2012).

271 The dams are listed in geographic order from downstream to upstream. *See* Scott Learn, *Rogue Reclaims its Legacy*, OREGONIAN, Oct. 29, 2010, at A1.

272 *See* Mark Freeman, *End of a Controversial Dam*, MAIL TRIB., July 16, 2008, http://www.mailtribune.com/apps/pbcs.dll/article?AID=/20080716/NEWS/807160319/-1/NEWS19 (last visited Nov. 18, 2012).

273 BUREAU OF RECLAMATION, DRAFT ENVIRONMENTAL ASSESSMENT: FISH PASSAGE IMPROVEMENTS, SAVAGE RAPIDS DAM, GRANTS PASS PROJECT, OREGON 2 (2005) [hereinafter SAVAGE RAPIDS DEA], *available at* http://digital.library.ucr.edu/cdri/documents/SavageRapids_DEA.pdf.

274 The irrigation project consisted of over 160 miles of canals. *See id.*

275 Engineers built the Savage Rapids Dam as a "combination gravity and multiple arch concrete dam." *Id.* at 3.

276 *See id.*

277 Even the most successful fish screens only managed to protect 90% of fish in the stream. *See* Whitworth, *supra* note 258, at 191.

278 *See* WaterWatch, *Savage Rapids Dam Removal Action Alert – 2006*, http://waterwatch.org/act-now-1/archive-savage-rapids-dam-removal-action-alert-8-9-2006 (last visited Nov. 18, 2012).

279 Whitworth, *supra* note 258, at 196.

water right extension required the GPID to exercise "due diligence in implementing approved conservation and fish passage plans" for Savage Rapids Dam, which meant providing safe and effective fish passage for migrating salmon.[280] The state commission interpreted the conditions in the water right to require removal of Savage Rapids Dam by 2001.[281] In weighing the public interest factors, the agency concluded that dam removal would provide more benefits to the public than upgrading existing fish passage facilities and keeping the low-cost irrigation system in place.[282]

Although GPID's water right was conditioned on dam removal, members of the GPID board of directors and water users throughout the Rogue Basin remained steadfastly opposed to removing the Savage Rapids Dam.[283] From 1994 to 1998, the GPID board stalled progress to secure federal authorization and funding for dam removal.[284] Some GPID board members expressed their desire to "Save Savage Rapids Dam" in letters to members of Oregon's congressional delegation,[285] citing the dam's benefits to the local community, including providing recreation on the reservoir, supplying low-cost irrigation, and maintaining high property values near the reservoir.[286] The GPID remained committed to the tradition and symbolism of the Savage Rapids Dam, refusing a deal with the federal government in which the government would pay for dam removal and purchase replacement water pumps.[287] Between 1998 and 2000, the GPID expended almost one-third of the district's operating budget—over $500,000—on legal fees fighting against dam removal, including opposing changes to the district's water rights, challenging the imposition of fish mitigation measures, and suing former district patrons who attempted to leave the district and cancel individual water rights.[288]

Frustrated with the slow progress toward removing the Savage Rapids Dam, in 1998, the Oregon Water Resources Commission determined that the GPID had violated the terms of its water right by failing to diligently provide fish conservation measures.[289] At a 1998 hearing examining the GPID's water rights, the Commission reduced GPID's diversion right by about 50%,[290] an action that the Oregon Court of Appeals subsequently affirmed.[291] Environmentalists and federal agencies renewed their efforts to remove the

280 *Id.*

281 *Id.* at 197–98.

282 *See id.* at 200.

283 *See id.* at 198–99.

284 Whitworth, *supra* note 258, at 198–99.

285 *See id.* at 197–99.

286 *Id.* at 200; Jessica Robinson, *Savage Rapids Lesson: Removing Dams No Easy Task*, OR. PUB. BROAD., June 23, 2009, http://www.opb.org/news/article/savage-rapids-lesson-removing-dams-no-easy-task/ (last visited Nov. 18, 2012).

287 *See* GROSSMAN, *supra* note 42, at 148–49.

288 *Id.* at 145, 149.

289 *See* Whitworth, *supra* note 258, at 201.

290 *Id.*

291 Grants Pass Irr. Dist. v. Water Res. Dep't, 1 P.3d 480, 481 (Or. App. 2000).

dam and joined the Commission in taking action against the GPID.[292] In 1998, NMFS filed a lawsuit against the GPID, alleging illegal takings of threatened coho salmon by the irrigation project.[293] NMFS called the Savage Rapids Dam the "worst fish-killer on the Rogue"[294] and conditioned any ESA incidental take permit for continued operation of the irrigation project on dam removal.[295]

The actions of the Commission and NMFS gave GPID little alternative to removal.[296] After studies indicated that dam removal provided the least expensive means of solving the fish mortality problem, the GPID's board of directors passed a resolution authorizing the removal of the dam.[297] Under the GPID removal plan, pumping plants along the river near the dam site would continue to supply water to the irrigation system after dam removal.[298] A vote of 6,720 members of the GPID resulted in overwhelming support for dam removal, clearing away opposition within the local community and allowing the board to take proactive measures to implement removal plans.[299] In 2001, GPID entered a consent decree with NMFS, agreeing to seek federal approval and funding to completely remove the dam by November 2006.[300]

To fund the removal of the Savage Rapids Dam, the GPID needed the support of the federal government.[301] The ensuing political process to secure federal authorization and funding resembled the saga that unfolded for the Elwha dam removals.[302] Like Elwha, funding for the Savage Rapids Dam removal came in stages.[303] In 2000, Oregon congressmen introduced the Savage Rapids Dam Act,[304] which would have provided $22.2 million for the complete deconstruction of the dam.[305] Although Congress failed to pass this bill, the federal government appropriated $500,000 to study dam removal in the Rogue basin.[306] Then, in 2004, Congress's energy and water appropriations bill authorized the Bureau of Reclamation to install

292 *See* Whitworth, *supra* note 258, at 200–01. Environmental groups, federal agencies, and tribes had been advocating for dam removal since the 1980s. *Id.* at 189 n.35.

293 *Id.* at 192.

294 Whitworth, *supra* note 258, at 184.

295 *Id.* at 201.

296 *See id.*

297 *See* Whitworth, *supra* note 258, at 196.

298 *Id.* at 196–97.

299 *Id.* at 201–02.

300 *See* Savage Rapids Pumping Facilities/Dam Removal Project, Josephine County, Rogue River Basin, OR, 69 Fed. Reg. 29,144, 29,144 (May 20, 2004) (describing the dam removal process).

301 *See* Whitworth, *supra* note 258, at 202.

302 *See supra* notes 101–11 and accompanying text; *see also* Whitworth, *supra* note 258, at 202 (describing positions of U.S. Senators Gordon Smith and Ron Wyden of Oregon, both of whom supported dam removal as well as federal spending to upgrade the Grants Pass irrigation system).

303 *See supra* notes 101–11 and accompanying text.

304 Savage Rapids Dam Act of 2000, S. 3227, 106th Cong. (2000).

305 *See id.* § 5; Whitworth, *supra* note 258, at 202.

306 *Id.*

replacement pumps to supply water for the GPID and to remove the dam.[307] Between 2007 and 2008, Congress appropriated over $28 million for the Savage Rapids Dam removal.[308]

Once the Bureau of Reclamation received the funding, removal proceeded quickly because federal and state agencies and the local community supported dam removal.[309] The Bureau supplemented a 1996 EIS studying dam removal, acquired a federal Clean Water Act section 404 permit and a state water quality certification, and garnered support from other consulting agencies.[310] The removal occurred in 2009, beginning with the construction of an upstream cofferdam that allowed engineers to deconstruct the dam in stages.[311] Less than five months after deconstruction began, the Rogue River flowed through Savage Rapids, eroding over 150,000 cubic yards of sediments from the reservoir within two weeks.[312] Removal of the Savage Rapids Dam allowed unimpeded passage to more than fifty miles of the Rogue's mainstem and 500 miles of upstream habitat for salmon spawning,[313] increasing the Rogue's salmon population by an estimated 114,000 fish.[314]

2. Gold Hill Dam

Fifteen miles upstream from the Savage Rapids Dam, a small concrete diversion dam blocked migrating salmon from continuing their journey up the Rogue River.[315] In the late 1800s, cement manufacturers began operating in Gold Hill, Oregon, using massive amounts of river water diverted through canals in connection with cement production.[316] In the early 1920s, a cement company constructed what was the first concrete diversion dam on the Rogue at Gold Hill.[317] In 1944, the company reconstructed the Gold Hill Dam,

307 Energy and Water Development Appropriations Act, 2004, Pub. L. No. 108-137, § 220, 117 Stat. 1827, 1853 (2003).

308 Mark Freeman, *Budget Boosts Savage Rapids Work*, MAIL TRIB., Feb. 7, 2007, http://www.mailtribune.com/apps/pbcs.dll/article?AID=/20070207/NEWS/302079995&cid=sitesearch (noting that the President's 2007 budget allotted $13 million toward dam removal projects and that the then-proposed 2008 budget sought to award an additional $15 million).

309 *See* Robinson, *supra* note 286.

310 *See* SAVAGE RAPIDS DEA, *supra* note 273, at 5–7 (2006).

311 *See* RICHARD D. BENIK, REMOVAL OF SAVAGE RAPIDS DIVERSION DAM – PART ONE, at 11 (2008), *available at* http://sunsite2.berkeley.edu/wrca/damremoval/documents/SavageRapidsDam_USSD_2008.doc. Dam removal occurred in two phases. First, engineers diverted the river around the right side of the dam while workers removed the left half the dam. Second, the engineers shifted the cofferdam to direct the river to flow through the left half of the channel while workers removed the right half. *Id.*

312 *Id.* at 14.

313 WaterWatch, *supra* note 269.

314 *Id.*

315 Or. Watershed Enhancement Bd., *Exciting Progress in Removal of Fish Killer*, http://waterwatch.org/pressroom/press-clips/exciting-progress-in-removing-fish-killer (last visited Nov. 18, 2012).

316 GEORGE KRAMER, OREGON INVENTORY OF HISTORIC PROPERTIES, SECTION 106 DOCUMENTATION FORM: CITY OF GOLD HILL/DAM REMOVAL PROJECT 5 (2007).

317 *Id.*

adding a powerhouse for hydroelectric generation capable of producing 25 kilowatts (KW)—enough power to operate the cement factory with excess to sell to residents of the area.[318] Although small in stature, the three- to fourteen-foot tall concrete dam posed problems for migrating salmon.[319] The dam provided fish ladders and fish screens, but failed to prevent fish mortality from upstream and downstream-migrating salmon that entered the diversion canals.[320]

In 1969, cement production in Gold Hill ended, and the owner-operators of the dam abandoned the structure, which reverted to the City of Gold Hill.[321] The city unsuccessfully attempted to sell the dam and powerhouse to electric utilities, including PacifiCorp, throughout the 1980s.[322] Although the powerhouse had been shut off since 1969, the city continued to use the dam and diversion channels to supply water for irrigation and municipal use, but the dam contributed an insignificant amount of water for use in the region.[323]

Growing interest in dam removal and river restoration as a way to increase wild salmon populations in the Rogue led to proposals to remove the Gold Hill Dam.[324] Because of the insignificant water diversions,[325] the NMFS pressured the city to remove the dam in order to facilitate coho salmon recovery.[326] In 2006, the city acquired a replacement water intake facility, a pump station placed in the Rogue 150 feet upstream from the dam.[327] The replacement water supply system made the Gold Hill Dam obsolete and led to the city's decision to remove the dam.[328]

The process of dam removal at Gold Hill proceeded in a manner similar to that of the Sandy River dams.[329] In both cases, private funding and near-unanimous support for removal produced a short time frame from the dam removal proposal to project completion.[330] In Gold Hill, the city secured private grants to completely fund the $4 million removal costs and spent less than one year acquiring permits from federal and state agencies[331]—all of

318 *Id.*

319 River Design Grp., *Gold Hill Dam Removal*, http://www.riverdesigngroup.com/projects/dam-removal-restoration/project-gold-hill-dam-removal (last visited Nov. 18, 2012).

320 KRAMER, *supra* note 316, at 3.

321 *Id.* at 6.

322 *Id.* at 6 n.5.

323 *Id.* at 6.

324 *See* Sanne Specht, *Gold Hill's Dam Set for Removal Next Year*, MAIL TRIB., July 14, 2007, *available at* http://www.mailtribune.com/apps/pbcs.dll/article?AID=/20070714/NEWS/707140311.

325 *Id.* (noting that around the time the dam was chosen for removal, the city of Gold Hill was only diverting about 5 cubic feet per second (cfs) from the river).

326 *Id.*

327 *Id.*

328 *See id.*

329 *See supra* Part IV.B.1.

330 *Compare supra* Part IV.B.1, *with infra*, notes 331–35 and accompanying text.

331 *See* Chris Jones, *Gold Hill Celebrates Dam Removal*, KTVL NEWS 10, Jul. 16, 2008, http://waterwatch.org/pressroom/press-clips/gold-hill-celebrates-dam-removal (last visited Nov. 18, 2012); *see also* Specht, *supra* note 324 (noting that the project received two large grants from the Oregon Watershed Enhancement Board and that by July 2007, the project was "on the road" to acquiring necessary permits). The Gold Hill Dam Removal Application was submitted to the Army Corps of Engineers on December 27, 2007, and removal of the dam began in July

which supported dam removal.[332] In the Gold Hill community, few residents opposed dam removal, mostly because the dam provided de minimis benefits.[333] The only complaints from the community had to do with concerns about the loss of the small reservoir for recreation and the minor costs associated with replacing irrigation lines with longer pipes to reach the river once the channel narrowed.[334] During the summer of 2008, engineers removed the concrete structure, allowing the Rogue to flow freely through Gold Hill for the first time in ninety years.[335]

3. Gold Ray Dam

Five miles upstream from the Gold Hill Dam, the Gold Ray Dam, one of the oldest structures in the Rogue River, presented another obstacle for migrating salmon.[336] In 1905, workers completed the original Gold Ray Dam, a structure built as a log-crib dam with a hydroelectric generator capable of producing 750 KW.[337] Hydroelectric power from Gold Ray supplied electricity for much of the Rogue Basin throughout the first half of the twentieth century.[338] In 1941, the dam operators, Condor Water and Light Company, constructed a replacement dam on the same site as the original log-crib structure.[339] The newly constructed concrete gravity dam,[340] which retained the name Gold Ray Dam, stood thirty-eight feet tall and continued to generate profitable amounts of hydroelectric power serving the surrounding area.[341] Eventually, Condor Water and Light Company sold the Gold Ray Dam to the California-Oregon Power Company, which later sold the dam to PacifiCorp.[342]

2008. Jones, *supra*; CITY OF GOLD HILL, U.S. ARMY CORPS OF ENGINEERS JOINT PERMIT APPLICATION FORM (2007), *available at* http://digital.library.ucr.edu/cdri/documents/GoldHillDam_RemovalApplication.pdf.

332 *See* Jones, *supra* note 331.

333 *Id.*

334 *Id.*

335 *Id.*

336 BILL ELLIOT & ERIC DITTMER, PRELIMINARY REPORT OF THE SEDIMENT STUDY CONDUCTED AT GOLD RAY RESERVOIR, JACKSON COUNTY, OREGON, at 2 (2009), *reprinted in* JACKSON CNTY., GOLD RAY DAM SEDIMENT ANALYSIS app. A (2009), *available at* http://rvcog.org/MN.asp?pg=NR_Gold_Ray_Dam_Removal (under "Other Technical Reports").

337 Ron Brown, *Oregon Trails: The History of Gold Ray Dam*, KDRV NEWS, Aug. 6, 2010, http://kdrv.com/news/local/184020 (on file with the authors).

338 Dennis Powers, *Gold Ray Dam*, OR. ENCYCLOPEDIA, http://www.oregonencyclopedia.org/entry/view/gold_ray_dam (last visited Nov. 18, 2012).

339 *Id.*

340 A log-crib dam uses a timber frame to hold rocks and gravel in place to block the river. A concrete gravity dam consists of concrete blocks held in place by gravity. *See* HEINZ CTR., DAM REMOVAL: SCIENCE AND DECISION MAKING 26–28 (2002), *available at* http://water.epa.gov/polwaste/nps/upload/Dam_removal_full_report.pdf.

341 OFFICE OF HABITAT CONSERVATION, NAT'L MARINE FISHERIES SERV., BIOLOGICAL ASSESSMENT FOR THE REMOVAL GOLD RAY DAM 1 (2010), *available at* http://rvcog.org/NR_upload/Gold%20Ray%20Dam/Other%20Technical%20Reports/Gold%20Ray%20Dam_BA_Final_ToNMFS_1.pdf [hereinafter GOLD RAY BA].

342 Powers, *supra* note 338.

In 1972, PacifiCorp abandoned the Gold Ray Dam, allowing ownership of the structure to revert to Jackson County.[343] From the outset, Jackson County encountered severe financial and regulatory problems associated with maintenance of the aging dam.[344] Although the dam no longer produced hydropower, the county faced the escalating costs of repairing the dam and replacing decades-old fish ladders that failed to meet current NMFS and Oregon Department of Fish and Wildlife standards.[345] Estimates placed the removal costs of the dam at $5 million, compared to over $70 million to refurbish the dam to generate uneconomical amounts of hydropower.[346] In addition to ordinary maintenance and fish ladder costs, concerns over the safety of the concrete structure forced Jackson County to consider removal as the only economically viable option.[347] By 2009, the county decided to seek federal funding to facilitate dam removal.[348]

In 2009, the county received a $5 million grant from the National Oceanic and Atmospheric Administration under the American Recovery and Reinvestment Act (the Obama Administration's economic stimulus package) and began the process of permitting the dam removal.[349] Like the Gold Hill and Sandy River dams, few local interests opposed removing the Gold Ray Dam, largely because the dam had outlived its usefulness.[350] In June 2010, removal work began on the dam site, using a two-stage process of dam removal similar to that implemented at Savage Rapids.[351] Yet, just as work on the removal began, some local citizens filed a lawsuit to halt the dam's deconstruction.[352]

The opponents who sued Jackson County claimed that removing the dam violated county land-use regulations and would destroy wetlands, harm structures of historical significance, and damage water quality.[353] In July

343 GOLD RAY BA, *supra* note 341, at 2.

344 *Id.*

345 *Id.*

346 Scott Learn, *After Dam Removals, Oregon's Rogue River Shows Promising Signs for Salmon*, OREGONIAN, Oct. 28, 2010, http://www.oregonlive.com/environment/index.ssf/2010/10/early_signs_good_for_dam_remov.html (last visited Nov. 18, 2012) ("Engineers estimated it would take nearly $70 million to upgrade it, versus $5.6 million to take it down."); Mark Freeman, *Prep Work on Gold Ray Dam to Resume: Land-Use Board Rejects Appeal to Halt Removal*, MAIL TRIBUNE, July 3, 2010, http://www.mailtribune.com/apps/pbcs.dll/article?AID=/20100703/NEWS/7030317.

347 GOLD RAY BA, *supra* note 341, at 2.

348 *Id.*

349 *See* American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, div. A, 123 Stat. 115, 129 (2009); Press Release, Nat'l Oceanic and Atmospheric Admin., NOAA Administrator Announces Stimulus Fund Awards for Habitat Restoration in Oregon (Jul. 10, 2009), http://www.noaanews.noaa.gov/stories2009/20090710_newport.html (last visited Nov. 18, 2012).

350 *See supra* Part IV.B.1–2; *see also* Mark Freeman, *Public Opinion Favors Gold Ray Dam Removal*, MAIL TRIB., Mar, 26, 2010 http://www.mailtribune.com/apps/pbcs.dll/article?AID=/20100326/NEWS/3260325.

351 GOLD RAY BA, *supra* note 341, at 6.

352 *See* Mark Freeman, *Gold Ray Dam Removal Halted: Dam Demolition May Be Delayed More than a Month While LUBA Reviews Appeal*, MAIL TRIB., June 26, 2010, http://www.mailtribune.com/apps/pbcs.dll/article?AID=/20100626/NEWS/6260304.

353 *See id.*

2010, Oregon's Land Use Board of Appeals dismissed the case, affirming the county's ability to proceed as planned in removing Gold Ray Dam.[354] Two weeks after the lawsuit, deconstruction work resumed, and the engineers completely removed the dam by the end of the summer of 2010.[355] With the completion of the Gold Ray Dam's removal, for the first time in over 100 years the mainstem of the Rogue flowed freely from its upper reaches to the Pacific Ocean.

4. Elk Creek Dam

The fourth major obstacle to fish migration in the Rogue Basin was a partially completed flood control dam on Elk Creek, one of the Rogue's major tributaries and a significant salmon spawning stream.[356] In 1955, massive floods in the Rogue Basin led Congress to authorize a series of dams designed to supply irrigation water, provide recreation benefits, and control the rivers flows, thus relieving downstream concerns about flooding.[357] The Rogue River Basin flood control project proposed to build three dams under the supervision of the Army Corps of Engineers.[358] In 1977, the Corps completed the William L. Jess Dam on Lost Creek, a tributary upstream from the Elk Creek–Rogue confluence.[359] Three years later, in 1980, workers finished construction of the second dam, the Applegate Dam, located on a downstream tributary of the Rogue.[360] The Corps proposed to build the third dam on Elk Creek, 1.5 miles upstream from the stream's confluence with the Rogue.[361] In 1986, construction of the Elk Creek Dam began;[362] however, litigation and a political fight over the wisdom of damming Elk Creek soon forced the Corps to abandon its efforts to complete the dam.[363]

354 *See* Shock v. Jackson Cnty., 61 Or. LUBA 403, 404 (2010); Freeman, *supra* note 346.

355 *See* Mark Freeman, *Gold Ray Remnants Go*, MAIL TRIBUNE Sept. 10, 2010, www.mailtribune.com/apps/pbcs.dll/article?AID=/20100910/NEWS07/9100347/-1/NEWSMAP.

356 Oregon Wild, *Elk Creek Dam*, http://www.oregonwild.org/waters/elk_creek_dam (last visited Nov. 18, 2012).

357 Camilla Mortensen, *Un-Damming Elk Creek: Controversial Rogue River Dam to Make Way for Salmon*, EUGENE WEEKLY, May 15, 2008, http://www.eugeneweekly.com/2008/05/15/news1.html (last visited Nov. 18, 2012).

358 *Id.*

359 U.S. ARMY CORPS OF ENG'RS, LOST CREEK LAKE AND APPLEGATE LAKE, OREGON (2008), *available at* http://www.nwp.usace.army.mil/Portals/24/docs/pubs/pamphlets/Applegate_Lost_Creek.pdf.

360 OR. DEP'T OF FISH & WILDLIFE, APPLEGATE DAM PHASE I COMPLETION REPORT: EFFECTS OF APPLEGATE DAM ON THE BIOLOGY OF ANADROMOUS SALMONIDS IN THE APPLEGATE RIVER 1 (1988), *available at* http://www.dfw.state.or.us/fish/local_fisheries/rogue_river/docs/Applegate_Dam_anadromous_salmonids_Phase_I_Completion_Report.pdf.

361 Matthew Preusch, *Salmon Runs on Rogue Expected to Revive Once Dams Come Down*, OREGONIAN, June 9, 2008, http://www.oregonlive.com/environment/index.ssf/2008/06/_epic_rogue_river_near.html (last visited Nov. 18, 2012).

362 Oregon Wild, *Elk Creek Dam Fact Sheet*, http://www.oregonwild.org/waters/elk_creek_dam/elk-creek-dam-fact-sheet (last visited Nov. 18, 2012).

363 *See, e.g.*, Mark Freeman, *End of a Controversial Dam*, MAIL TRIBUNE, July 16, 2008, www.mailtribune.com/apps/pbcs.dll/article?AID=/20080716/NEWS/807160319/-1/NEWS19.

Soon after the construction began, environmentalists concerned about the effects that the dam would have on anadromous fish turned to the courts to stop construction of the Elk Creek Dam.[364] The environmental groups, led by the Oregon Natural Resources Council, claimed that the Corps violated the National Environmental Policy Act (NEPA) by failing to adequately analyze the environmental effects of the dam, particularly the agency's failure to conduct a sufficient cumulative impacts analysis, mitigate the environmental impacts, supplement the dam's EIS, and conduct a "worst case analysis" of potential but uncertain effects.[365] In *Oregon Natural Resources Council v. Marsh*,[366] the Ninth Circuit ruled in favor of the environmentalists, concluding that the Corps' environmental analysis violated NEPA and issued an injunction barring the Corps from completing the dam until it adequately analyzed the dam's potential environmental effects.[367] However, in 1989, the Supreme Court reversed the Ninth Circuit, determining that the Corps' analysis satisfied NEPA because the Corps was not required to conduct a supplemental EIS, the agency fulfilled NEPA's mitigation requirements, and the statute did not require agencies to consider a worst-case scenario.[368]

Although the Supreme Court validated part of the Corps' NEPA analysis in *Marsh*, the Elk Creek Dam never was completed.[369] Between 1992 and 1995, the USFS, BLM, and NMFS each concluded that the Elk Creek Dam would unreasonably damage wild anadromous fish populations in the Rogue Basin.[370] In 1994, the federal court for the District of Oregon renewed the injunction prohibiting further dam construction and required the Corps to conduct a new analysis considering the effects of the dam on the Rogue's fishery,[371] a decision that was upheld by the Ninth Circuit.[372] In 1995, the

364 *See* James J. Wesser, Oregon Natural Resources Council v. Marsh*: The Ninth Circuit Establishes a Potent Standard for Environmental Disclosure*, 18 GOLDEN GATE U. L. REV. 153, 154–55 (1988).

365 Or. Natural Res. Council v. Marsh, 628 F. Supp. 1557, 1562–63 (D. Or. 1986), *rev'd*, 820 F.2d 1051 (9th Cir. 1987).

366 820 F.2d 1051 (9th Cir. 1987), *rev'd*, 490 U.S. 360 (1989).

367 *Id.* at 1055–62.

368 Marsh v. Or. Natural Res. Council, 490 U.S. 360, 369–70, 385 (1989). *See* Marion D. Miller, *The National Environmental Policy Act and Judicial Review After* Robertson v. Methow Valley Citizens Council *and* Marsh v. Oregon Natural Resources Council, 18 ECOLOGY L.Q. 223, 248 (1991); Wendy B. Davis, *The Fox Is Guarding the Henhouse: Enhancing the Role of the EPA in FONSI Determinations Pursuant to NEPA*, 39 AKRON L. REV. 35, 57–58 (2006).

369 The Corps did not appeal the Ninth Circuit's conclusion that it failed to conduct an adequate cumulative impacts analysis; thus, even though the Corps won every issue brought to the Supreme Court, the injunction against the dam's completion remained in effect. Or. Natural Res. Council v. Marsh, 845 F. Supp. at 763 (D. Or. 1994); Marsh v. Or. Natural Res. Council, 490 U.S. at 363. *See* U.S. Army Corps of Eng'rs, *Operations: Elk Creek*, http://www.nwp.usace.army.mil/Locations/RogueRiverBasin/ElkCreek.aspx (last visited Nov. 18, 2012).

370 *See* Oregon Wild, *Elk Creek Dam Timeline*, http://www.oregonwild.org/waters/elk_creek_dam/elk-creek-dam-timeline (last visited Nov. 18, 2012).

371 Or. Natural Res. Council v. Marsh, 845 F.Supp. 758, 763–64 (D. Or. 1994) (relying on the Wild and Scenic Rivers Act to conclude that the Corps must consider downstream effects to anadromous fish).

Corps determined that the financial costs of legal challenges, environmental studies, necessary fish passage facilities, and continued construction outweighed the potential gains of the dam.[373] Consequently, the agency abandoned the Elk Creek Dam project, leaving one-third of the eighty-three-foot structure blocking the stream channel—preventing fish passage in Elk Creek and providing no economic or flood control benefits to the human community.[374]

Once the Corps decided not to complete the dam, a political controversy erupted over the future of the partially finished dam that continued to hinder the recovery of threatened salmon species.[375] Like the political debate over funding for dam removals on the Elwha River, the controversy over the future of the Elk Creek Dam featured two conflicting views and passionate advocates arguing for and against dam removal.[376] On one side of the debate, a few powerful political figures opposed removing the dam, preferring instead that the Corps maintain the structure to preserve the possibility of finishing the dam in the future.[377] On the other side, a coalition of organizations and government agencies championed dam removal to promote anadromous fish recovery and serve the public interest by restoring the natural flow of the river.[378] Toward the end of a fourteen-year debate,[379] a key political figure who had opposed dam removal, U.S. Representative Greg Walden of Oregon, notified the Corps that any efforts to remove or notch[380] Elk Creek Dam would not be funded by Congress, and that the Corps should continue its existing salmon transportation plan, which consisted of trapping salmon below the dam and trucking the fish above the dam.[381] Congressman Walden's opposition to dam removal culminated in a 2003 spending bill rider that prevented the Corps from implementing the dam notching plans.[382]

Ultimately, Congressman Walden and the dam removal opponents could not match the overwhelming public and scientific support in favor of removing or notching Elk Creek Dam.[383] Since the early 1990s, NMFS

372 Or. Natural Res. Council v. Marsh, 52 F.3d at 1490 (9th Cir. 1995); *see Elk Creek Dam Timeline*, *supra* note 370.

373 *See Elk Creek Dam Timeline*, *supra* note 370.

374 *See* Oregon Wild, *supra* note 356; *Elk Creek Dam Timeline*, *supra* note 370.

375 *See Elk Creek Dam Timeline*, *supra* note 370. NMFS added the Rogue's coho salmon to the ESA list of threatened species in 1997. Endangered and Threatened Species; Threatened Status for Southern Oregon/Northern California Coast Evolutionary Significant Unit (ESU) of Coho Salmon, 62 Fed. Reg. 24,588, 24,588–89 (May 6, 1997) (codified at 50 C.F.R. pt. 227).

376 *Elk Creek Dam Timeline*, *supra* note 370; *see also supra* Part II.B.2.

377 *See* Mortensen, *supra* note 357.

378 *See* Oregon Wild, *supra* note 356.

379 The political controversy lasted from about 1994 to 2008. *See Elk Creek Dam Timeline*, *supra* note 370.

380 *See* Nat'l Park Serv., *supra* note 113 (explaining the concept of "notching" a dam).

381 *See Elk Creek Dam Timeline*, *supra* note 370; U.S. ARMY CORPS OF ENG'RS, EVALUATION OF THE EFFECTS OF ELK CREEK DAM ON MIGRATORY SALMONIDS 3 (2007) (describing the collection and transportation methods for moving salmonids around the dam).

382 *See Elk Creek Dam Timeline*, *supra* note 370.

383 *See id.*; Oregon Wild, *supra* note 356.

expressed concerns that the dam failed to provide effective fish passage, and that no other more effective techniques, such as fish ladders, promised to redress the issue of fish passage at Elk Creek Dam.[384] The Corps eventually agreed with NMFS, concluding that notching the dam would be the least expensive means of addressing the fish passage issue.[385] Elk Creek historically provided a significant amount of the Rogue Basin's spawning habitat, accounting for 44% of upper Rogue coho spawning habitat and 15% to 20% of upper Rogue steelhead spawning habitat.[386] In 2001, a NMFS BiOp concluded that unless the Corps notched Elk Creek to allow for fish passage, coho salmon, a listed threatened species, would be jeopardized.[387]

With the scientific debate over the merits of notching settled, advocates for river restoration increased pressure on Congress to notch Elk Creek Dam.[388] In 2002, Oregon Governor John Kitzhaber urged the Corps to notch the dam in order to boost economic value of the Rogue's fishery and recover coho stocks.[389] Other groups pointed out the expense and inefficiencies of the Corps' fish transportation plan—both Taxpayers for Common Sense and environmental groups called the plan a waste of taxpayer's money and urged Congress to force the Corps to notch the dam.[390]

In 2007, the Corps finally acquiesced and released a plan to notch Elk Creek Dam by demolishing the middle section of the structure, allowing the stream to run through a reclaimed channel.[391] Beginning in July 2008, nine controlled blasts destroyed the concrete sections of the dam in the middle of the creek.[392] During the summer of 2008, the Corps provided re-vegetation, stream bank stabilization, and stream channel reclamation along a portion of Elk Creek.[393] Engineers cleared concrete from the streambed, but left the concrete remnants of the unfinished dam on either side of the stream, framing the river as it flows through the former dam site.[394]

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384 *Elk Creek Dam Fact Sheet*, *supra* note 362.

385 Oregon Wild, *supra* note 356.

386 *Elk Creek Dam Fact Sheet*, *supra* note 362.

387 Margaret B. Bowman, *Legal Perspectives on Dam Removal*, 52 BIOSCIENCE 739, 741 (2002).

388 *See Elk Creek Dam Fact Sheet*, *supra* note 362.

389 Letter from John Kitzhaber, Governor, Oregon, to U.S. Representatives C.W. Bill Young and David R. Obey, House Committee on Appropriations (Aug. 27, 2002), *available at* http://www.oregonwild.org/waters/elk_creek_dam/elk-creek-dam-background-documents/oregon-governor-john-kitzhaber-s-letter-to-congress-on-elk-creek-dam-8-27-02.

390 Letter from American Rivers, Taxpayers for Common Sense (and other environmental groups), to U.S. Representatives C.W. Bill Young and David R. Obey, House Committee on Appropriations (Aug. 20, 2002), republished at: http://www.oregonwild.org/waters/elk_creek_dam/elk-creek-dam-background-documents/american-rivers-taxpayers-for-common-sense-and-others-letter-to-house-appropriations-committee-of-august-20-2002.

391 *Elk Creek Dam Fact Sheet*, *supra note* 362.

392 *Id.*

393 *Id.*

394 *See* WaterWatch, *Notching the Elk Creek Dam*, http://waterwatch.org/programs/freeing-the-rogue-river/notching-the-elk-creek-dam (last visited Nov. 18, 2012)

B. Restoring the Rogue River

Almost immediately after the removal of the three mainstem Rogue dams, the river's salmon fishery showed signs of recovery.[395] In 2010, biologists found thirty-one redds—small nests dug by fish in stream beds for egg laying—in the Rogue where the Gold Ray reservoir once stood, and sixty-three in the former Savage Rapids reservoir.[396] With the continuation of river restoration projects, including streambank stabilization throughout the basin, biologists and fishermen are optimistic that salmon populations will rebound.[397]

VI. THE KLAMATH RIVER BASIN: LOOKING AHEAD TO FUTURE DAM REMOVALS

To the south of the Rogue Basin, the Klamath River flows from its headwaters in the Cascade Range near Klamath Falls, Oregon, for over 263 miles to its mouth at the Pacific Ocean in northern California.[398] The Klamath carves a course through two distinct geographic areas—the dry, high desert of southern Oregon, where water derives primarily from spring snowmelt,[399] and the wet, temperate clime of northern California, where rainfall and numerous tributaries[400] increase the river's discharge.[401] Historically one of the most biologically productive streams in the Pacific Northwest, the Klamath yielded abundant runs of anadromous fish, averaging 880,000 spawning salmon per year.[402] For over 4,500 years, the Klamath Tribes[403] have relied on the river's salmon and sucker fish as staple food sources and pillars of their cultural identity.[404] Unfortunately, hydroelectric dams, irrigation projects, and recent droughts nearly destroyed the Klamath's wild salmon

395 *See* Learn, *supra* note 271, at 1.

396 *Id.* at A8.

397 *See id.*

398 *See* KYNA POWERS ET AL., CONG. RESEARCH SERV., RL 33098, KLAMATH RIVER BASIN ISSUES AND ACTIVITIES: AN OVERVIEW 1 (2005).

399 *See* Holly Doremus & A. Dan Tarlock, *Fish, Farms, and the Clash of Cultures in the Klamath Basin*, 30 ECOLOGY L.Q. 279, 289 (2003). The Iron Gate Dam at river mile 190 serves as the general dividing point for basin's two geographic regions. *See* COMM. ON HYDROLOGY, ECOLOGY, AND FISHES OF THE KLAMATH RIVER, NAT'L RESEARCH COUNCIL, HYDROLOGY, ECOLOGY, AND FISHES OF THE KLAMATH RIVER BASIN 26 (2008), *available at* http://www.nap.edu/openbook/12072/png/26.png.

400 The lower Klamath River's principle tributaries include the Trinity, Shasta, Scott, and Salmon Rivers. NAT'L MARINE FISHERIES SERV., KLAMATH RIVER BASIN, 2009 REPORT TO CONGRESS 2 (2009).

401 *See* Doremus & Tarlock, *supra* note 399. The Klamath River Basin covers an area of over 12,100 square miles. POWERS ET AL., *supra* note 398.

402 Glen Spain, *Dams, Water Reforms, and Endangered Species in the Klamath Basin*, 22 J. ENVTL. L. & LITIG. 49, 51 (2007).

403 The Klamath Tribes include the Klamath, Modocs, and Yahooskin peoples of the upper basin, as well as the Karuk and Yurok tribes of the lower basin. Daniel McCool, *Rivers of the Homeland: River Restoration on Indian Reservations*, 16 CORNELL J.L. & PUB. POL'Y 539, 549–50 (2007).

404 *See id.* at 552.

population; current salmon runs number only about 6% of historic levels.[405] Throughout most of its modern history, controversy and political strife have dominated the Klamath Basin, including conflicts over virtually every major western water issue—dams, water rights, and endangered species.[406]

A. Setting the Stage for the Klamath Controversy

Non-native settlement and population growth in the Klamath Basin began in the middle of the nineteenth century as miners and pioneers flocked to the resource-rich area pursuing gold, timber, and farmland.[407] In 1905, the Bureau of Reclamation authorized the construction of hydroelectric dams and irrigation canals throughout the basin, which eventually supplied electricity and water to over 200,000 acres of arid farmland in Oregon and California.[408] Currently, the mainstem of the Klamath River contains five dams, including four hydroelectric dams, owned and operated by PacifiCorp as part of the Klamath Hydroelectric Project.[409] The combined effects of dams and irrigation, however, blocked the Klamath to salmon migration and reduced water flows, destroying fish spawning habitat and leaving the once-abundant salmon in danger of extinction.[410]

1. Dam Building for Power

In 1913, construction began on the first in a series of dams planned as part of an ambitious hydroelectric project on the mainstem of the Klamath River.[411] The California Oregon Electric Company (COPCO) initiated the Klamath Hydroelectric Project by building two concrete arch hydroelectric

405 Spain, *supra* note 402, at 52; *see also* Robert A. McFarlane, Note, *The Imperiled Klamath River Salmon: A Troubled History and A Hopeful Future Under the Central Valley Project Improvement Act*, 1 HASTINGS W.-NW J. OF ENVTL. L., POL'Y, 89, 92–93 (1994) (recognizing that in 1992, the number of salmon returning to spawn in the Klamath Basin reached an all-time low of 25,900).

406 *See* McCool, *supra* note 403, at 549 (noting that the "Klamath Basin has become famous for conflict") (citation omitted).

407 *See* Mark Clark & Earl D. Miller, *Notes on Early Water Use in the Klamath Basin*, 13 J. SHAW HIST. LIBR. 19, at 20–21 (1999).

408 Matthew G. McHenry, Comment, *The Worst of Times: A Tale of Two Fishes in the Klamath Basin*, 33 ENVTL. L. 1019, 1024 (2003). The Reclamation Act of 1902, 43 U.S.C. §§ 371–498, directed the Bureau of Reclamation to aid western development by funding irrigation projects and other public works in arid regions. *Id.* at 1022–23; Clark & Miller, *supra* note 407, at 23; Davidson, *supra* note 22 at 533–35.

409 The five main stem dams are the Keno, J.C. Boyle, Copco No.1, Copco No.2, and the Iron Gate Dams. In addition, the Klamath Basin contains two dams on tributary streams: the Link River Dam and Fall Creek Dams. *See* David N. Allen, *The Klamath Hydroelectric Settlement Agreement: Federal Law, Local Compromise, and the Largest Dam Removal Project in History*, 16 HASTINGS W.-NW. J. ENVTL. L. & POL'Y, 427, 431, 443–44, (2010).

410 *See* Chang-Hee Christine Bae, *Salmon Protection in the Pacific Northwest: Can it Succeed?* 17 N.Y.U. ENVTL. L. J. 559, 561–62, 566–69 (2008).

411 *See* GEORGE KRAMER, KLAMATH HYDROELECTRIC PROJECT (FERC NO. 2082) HISTORIC CONTEXT STATEMENT 40 (2003), *available at* http://act.americanrivers.org/site/DocServer/Kramer_2003_FLA_E6_Appendix_E-6D_Historic_Context_1.pdf.

dams in Ward's Canyon, 198 miles upstream from the Klamath's mouth.[412] Five years after construction began, COPCO completed the first structure, Copco No. 1, a massive 120-foot dam that generated 20 MW of electricity.[413] In 1925, engineers completed the second dam, Copco No. 2, which stood twenty-one feet tall at a quarter mile downstream from Copco No. 1.[414] Together the two dams generated 47 MW of electricity and completely blocked salmon access to seventy-five miles of the upper Klamath River.[415]

As farms grew and more fields required irrigation, an increasing demand for electricity led to the expansion of the Klamath Hydroelectric Project.[416] In 1958, workers completed the Big Bend Dam, later renamed the J.C. Boyle Dam, twenty-five miles upstream from the Copco Dams.[417] The sixty-eight-foot earthen-fill dam generated 80 MW of electricity for COPCO's power customers in the Klamath Basin.[418] Because the construction of the J.C. Boyle Dam occurred after the Federal Water Power Act of 1935, COPCO required a permit for construction and operation of the dam.[419] In 1954, COPCO received a fifty-year license for the J.C. Boyle Dam, which was later transferred to PacifiCorp after the two companies merged in 1961—the same year PacifiCorp took over management of the Klamath Hydroelectric Project.[420]

In 1959, the California Fish and Game Department and the downstream Klamath fishing industry threatened to sue PacifiCorp over the wildly fluctuating water releases from the Copco and J.C. Boyles Dams.[421] PacifiCorp generated power from the three dams by releasing stored water from the reservoirs at times of high electricity demand.[422] This produced drastically varying downstream river levels that harmed fish and water quality in the lower Klamath.[423] In order to avert the lawsuit and better regulate flows on the Klamath, Pacificorp agreed to build a new dam

412 *See id.* at 39–44; G&G ASSOCS., KLAMATH RIVER DAM REMOVAL INVESTIGATION 3 (2003), *available at* http://ucblibrary4.berkeley.edu/wrca/damremoval/documents/Gathart_dam_removal_report.pdf.

413 *See* KRAMER, *supra* note 411; G&G ASSOCS., *supra* note 412.

414 G&G ASSOCS., *supra* note 412.

415 *See* OFFICE OF ENERGY PROJECTS, FED. ENERGY REGULATORY COMM'N, FINAL EIS: RELICENSING OF THE KLAMATH HYDROELECTRIC PROJECT NO. 2082-027, at 2-8 to -11 (2007), *available at* http://www.ferc.gov/industries/hydropower/enviro/eis/2007/11-16-07.asp (click on "Section 2") [hereinafter KLAMATH EIS]; Klamath Forest Alliance, *Klamath River*, http://www.klamathforestalliance.org/Issuesdatabase/klamathriver.html (last visited Nov. 18, 2012).

416 *See* Clark & Miller, *supra* note 407, at 20–24.

417 *See* PACIFICORP, EXHIBIT C: CONSTRUCTION HISTORY AND PROPOSED CONSTRUCTION, KLAMATH HYDROELECTRIC PROJECT (FERC PROJECT NO. 2082), at 4-1 (2004); G&G ASSOCS., *supra* note 412.

418 *See* PACIFICORP, *supra* note 417.

419 16 U.S.C. §§ 797(e), 800. *See* Klamath Off-Project Water Users, Inc. v. PacifiCorp, 240 P.3d 94, 96 (Or. App. 2010).

420 *See* Klamath Off-Project Water Users, 240 P.3d, at 96–97.

421 *See* HOLLY D. DOREMUS & A. DAN TARLOCK, WATER WAR IN THE KLAMATH BASIN: MACHO LAW, COMBAT BIOLOGY, AND DIRTY POLITICS 79 (2008) [hereinafter WATER WAR].

422 *Id.*

423 *Id.*

downstream from the Copco Dam.[424] In 1962, PacifiCorp completed the massive Iron Gate Dam, which stood 173 feet tall, was composed of rock and gravel fill materials, and generated 18 MW of electricity.[425]

After completion of the Iron Gate Dam, the Klamath Hydroelectric Project consisted of four hydroelectric dams, with a rated capacity of 169 MW.[426] Currently, the four dams produce closer to 81 MW,[427] supplying power to over 1,400 farms and about 70,000 homes throughout the Klamath Basin.[428] With no fish passage facilities at the three downstream dams—Iron Gate and Copco Nos. 1 and 2—the Klamath Hydroelectric Project completely blocked migratory fish access to 300 miles of the upper Klamath River and its tributary streams.[429]

2. Irrigating the Upper Klamath Basin

Coinciding with the start of dam construction on the Klamath, the Bureau of Reclamation began a massive irrigation project to drain marshlands and deliver water from the Klamath River to farms in the upper basin.[430] In 1905, the Bureau began constructing water storage dams, reservoirs, and over 185 miles of canals—all part of the Klamath Irrigation Project.[431] The federal government's policy of transforming the arid upper Klamath Basin into productive farmland through subsidized irrigation gained further momentum in 1917 when the government opened public lands to homesteaders who paid only a small fee in exchange for the delivery of irrigation water.[432]

With a continuously growing population and demand for water, the federal government enacted the Klamath River Basin Compact to govern the orderly development of the basin.[433] The 1957 Compact prioritized irrigation

424 *Id.*

425 *See* WATER WAR, *supra* note 421; G&G ASSOCS., *supra* note 412, at 18.

426 *See* Allen, *supra* note 409, at 444. Until 2006, PacifiCorp contracted with the Bureau of Reclamation to operate two government dams. *Id.* at 444 n.130. The Link River and Keno Dams are primarily flow-regulating dams located near the Klamath's headwaters at river miles 254 and 233, respectively. A 22-mile reservoir formed behind the Keno Dam supplies water to 41% of lands irrigated by the Klamath Irrigation Project. *Id.* at 444 n.132. The contract between PacifiCorp and the Bureau of Reclamation required the Klamath's flows to be regulated to ensure the availability of irrigation water in the reservoir. *Id.* The Link River Dam also supplies water to two powerhouses, the Eastside and Westside Powerhouses, *id.* at 444, which have a combined generating capacity of 3.8 MW and are technically part of the Klamath Hydroelectric Project. *Id.* at 444 n.131.

427 *See* Allen, *supra* note 409, at 444.

428 ANNA LEON-GUERRO, SOCIAL PROBLEMS: COMMUNITY, POLICY, AND SOCIAL ACTION 373 (2010); PACIFICORP, KLAMATH SETTLEMENT OVERVIEW 2 (2011), *available at* http://www.oregon.gov/energy/RENEW/Geothermal/docs/5-OGWG-Pacificorp.pdf.

429 The J.C. Boyle Dam received upstream and downstream fish passage facilities; however, the Klamath Hydroelectric Project combined with the Keno and Link River Dams blocked 570 miles of the Klamath and its tributaries to fish migration. *See* Allen, *supra* note 409, at 445.

430 *See* Davidson, *supra* note 22, at 533–34.

431 *Id.* at 534–35.

432 *Id.* at 535.

433 *See* Klamath River Basin Compact, Pub. L. No. 85-222, art. I, 71 Stat. 497 (1957).

over all water uses in the basin other than domestic use, including instream flows for fish and wildlife.[434] By 2001, the Klamath Irrigation Project supplied water to over 200,000 acres of farmland,[435] but human population growth and water users have long exceeded the capacity of the Klamath to supply enough water for all of the farmlands, let alone leaving water in the river to sustain the ecosystem.[436]

The economic dependence of farmers on irrigation water has led to serious fights over water appropriations in the basin.[437] In 2001, a severe drought left the Klamath Basin, an already dry region, especially desperate for water.[438] The Bureau implemented an operations plan for the Klamath Irrigation Project that re-prioritized water deliveries, leaving water in the river for ESA-listed fish and tribal water rights,[439] but shutting off water deliveries to upper Klamath irrigators—a move that elevated the water conflict into a furor.[440] After losing a lawsuit attempting to enjoin the Bureau from implementing the operations plan,[441] the Klamath Irrigation District, an organization of irrigators, sued the federal government for $1 billion in lost revenue to farms as a result of the irrigation shut-off.[442]

Another front in the Klamath water war occurred at the convergence of hydropower and irrigation. Since 1917, a clause in PacifiCorp's FERC license for the Klamath Hydroelectric Project allowed irrigators to receive electricity for irrigation pumps from the hydroelectric dams at one-twelfth to one-seventeenth the market price.[443] In 2006, the states of Oregon and California ordered a decoupling of the favorable rates and a return to market prices phased in over a seven- and four-year transition period, respectively.[444]

434 *See* Davidson, *supra* note 22, at 536. Water conservation was one of the stated goals of the Compact, a goal that seems to have been lost between Washington, D.C. and Oregon. Klamath River Basin Compact, art. I(a), 71 Stat. at 497.

435 *See* Davidson, *supra* note 22, at 536.

436 *See* Spain, *supra* note 402, at 93–94. The Oregon Water Resources Department still issues water rights in the Klamath Basin even though the basin has been over-appropriated for years. *Id.* Irrigators have begun pumping groundwater to fill their demands for water, resulting in groundwater depletion that has exacerbated the conflict in the Klamath. *Id.* at 94.

437 *See* Jeff Barnard, *Fight Over Water in Klamath Basin is Symbol of West*, SEATTLE TIMES, Dec. 1, 1996, http://community.seattletimes.nwsource.com/archive/?date=19961201&slug=2362598 (last visited Nov. 18, 2012). The late-1970s drought was aptly named the "Klamath Salmon War" because of the conflicts between irrigators and the fishing industry and tribes. *See* McFarlane, *supra* note 405, at 92.

438 *See* Davidson, *supra* note 22, at 543–44.

439 *See* McHenry, *supra* note 408, at 1045–46.

440 In 2001, the Klamath water conflict nearly deteriorated into violence when farmers staged a protest to release water from irrigation headgates. *See* Davidson, *supra* note 22, at 545. U.S. Marshals were called to Klamath Falls, Oregon, because local police refused to arrest the farmers. *See* Bruce Barcott, *What's A River For?* MOTHER JONES, May/June 2003, http://www.motherjones.com/politics/2003/05/whats-river.

441 *See* Kandra v. United States, 145 F. Supp. 2d 1192, 1200–02 (D. Or. 2001) (denying the irrigators' injunction request); McHenry, *supra* note 408, at 1027.

442 *See* Spain, *supra* note 402, at 77–78 (discussing Klamath Irr. Dist. v. United States, 67 Fed. Cl. 504, 526–27 (2005), *vacated and remanded*, Klamath Irr. Dist. v. United States, 635 F.3d 505 (Fed. Cir. 2011)).

443 *See id.* 113–14.

444 *See id.* at 115.

Although an association of Klamath irrigators continues to challenge the states' decision to decouple,[445] the elimination of below-market power rates removed the principal economic interest irrigators had in maintaining the Klamath's hydroelectric dams.[446]

3. Tribal Water Rights and the Disappearing Salmon

For almost a century, the interests of hydropower and irrigators took precedence in the Klamath Basin, subjugating tribal and environmental water usage, and at times leaving not even a single drop of water in the river.[447] In 1864, the Klamath Tribes signed a treaty with the federal government guaranteeing tribal fishing rights in historic fishing grounds of the basin.[448] The Bureau of Reclamation and Oregon's Water Resources Department, however, paid little attention to the tribes' reserved fishing rights until 1983, when the Ninth Circuit ruled that the Bureau's irrigation project must leave enough water in the Klamath to ensure fishing capacity.[449] The Ninth Circuit elevated consideration of tribal water interests above irrigators, concluding that the tribes' water priority date extended to time immemorial and recognizing the tribes' water rights as the most senior in the basin.[450]

Although the Ninth Circuit recognized the tribes' senior water rights, the historic Klamath water conflict descended into a "wicked" natural resource problem with the interjection of the Endangered Species Act.[451] Because the hydroelectric dams blocked migrating fish access to upstream spawning grounds, and because irrigators pumped massive amounts of water out of the river and tributaries, the native fish species of the Klamath entered a precipitous decline.[452] In 1988, the Fish and Wildlife Service listed two upstream fish, the Lost River sucker (*Deltistes luxatus*) and short-nose sucker (*Chasmistes brevirostris*), as endangered species.[453]

The ESA's requirement that federal agencies consider and protect the listed sucker fish forced the Bureau to store more water in upper basin reservoirs, keeping higher upstream water levels and improving sucker fish

445 *See id.* at 115–16 (discussing Klamath Off-Project Water Users, Inc. v. PacifiCorp, 240 P.3d 94, 96 (Or. App. 2010) in which the court summarily dismissed the irrigators' claims).

446 *Id.* at 113. None of the hydroelectric dams provide water storage directly for the Klamath Irrigation Project, as the irrigation diversions all occur well upstream from the dams. *Id.* at 101.

447 *See* McFarlane, *supra* note 405, at 94.

448 *See* Davidson, *supra* note 422, at 541.

449 *See* United States v. Adair, 723 F.2d 1394, 1413–14 (9th Cir. 1983); Spain, *supra* note 402, at 92–93.

450 *See* Spain, *supra* note 402, at 92.

451 *See* Martin Nie, *Drivers of Natural Resource-Based Political Conflict*, 36 POL'Y SCI. 307, 310 (2003) (describing "wicked" natural resource problems as exhibiting four characteristics: 1) defining the problem is a problem, 2) having no clear point when the problem can be deemed solved, 3) eluding yes/no policy questions and objective evaluations, 4) consisting of a pattern where every sub-problem is a symptom of another problem.)

452 *See* Spain, *supra* note 402, at 52.

453 *See* Determination of Endangered Status for the Shortnose Sucker and Lost River Sucker, 53 Fed. Reg. 27,130 (July 18, 1988) (codified at 50 C.F.R. pt. 17).

habitat.[454] But the maintenance of Klamath water upstream, combined with severe droughts in the early 1990s, proved catastrophic for other struggling native species.[455] In 1997, the NMFS listed coho salmon as a threatened species, in large part due to the poor water quality and inadequate downstream Klamath flows that prevented the salmon from migrating upstream to spawning habitat.[456] Between September 20 and 27, 2002, over 30,000 fish died in the lower Klamath due to toxic water conditions and low flows—an event that was one of the largest salmon-kills ever.[457] The loss of wild salmon in the Klamath also resulted in economic hardship for the northern California and Oregon fishing industry, which lost over $100 million in revenue due to fishing closures in 2006 alone.[458]

In order to fulfill their obligations under the ESA to protect upstream and downstream fish habitat, the Bureau's 2001 Operations Plan reprioritized water deliveries in the basin.[459] The plan directed the Bureau to leave enough water in the Klamath to ensure habitat for upstream sucker fishes and downstream salmon, and fulfill tribal water and fishing rights before supplying irrigators.[460] In a decision cursed by farmers, the federal district court upheld the Operations Plan, noting that the ESA functioned as a trump card in natural resource management.[461] According to the court, the Bureau had a legal duty to leave enough water in the Klamath to avoid jeopardy to listed species and to fulfill tribal water rights, even if doing so meant causing economic harm to irrigators.[462]

B. Dam Removal and the Klamath Basin Agreements

The severe decline and subsequent ESA listing of wild fish in the Klamath eventually led to calls from environmentalists, the Klamath Tribes, and the fishing industry to remove the hydroelectric dams and restore the Klamath's abundant fishery.[463] The campaign for dam removal accelerated in 2004 when the Klamath Hydroelectric Project's fifty-year FERC license was

454 *See* Spain, *supra* note 402, at 58.

455 *See id.* at 52.

456 *See* Threatened Status for Southern Oregon/Northern California Coast Evolutionarily Significant Unit (ESU) of Coho Salmon, 62 Fed. Reg. 24,588, 24,588, 24,592–93, 24,609 (May 6, 1997) (codified as amended at 50 C.F.R. § 223.102).

457 *See* Thomas P. Schlosser, *Dewatering Trust Responsibility: The New Klamath River Hydroelectric and Restoration Agreements*, 1 WASH. J. ENVTL. L. & POL'Y 42, 61 (2011).

458 *See* Spain, *supra* note 402, at 98; *see also Perspectives on California's Water Supply: Challenges and Opportunities; Hearing Before the H. Subcomm. On Water and Power*, 111th Cong. (2010) (statement of Larry Collins, President, Pac. Coast Fed'n of Fishermen's Ass'ns), republished at: www.pcffa.org/fn-apr10.htm (last visited Nov. 18, 2012).

459 *See* McHenry, *supra* note 408, at 1045.

460 *See id.*

461 *See* Kandra v. United States, 145 F. Supp. 2d 1192, 1207 (D. Or. 2001); *see also* Spain, *supra* note 402, at 58.

462 *See Kandra*, 145 F. Supp. 2d at 1207 (citing Tenn. Valley Auth. v. Hill, 437 U.S. 153, 184 (1978), for the proposition that "the ESA requires an agency to avoid jeopardy to species, 'whatever the cost'").

463 *See* Allen, *supra* note 409, at 446.

set to expire.[464] By 2010, the major interest groups in the Klamath Basin signed two agreements proposing major changes to water resource management in the basin and aiming to remove PacifiCorp's four hydroelectric dams by 2020.[465]

1. The Relicensing Process

In 2004, PacifiCorp began the process of renewing its FERC license for the continued operation of the Klamath Hydroelectric Project.[466] For the next two years, federal agencies studied the environmental and economic effects of relicensing the Klamath dams.[467] Under the Federal Power Act, FWS and NMFS submitted joint comments, including mandatory prescriptions for FERC to include in the renewed license.[468] FWS and NMFS prescribed new fish ladders, fish screens, and improved spillways at all four dams.[469] The Department of the Interior also submitted comments recommending that FERC require minimum flows from the J.C. Boyle Dam, minimum water levels in the Keno reservoir, and streamflow monitoring throughout the reach of the Klamath Hydroelectric Project.[470]

In its final EIS released in 2007, FERC concluded that the required modifications and improvements to the hydroelectric dams would cost more than the likely revenue from maintaining the dams, making relicensing the entire Klamath Hydroelectric Project uneconomical.[471] As a result of this conclusion, and due to the reluctance of Oregon and California to provide certifications under section 401 of the Clean Water Act without substantial improvements to the Klamath's water quality,[472] PacifiCorp turned to the negotiating table, seeking a settlement with key stakeholders.[473] The resulting negotiations produced two major agreements addressing water allocation and hydropower conflicts in the Klamath Basin.[474]

2. The Agreements

In February 2010, approximately twenty parties[475] signed the Klamath Basin Restoration Agreement—a major proposal to resolve water allocation

464 *See id.* at 446–47.

465 *See id.* at 451–52.

466 *Id.* at 446–47.

467 *See id.* at 447.

468 *See id.* Recall that under the FPA, FWS and NMFS may submit mandatory prescriptions that FERC must include in the license. *See* Federal Power Act, 16 U.S.C. § 811 (2006); Blumm & Nadol, *supra* note 153, at 85.

469 PacifiCorp challenged the fishway prescriptions, but an administrative law judge ruled in favor of the FWS and NMFS prescriptions. *See* Klamath Hydroelectric Project, No. 2006-NMFS-0001, at 6 (NOAA Fisheries Sept. 27, 2006).

470 *See* Allen, *supra* note 409, at 449.

471 *See id.*; KLAMATH EIS, *supra* note 415, at 4-4, 4-6 tbl.4-4.

472 *See* Allen, *supra* note 409, at 449–450.

473 *See id.* at 451.

474 *See* Schlosser, *supra* note 457, at 44–45.

475 *See id.* at 44. PacifiCorp was not a party to the Restoration Agreement.

and fishery issues in the Basin.[476] The Restoration Agreement contained three broad goals for future water allocation in the Klamath: 1) restoring and sustaining fish populations to support an economic harvest; 2) providing water and power for agriculture, domestic use, and wildlife; and 3) promoting sustainability, including mitigating effects of future dam removals.[477] The Restoration Agreement called for the creation of the Klamath Basin Coordinating Council, which would oversee $1 billion in federal spending over ten years on water improvement projects, including $900 million for fish restoration.[478] Although the Restoration Agreement has been roundly criticized on all fronts,[479] perhaps its most controversial provision is the one that tied that agreement to the implementation of the second agreement, the Klamath Hydroelectric Settlement Agreement.[480] Thus, signatories pinned the fate of a crucial Klamath water allocation agreement on the implementation of the largest dam removal project ever proposed.[481] In 2011, Senator Jeff Merkley (D-Or.) introduced a bill in Congress to approve the Restoration Agreement and authorize appropriations for water improvement projects.[482] But so far this bill has not gained much political traction, and even Senator Merkley admitted that the debate is going to continue and the issue is far from settled.[483]

During the signing ceremony of the Restoration Agreement in February 2010, twenty organizations consented to the Hydroelectric Agreement—a framework for decommissioning the Klamath Hydroelectric Project.[484] Within this novel proposal, PacifiCorp and the federal government agreed to continue studying the possibility of removing the four Klamath hydroelectric dams.[485] If the federal government proceeds with dam removal, PacifiCorp

476 *See id.*

477 *See* Allen, *supra* note 409, at 453.

478 *See id.* at 453–54. The Restoration Agreement requires Congress to approve an additional $400 million appropriation and authorize federal agencies in the Klamath to redirect $600 million in existing funds over the next 10 years. *Id.*

479 *See* Schlosser, *supra* note 457, at 43 (criticizing the agreements for their abandonment of tribal fishing and water rights); John Devoe, *Merkley's Proposal Unscientific and Unsustainable*, OREGONIAN, Dec. 10, 2011, at B7 (discussing the views of WaterWatch of Oregon, an environmental group that does not support the agreements because of the costs they impose and their failure to protect instream flows for fish).

480 *See* Bill Cross, *Harm from Dams Far Outweighs Kilowatts Produced*, OREGONIAN, Dec. 3, 2011, at B9 (suggesting the issue of dam removal should be discussed as an economic problem: the value of the electricity generated versus the environmental benefits of dam removal).

481 *See* Allen, *supra* note 409, at 451, Peter Fimrite, *Deal to Raze 4 Klamath Dams*, S.F. CHRON., Sept. 30, 2009, http://www.sfgate.com/green/article/Deal-to-raze-4-Klamath-dams-3215111.php (last visited Nov. 18, 2012).

482 Klamath Basin Economic Restoration Act of 2011, S. 1851, 112th Cong. §§ 101, 104; s*ee* Charles Pope & Scott Learn, *Klamath Basin Water Bill Is Landmark, But Will It Pass Congress?*, OREGONIAN, Nov. 10, 2011, at A1.

483 *See* Samantha Tipler, *Water Issues Dominate Merkley Town Hall*, HERALD & NEWS, Apr. 5, 2012, republished at: http://www.klamathbasincrisis.org/settlement/articles2012/wtrissuesdominateMerkley040512.htm (last visited Nov. 18, 2012).

484 *See* Schlosser, *supra* note 457, at 45.

485 *See* Allen, *supra* note 409 at 457.

will transfer title to the four dams[486] to a designated dam removal entity,[487] which will be responsible for planning and implementing dam removal and river restoration beginning in 2020.[488]

Under the Hydroelectric Agreement, PacifiCorp ratepayers and Oregon and California taxpayers would pay all of the removal costs up to $450 million.[489] In July 2009, Oregon Governor Ted Kulongoski signed into law S.B. 76, a bill that increased rates for PacifiCorp's Oregon customers in order to raise $184 million by 2020.[490] Subsequently, California's Public Utility Commission approved a rate increase for northern California PacifiCorp customers in order to raise an additional $16 million for the Klamath dam removal.[491] As part of the Hydroelectric Agreement, the state of California agreed to provide an additional $250 million for removal through bonds.[492] If the costs of dam removal exceed $450 million, the Hydroelectric Agreement releases California, Oregon, and PacifiCorp from further liability, [493] placing the burden of potential excess costs on the federal government or private contributions.

Although the Hydroelectric Agreement established the framework for dam removal, the signatories left the ultimate decision of whether to pursue complete dam removal in the hands of the Secretary of the Interior.[494] The agreement called for the Secretary to continue studying dam removal and to make a formal determination on whether to move ahead with the plan.[495] After the determination, the project could proceed only if Congress enacted legislation approving the plan, and if the following conditions were also met: 1) the Secretary and PacifiCorp agreed on a transfer of titles to the dams, 2) the states authorized funding for removal (and the Secretary established a plan to cover excess costs), and 3) the Secretary identified a willing dam removal entity.[496]

The established timeline for removal beginning in 2020 under the Hydroelectric Agreement allows PacifiCorp to operate the Klamath Hydroelectric Project in the interim.[497] Currently, the four hydroelectric dams continue to operate under year-to-year FERC licenses,[498] and

486 *See id.* at 451, 454. PacifiCorp would be shielded from liability after the voluntary transfer. *Id.* at 459.

487 *See id.* at 463. The dam removal entity would be responsible for acquiring the necessary permits and certifications necessary for dam removal. *Id.*

488 *See id.* at 464.

489 *Id.* at 459; *see* Allison Winter, *Interior Analysis Weighs Klamath Dam Removal, But Hill Action Lags*, NATURAL RES. WEEKLY REPORT, E&E NEWS, Feb. 2, 2012, http://www.eenews.net/Landletter/print/2012/02/02/10 (estimating total costs for removal of the four hydroelectric dams at $238–$493 million).

490 *See* Allen, *supra* note 409, at 459–60; S. 76, 75th Leg., 2009 Reg. Sess. (Or. 2009).

491 *See* Allen, *supra* note 409, at 460.

492 *See id.*

493 *See id.* at 459.

494 *See id.* at 457.

495 *See id.*

496 *See id.*

497 *See id.* at 465.

498 *See id.*

PacifiCorp's yearly revenues from the project are estimated at $27 million.[499] The Settlement Agreement also requires PacifiCorp to implement temporary measures for improving fish passage and water quality, including spending $510,000 per year on salmon recovery efforts,[500] less than 2% of the annual revenues produced by the project.

C. Factors Affecting Dam Removal: Lessons for the Klamath

Two years after the signing ceremony, the future of the Restoration and Hydroelectric Agreements remains anything but certain. Senator Merkley's efforts to approve and appropriate funding for the agreements in Congress have stalled.[501] In February 2012, Secretary Salazar announced that he would delay indefinitely a determination on dam removal because the Department of the Interior lacked authority to take title of the dams and carry out their removal absent congressional action.[502] Despite the novel and ambitious plan to resolve the controversies over dams, water allocation, and ESA-listed species in a holistic way, the agreements have drawn sharp criticism from both sides—further galvanizing a region accustomed to disagreement.[503] In May 2012, the Hoopa Tribe of the lower Klamath advocated abandoning the agreements and returning the dam-removal decision to the FERC relicensing process.[504]

Unlike the examples of the Elwha,[505] White Salmon,[506] Sandy,[507] and Rogue Rivers,[508] the Klamath dams[509] stand at the center of a dense and complex web of interest groups and political conflict. But the lessons learned from successful dam removals in other parts of the Pacific Northwest shed some light on the factors affecting dam removal in the Klamath. First, the method of funding the Klamath removals differs drastically from previously successful strategies for decommissioning the

499 *See* Schlosser, *supra* note 457, at 69.

500 Allen, *supra* note 409, at 465.

501 *See* Pope & Learn, *supra* note 482.

502 *See* Scott Learn, *Salazar Can't Sign Off on Removal of 4 Dams*, OREGONIAN, Feb. 28, 2012, at B1.

503 *See* Schlosser, *supra* note 457, at 45 (arguing that PacifiCorp's "stakeholder benefits [from the Hydroelectric Agreement] will result in a loss of certain ecosystem services and tribal rights in the region"); Michael A. Swiger & Sharon L. White, *Rebuttal in Defense of the Klamath Hydroelectric Settlement Agreement*, 1 WASH. J. ENVTL. L. & POL'Y 297, 298 (2011) (defending the Hydroelectric Agreement on behalf of PacifiCorp); *Think Out Loud: Environmental Update*, OR. PUB. BROAD. (May 8, 2012), http://www.opb.org/thinkoutloud/shows/environmental-update-508 (discussing controversy over whether dam removal will lead to salmon restoration).

504 John Bowman, *Klamath Dams: Hoopa Tribe Files Petition with FERC*, SISKIYOU DAILY, June 1, 2012, http://www.siskiyoudaily.com/article/20120601/NEWS/306019973/0 (last visited Nov. 18, 2012). The Hoopa might be intending to force dam removal at PacifiCorp's expense.

505 *See supra* Part II.

506 *See supra* Part III.

507 *See supra* Part IV.

508 *See supra* Part V.

509 *See supra* Part VI.A–B.

Elwha and Condit Dams.[510] The Klamath's Hydroelectric Agreement placed the primary fiscal responsibility for dam removal on the citizens who will benefit most from a restored river ecosystem.[511] Yet, by placing two state electorates and two public utility bureaucracies in charge of securing $450 million, the Settlement Agreement has created a significant opportunity for dam removal opponents to derail the project at the federal, state, or local levels. Moreover, the parties to the Restoration and Hydroelectric Agreements may have prolonged the process by tying the two agreements together as a package deal awaiting approval from Congress.[512] Congress might have accommodated a dam removal proposal that required no expenditures, but the current political atmosphere is unlikely to acquiesce to the $400 million in additional appropriations contained in the Restoration Agreement. The price tag of the Restoration Agreement and the branding of the Klamath as the "largest dam removal project in history"[513] seemed to diverge from Congress's reluctance to spend federal money on infrastructure projects.[514]

Second, community support, or perhaps the lack of community opposition, proved critical to the Elwha,[515] Sandy,[516] and Rogue River[517] dam removals. Pacifying the Klamath Basin population and uniting all of the stakeholders around dam removal in the Klamath is highly unlikely, given the century-old, multi-faceted conflict. The Klamath Agreements attempted to generate a compromise acceptable to most parties; whether this approach will prove successful remains to be seen. Currently, opponents of dam removal, as well as some environmental groups critical of the agreements,[518] have effectively blocked congressional approval and any progress toward dam removal.

Third, in each of the previous dam removals in the Pacific Northwest, a champion (a political figure, an agency, or an energy company) led the movement toward dam removal.[519] Perhaps as a symptom of the lack of widespread support for the agreements, the Klamath lacks a champion leading the campaign for dam removal and generating the political will to

510 *See supra* notes 108–12, 167–71 and accompanying text.

511 *See supra* notes 489–93 and accompanying text.

512 *See* Allen, *supra* note 409, at 451.

513 *Id.* at 427.

514 *See, e.g.*, Ezra Klein, *14 Reasons Why This Is The Worst Congress Ever*, WASH. POST, July 13, 2012, http://www.washingtonpost.com/blogs/ezra-klein/wp/2012/07/13/13-reasons-why-this-is-the-worst-congress-ever/ ("9. They can't get appropriations done on time") (last visited Nov. 18, 2012); *Political Gridlock Rises, and the Debt Ceiling Doesn't*, NAT'L PUB. RADIO, July 2, 2011, http://www.npr.org/2011/07/02/137573479/political-gridlock-rises-and-the-debt-ceiling-doesnt?ps=cprs (last visited Nov. 18, 2012) (discussing the unprecedented "debt ceiling" crisis and the refusal of congressional Republicans to vote for tax or spending increases).

515 *See supra* notes 88–95 and accompanying text.

516 *See supra* notes 246–47 and accompanying text.

517 *See supra* notes 309, 324, 350, 378 and accompanying text.

518 *See* Devoe, *supra* note 479 (noting WaterWatch, an Oregon environmental group, does not support the Agreements).

519 *See supra* notes 109 (Elwha), 160 (White Salmon), 234 (Sandy), 297 (Rogue) and accompanying text.

see the project to completion.[520] Although the dam removal movement remains strong in the Klamath Basin,[521] it is multi-dimensional, with many competing interests and priorities, and no willing and capable leader to garner and maintain the requisite political support from Congress, federal agencies, PacifiCorp, the states, and the local community.

VII. CONCLUSION

From the successful restoration projects on the Elwha, White Salmon, Sandy, and Rogue Rivers, to the proposed dam removals on the Klamath River, this Article examined the experiences of dam decommissioning in the Pacific Northwest. Several important factors, such as the size of the project, the applicability of the FERC licensing process, the existence of local opposition, the leadership of well-positioned politicians, and the availability of funding, all affect the speed of the dam-removal process from proposal to river restoration. The decades of struggles to remove dams in the Pacific Northwest provide valuable lessons for other parts of the country and the world hoping to follow in the Northwest's footsteps in search of renewed ecosystems and reclaimed rivers.[522]

The physical and human geography of the Pacific Northwest, including a history of massive hydroelectric projects that depleted once-abundant salmon fisheries, provided the impetus to remove the region's dams. Restoring fisheries also provides a significant motivation for removing dams in the Snake River Basin of Idaho and Eastern Washington.[523] Since the 1980s, river restoration advocates have called for the removal of four lower Snake River hydroelectric dams that block salmon migration to thousands of miles of headwaters spawning grounds.[524] In May 2012, some members of the

520 *See* Editorial, *On the Klamath, A Ship Is Sailing*, OREGONIAN, Dec. 2, 2011, at B4 (noting that U.S. Representative Greg Walden, who represents the Klamath Basin, has not fully supported the Agreements because many of his constituents remain opposed to dam removal).

521 *See id.*

522 The movement to remove dams has an international component, including in Sweden. *See* Anna G. C. Lejon et al., *Conflicts Associated With Dam Removal in Sweden*, ECOLOGY & SOC'Y, Dec. 2009, *available at* http://www.ecologyandsociety.org/vol14/iss2/art4/ES-2009-2931.pdf.

523 *See* Am. Rivers, *Lower Snake River, ID, OR and WA*, http://www.americanrivers.org/initiatives/dams/projects/lower-snake-river-id-or-wa.html (last visited Nov. 18, 2012) ("[B]est available science concludes that removing [the four Snake River] dams and restoring a free-flowing lower Snake River would allow for the restoration of healthy, fishable salmon and steelhead"). In addition to benefiting fish, dam removals boost local economies, increasing recreational opportunities and improving public safety. *See* ECONOMIST, *supra* note 18, at 35.

524 *See* Scott Learn, *Judge James Redden: "We Need to Take Those (Snake River) Dams Down*," OREGONIAN, Apr. 25, 2012. *See e.g.* 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, 1006–20 (1998) (providing an overview of reports and studies leading to the calls for dam breaching).

Nez Perce Tribe in Idaho renewed their calls for the federal government to rethink its failed policies with respect to the Snake River.[525]

Other current dam removal proposals include the Green River in Massachusetts[526] and the Ventura River in California.[527] In the future, dam removal proposals are likely to accelerate.[528] As the Harvard Law Review recently observed, "[t]he Columbia River conflict is only the most high-profile manifestation of a growing unease about the environmental and economic costs of dams: 241 dams were demolished nationwide between 2006 and 2010."[529] Current and future proposals for dam removal throughout the country stand to benefit from the lessons of the Pacific Northwest.

The size of the dam and the amount of required restoration work are major factors affecting the outcome of dam removal. Small-scale dams on the Rogue River—the Gold Hill[530] and Gold Ray Dams[531]—stood no more than thirty-eight feet tall and were readily removed within a few years of the initial proposal.[532] On the other hand, the Elwha and Glines Canyon Dams each stood at least 105 feet tall with large reservoirs that will require years of reclamation and deconstruction work to restore the river channel.[533] For more than two decades, the Elwha River dams' size, complexity, and symbolism represented a daunting task for both engineers and politicians,

525 *See* Brooklyn Baptiste, *Balancing Power Needs and the Environment: What James Redden Says on Salmon Recovery Still Matters*, OREGONIAN, May 4, 2012, at C5 ("Supported by concurring science extending back more than a decade, the [Nez Perce Tribe] has been a leading advocate for breaching the lower Snake dams . . . ."). For a discussion of the role of Judge Redden in efforts to restore Columbia Basin salmon through Endangered Species Act compliance, see Michael C. Blumm & Aurora Paulsen, *The Role of the Judge in Endangered Species Act Litigation: District Judge James Redden and the Columbia Basin Salmon Saga*, 32 Stan. Envtl. L. Rev. (forthcoming 2013), *available at* http://ssrn.com/abstract=2051638.
In August 2012, U.S. Representative Doc Hastings (R-WA) introduced House Bill 6247, the Saving Our Dams and New Hydropower Development and Jobs Act of 2012, H.R. 6247, 112th Cong. (2012), which would seriously undermine dam removal efforts on the Snake River and nationwide. House Bill 6247 prohibits federal funding from being spent on removing, partially removing, or even studying removal of any dam in the United States, and prevents federal funds from being spent on dam removal mitigation or restoration after a dam has already been removed. *See* H.R. 6247, 112th Cong. §§ 11–12 (2012).

526 U.S. ARMY CORPS ENG'RS, FINAL REPORT: SOMERSET & SEARSBURG DAMS (DEERFIELD RIVER WATERSHED STUDY), at 36 (2007), *available at* http://www.mass.gov/eea/docs/eea/water/deerfield-report-2007.pdf.

527 *See* Ventura Cnty., Cal., *Matilija Dam Ecosystem Restoration Project*, http://www.matilijadam.org/index.html (last visited Nov. 18, 2012).

528 The environmental nonprofit group American Rivers has a stated goal of helping to remove 100 obsolete dams in 2012. *See* Amy Souers Kober, American Rivers Blog, *Help Us Remove 100 Dams in 2012!*, http://www.americanrivers.org/newsroom/blog/akober-201223-help-us-remove-100-dams-in-2012.html (last visited Nov. 18, 2012).

529 *Endangered Species Act—District of Oregon Invalidates Biological Opinion for Federally Operated Dams on Columbia River*—National Wildlife Federation v. National Marine Fisheries Service, *No. CV 01-00640-RE, 2011 WL 3322793 (D. Or. Aug. 2, 2011)*, 125 HARV. L. REV. 819 (2012).

530 *See supra* Part V.A.2.

531 *See supra* Part V.A.3.

532 *See supra* notes 319, 329, 335 (Gold Hill) and 341, 349–55 (Gold Ray) and accompanying text.

533 *See supra* notes 40–43 and accompanying text.

delaying the dam's eventual removal.[534] As of 2012, the Elwha dam removals hold the record for the largest U.S. dam removal project in history[535]—a record that many citizens and groups in the Klamath Basin hope to usurp.

The FERC licensing process for non-federal hydroelectric dams presents either an opportunity for clarity or a cloud of uncertainty, but exerts a considerable influence over the dam removal result. The Elwha, White Salmon, and Sandy River dams all began the process of dam removal because of the mandatory prescriptions for fish passage imposed by federal agencies under the Federal Power Act.[536] In the case of the Condit Dam, PacifiCorp attempted to surrender its FERC license during the renewal application, causing confusion at FERC, which had procedures for license renewal or license surrender, but not both at the same time.[537] PGE decided from the outset to voluntarily surrender its FERC license for the Bull Run Hydroelectric Project,[538] and the James River Corporation avoided the FERC process by transferring ownership of the Elwha and Glines Canyon Dams to the federal government.[539]

Local opposition to dam removal in the Pacific Northwest has proven to be one of the most telling factors determining how much time passes between initial proposal and completion of the project. Steadfast political opposition, as demonstrated by Senator Gorton's refusal to support the Elwha Dam restoration,[540] can obstruct the necessary congressional approval and delay the project for years. In contrast, the remoteness and federal ownership of the land surrounding the Sandy River dams meant that the dam removal affected few local landowners, and thus the project proceeded without significant opposition.[541] Advocates for removing the Klamath River dams have the most to learn from the Condit Dam removal, where local landowners delayed the state and county permitting process and even attempted to invoke environmental laws to derail the project.[542] A controversy as complex as the Klamath's will not likely prompt unanimous agreement, but persistent and coordinated efforts by federal agencies, tribes, environmentalists, and the dam owners can eventually overcome even a well-funded opposition.

Successful dam removals in the Pacific Northwest all exhibit the presence of at least one strong political champion to provide leadership and influence throughout the dam removal process. Congressmen John Dingell and Norm Dicks and Senator Bill Bradley paved the way for Congress to

534 *See supra* Part II.B.1–3.

535 *See* Ker Than, *Largest U.S. Dam Removal to Restore Salmon Runs*, NAT'L GEOGRAPHIC NEWS, Aug. 31, 2011, http://news.nationalgeographic.com/news/2011/08/110831-dam-removal-elwha-freshwater-science-salmon (last visited Nov. 18, 2012).

536 *See supra* notes 49–58 (Elwha), 159–63 (White Salmon), 224–31 (Sandy) and accompanying text.

537 *See supra* notes 164, 170–71, 248–50 and accompanying text.

538 *See supra* notes 231–40 and accompanying text.

539 *See supra* notes 96–100 and accompanying text.

540 *See supra* notes 105–06 and accompanying text.

541 *See supra* note 250 and accompanying text.

542 *See supra* notes 175–80 and accompanying text.

approve the Elwha Act and fund the Elwha dam removals,[543] and the National Park Service fulfilled a leadership role in planning, permitting, and conducting the restoration.[544] The Yakama tribe and environmental groups successfully campaigned to remove the Condit Dam by forcing a final settlement agreement with PacifiCorp.[545] On the Sandy River, the dam owner, PGE, assumed a leadership role after perceiving an economic and public relations gain through the speedy restoration of an immensely popular wild fishery.[546] Similarly, environmental groups and federal agencies led the way for the Rogue River dam removals.[547] However, the Klamath Basin currently lacks an outspoken political champion.[548]

Finally, dam removals in the Pacific Northwest demonstrate that the sources and amounts of funding determine whether a proposal for dam decommissioning will proceed quickly or experience delay. Congressman Dicks and others secured funding for the Elwha dam removals in stages, allowing each appropriation to contribute small amounts that added up to full funding over the course of a decade.[549] The Elwha and Rogue dam removals both benefited from the 2009 stimulus bill, the American Recovery and Reinvestment Act, because they each had "shovel ready" plans in place.[550] Private funding from the dam owners financed the Condit[551] and Sandy River[552] dam removals, although PacifiCorp operated the profitable Condit Dam for six years under the settlement agreement in order to acquire sufficient funds to pay for the $17 million restoration project.[553]

The projected costs for the Klamath River dam removals dwarf the final bills from the Elwha,[554] White Salmon,[555] Sandy,[556] and Rogue Rivers,[557] especially because interest groups tied the dam removal proposal to the water allocation agreement, which calls for a $400 million appropriation

543 *See supra* notes 108–12 and accompanying text.

544 *See supra* note 112 and accompanying text.

545 *See supra* notes 160, 167–71 and accompanying text.

546 *See supra* notes 234–40 and accompanying text.

547 *See supra* notes 292, 325–26 and accompanying text.

548 *See supra* note 520 and accompanying text.

549 *See supra* notes 108–12 and accompanying text.

550 *See supra* notes 111, 349 and accompanying text; Charles Euchner, *Lots of Stimulus Money — and Concerns About Where to Put It to Work*, N.Y. TIMES, Oct. 22, 2009, http://www.nytimes.com/2009/10/23/business/global/23rglobalus.html (last visited Nov. 18, 2012).

551 *See supra* note 167 and accompanying text.

552 *See supra* notes 241–43 and accompanying text.

553 *See supra* notes 167–68 and accompanying text.

554 *See supra* notes 110 and accompanying text (Elwha dams removal cost between $246 and $272 million).

555 *See supra* note 168 and accompanying text (Condit Dam removal costs capped at $17.15 million).

556 *See supra* notes 242–43 and accompanying text (the Sandy River dam removal cost about $23.7 million).

557 *See supra* notes 308 (Savage Rapids cost about $28 million), 331 (Gold Hill cost about $4 million), 346 (Gold Ray cost about $5 million) and accompanying text. Total costs for notching the Elk Creek Dam are unknown, but not likely to be significantly more than the removals at Gold Hill or Gold Ray. Oregon Wild, *supra* note 356.

from Congress.[558] Advocates for the Klamath restoration and other future dam removal proposals might consider following the example of the Elwha dam removals by breaking the appropriations into smaller, more politically palatable amounts.[559] Although spreading the appropriations out into smaller increments could extend the timeline for completing the project, a persistent and measured approach may be the best option for funding larger-scale dam removals in an era of fiscally strapped government budgets. Another option would be to call upon PacifiCorp to commit more of the $510,000 it is required to pay in salmon recovery efforts to help fund implementation of the water allocation agreement, since that sum is just roughly 1.5 percent of the annual revenues produced by the Klamath project.[560]

In the Pacific Northwest, the time between dam removal proposal and completion ranged from only two years for the Gold Hill and Gold Ray Dams to over twenty-nine years at the Condit Dam.[561] On average, the campaigns to successfully remove nine dams in the region lasted about thirteen years. Advocates for current and future dam removal proposals should be prepared for a project that faces significant odds and may take over a decade to complete, depending on the dam's size, FERC licensing process, community support, political leadership, and funding available for removal.

558 *See supra* notes 505–14 and accompanying text.

559 *See supra* notes 108–12 and accompanying text.

560 *See supra* text accompanying and following note 500.

561 *See supra* notes 72, 94–112 (Elwha, 25 years); 160–61, 164–190 (Condit, 29 years); 237–57 (Sandy, 7 years); 279–314 (Savage Rapids, 15 years); 331–35 (Gold Hill, 2 years); 341–55 (Gold Ray, 2 years); 379–94 (Elk Creek, 15 years).