Let the River Run: Strategies to Remove Obsolete Dams and Defeat Resulting Fifth Amendment Taking Claims

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This dam removal is far more than a symbol of the shifting tide in American conservation.

—Bruce Babbitt[1]

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1. Bruce Babbitt, Sec'y of the Interior, Address at the Neuse River (Dec. 12, 1997), *quoted in* WILLIAM ROBERT LOWRY, DAM POLITICS: RESTORING AMERICA'S RIVERS 224 (Georgetown Univ. Press 2003).

I. INTRODUCTION

America's obsession with controlling nature for the benefit of industrialization has made us a dam nation. "The untransacted destiny of the American people . . . to subdue the continent" was accomplished largely by building dams.[2] Dams encouraged settlement by generating electric power, improving navigation, providing flood control, and delivering water for agricultural, municipal, and industrial development. As a result, "[w]e have been building, on average, one large dam . . . every single day, since the Declaration of Independence."[3] Seventy-six

2. William Gilpin, Mission of the North American People: Geographical, Social, and Political 130 (J.B. Lippincott and Co. 1874) (quoting a report to the U.S. Senate of 1846), *reprinted in* Chris J. Magoc, So Glorious a Landscape: Nature and the Environment in American History and Culture (Scholarly Resources 2002).

3. Bruce Babbitt, Sec'y of the Interior, Address at the Ecological Soc'y of Am. (Aug. 4, 1998), *available at* http://www.sci.sdsu.edu/salton/DamsAreNotForever.html (last visited Nov. 1, 2012).

thousand large dams,[4] including 8,100 major dams,[5] entomb 600,000 river miles of water.[6] Counting dams of all sizes, there are well over 2.5 million in American waters.[7] As one author has observed, "[v]irtually no major river in the United States is without a dam."[8]

Yet this progress has come at a price. A dammed river will never function the same as a free-flowing river. The essence of a river is water *movement*. Damming America's waters has caused a dramatic decline in the health of our watersheds. Dams are physical barriers that block the natural flow of nutrients and the migration of fish.[9] "Leaves are no longer carried to awaiting insects, and the insects are no longer carried by the waters to foraging fish."[10] Normally, pebbles, sand, and fallen trees move downstream to eventually settle and form diverse habitat.[11] "Fallen trees provide areas of shade and slack water[, while s]ubmerged gravel beds make a home for [invertebrates and] act as spawning grounds for migratory fish . . . ."[12] But when a dam is built, the flow of sediment is trapped behind the impoundment, causing the downstream river bottom to wash away and leave a coarse riverbed in which some invertebrates, an essential food source for fish, cannot survive.[13] The lack of sediment recharge further disrupts and destroys deltas and estuaries, the nurseries of a river.[14]

In addition to acting as physical barriers, dams change water levels and the timing of flows.[15] River flow volumes are meant to vary widely from season to season, and this variability "is an indispensible part of how a river system works."[16] For example, the lifecycles of many river

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4. THE HEINZ CTR., DAM REMOVAL: SCIENCE AND DECISION MAKING 23 (2002). This 1996 figure comes from the National Inventory of Dams, which catalogs all dams greater than six feet high with more than fifty acre-feet of storage, and those that are twenty-five feet high with more than fifteen acre-feet of storage.

5. The National Inventory of Dams defines a major river as being fifty feet tall with a storage capacity of at least 5,000 acre feet, or of any height with a storage capacity of 25,000 acre feet. Nat'l Inventory of Dams, *Major Dams of the United States*, NAT'L ATLAS OF THE U.S., http://www.nationalatlas.gov/mld/dams00x.html (last visited Jan. 9, 2012).

6. Babbitt, *supra* note 3.

7. HEINZ CTR., *supra* note 4, at 23.

8. Elizabeth Grossman, Watershed: the Undamming of America 3 (Counterpoint 2002).

9. Peter J. Carney, Dam Removal: Evolving Federal Policy Opens a New Venue of Fisheries and Ecosystem Management, 5 OCEAN & COASTAL L.J. 309, 327 (2000).

10. *Id.* at 328.

11. Hydropower Reform Coal., *Dam Effects*, DAMEFFECTS.ORG, http://www.dameffects.org (last visited Jan. 9, 2012).

12. *Id.*

13. *Id.*

14. GROSSMAN, *supra* note 8, at 2.

15. *Id.*

16. Hydropower Reform Coal., *supra* note 11.

species follow the timing of high and low flows, with seasonal events like high springtime flows triggering a new phase in their lives.[17]

Last, but certainly not least, dams make for poor water quality. Two common water quality problems associated with dams are temperature and dissolved oxygen.[18] The water from deep behind an impoundment can be significantly cooler than the downstream river's shallow and sun-soaked waters.[19] "In the summer, temperatures can be unnaturally cold on the bottom of [the impoundment] and too warm on the surface."[20] While "[i]n winter, deep waters can be unnaturally warm."[21]

Dissolved oxygen, essential for aquatic life, is also altered. "[W]hen organic materials that have built up behind the dam begin to decompose, they consume the limited [amounts of dissolved] oxygen [available]."[22] The lowest levels of the reservoir become devoid of oxygen, creating dead zones that cannot support river life. Depending upon how a dam is constructed, water may be released from either the top or bottom of the impoundment. Water released from the top of the impoundment may cause excessive uptake of air from the atmosphere and result in water that contains too much atmospheric gas.[23] Conversely, water released from the bottom of a deep reservoir is oxygen-deprived.[24] These effects on water temperature, oxygen level, rate of flow, composition of spawning beds, and food supply have so negatively impacted the ability of anadromous fish to survive that the salmon has become a cause célèbre in the Pacific Northwest.[25]

But reasons for dam removal go beyond environmental concerns. By 2020, over 60,000 dams (eighty percent) listed in the U.S. Army Corps of Engineers' (Army Corps of Engineers) National Inventory of Dams will be more than fifty years old and nearing the end of their design life.[26] Structural obsolescence poses significant safety risks to human life,[27] and the cost of performing necessary structural repairs

17. *Id.*

18. *Id.*

19. Carney, *supra* note 9, at 327.

20. Hydropower Reform Coal., *supra* note 11.

21. *Id.*

22. *Id.*

23. Mo. Dep't of Natural Res., Water Chemistry, Introductory Level Workshop 4, http://www.dnr.mo.gov/env/wpp/vmqmp/vwqm-intro07.pdf (last visited Nov. 12, 2011).

24. *Id.*

25. *See generally* THE HEINZ CTR., *supra* note 4, at 47 ("[The Pacific Northwest] is famous for severely depleted salmon runs and large hydroelectric projects that may be contributing to the declines.").

26. *Id.* at 41.

27. *See generally id.* at 42 ("Dam safety and security is a major issue in the consideration of dam removal."). According to the National Inventory of Dams, roughly thirty-two percent of dams (26,652 dams) pose a high or significant hazard potential. Nat'l Inventory of Dams, *Dams by*

often exceeds the price of removal.[28] Many dams have also become economically obsolete, outliving the mills or regional power grids they once served.[29] Early hydropower facilities that generated electrical power for regional power grids are now serviced by larger, more efficient sources on the national grid.[30] Hydropower facilities once provided an all-time high of one-third of the nation's electrical energy during the 1940s,[31] but by 1996 hydropower accounted for only one-tenth of the nation's total generating capacity.[32] Recognizing that the public interest now favors a healthy, free-flowing river over electric power generation, the Federal Energy Regulatory Commission (FERC) has taken the unprecedented step of ordering the removal of obsolete dams.[33]

This article explores ways to remove dams whose existence no longer benefits the public because of environmental, safety, or economic concerns. Three legal tools could accomplish this: (1) the Endangered Species Act, (2) federal and state dam safety proceedings, and (3) the FERC's hydropower relicensing procedure. Each of these avenues will be explored, followed by a discussion of Fifth Amendment taking claims and other sources of liability that could result from dam removal.

II. LEGAL TOOLS TO REMOVE DAMS

A. The Endangered Species Act

The Endangered Species Act[34] (ESA) can be an effective tool for the removal of public and private hydropower and nonhydropower dams. The ESA is a federal statute implemented to protect endangered and threatened fish, wildlife, and plant species, and the ecosystems upon which they depend. While the ESA has never been used to force dam removal, it has spurred both the federal government and private entities to voluntarily remove dams in order to avoid ESA takings claims.[35]

Hazard Potential, U.S. ARMY CORPS OF ENG'RS, http://geo.usace.army.mil/pgis/f?p=397:5:2016393958697412::NO (last visited Nov. 12, 2011).

28. THE HEINZ CTR., *supra* note 4, at 44 ("[Removal of a dam] may be much less expensive than . . . performing needed structural repairs.").

29. *Id.* at 43. In the eastern United States, "dams that diverted . . . streams for millraces or raised water levels to drive waterwheels lasted longer than the mills they served." *Id.*

30. *Id.* at 43–44.

31. *The History of Hydropower Development in the United States*, BUREAU OF RECLAMATION, http://www.usbr.gov/power/edu/history.html (last visited Mar. 31, 2010).

32. Carney, *supra* note 9, at 311.

33. FERC Project Decommissioning at Relicensing; Policy Statement, 60 Fed. Reg. 339, 342–43 (Jan. 4, 1995) (codified at 18 C.F.R. § 2.24) [hereinafter FERC Policy Statement].

34. 16 U.S.C. §§ 1531–43 (2009).

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

The ongoing Elwha Ecosystem Restoration Project—the nation's largest dam removal project—is a prime example.[36] In September 2011 the process of removing the Elwha and Glines Canyon dams to restore the free flow of the Elwha River began.[37] It is "the largest dam removal project in U.S. history[, and] will reopen more than 70 miles of pristine [salmon] spawning and rearing habitat in the Elwha River and its tributaries."[38] The National Park Service predicts that salmon populations will "swell from 3,000 to nearly 400,000 as all five species of Pacific salmon return" to the iconic Pacific Northwest river.[39] Although congressional legislation was the ultimate force behind the dam's removal,[40] fear of future ESA liability was no doubt taken into account.[41]

The ESA has also been responsible for changing the way dams operate by requiring the installation of fish passage devices and maintenance of certain flow levels for the protection of threatened species.[42] Use of the ESA's citizen suit provision to enforce a taking of a protected species could result in an injunction to modify a dam's operation or force its removal.[43] For these reasons, the ESA provides the impetus for the voluntary removal of many private dams.[44] Where removal cannot be accomplished voluntarily, two sections of the ESA could be used to compel dam removal: (1) the "consultation" or prevention of jeopardy provisions in Section 7, and (2) the prohibition of taking a listed species in Section 9.[45] Each of these sections will be discussed below.

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36. *Elwha River Restoration*, NAT'L PARK SERV., http://www.nps.gov/olym/naturescience/elwha-ecosystem-restoration.htm (last visited Jan. 9, 2012).

37. *Id.*

38. *Id.*

39. *Id.*

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

41. *See Elwha River Restoration: Background and History*, AMERICAN RIVERS, http://www.americanrivers.org/our-work/restoring-rivers/dams/projects/elwha-river-background.html (last visited Jan. 9, 2012) ("The dam's owner became increasingly concerned that a court order would some day force it to remove the dams and foot the bill for river restoration."). After removal of the dams began, several organizations sued the National Park Service and other agencies for violations of the Endangered Species Act associated with the Elwha Fish River Restoration Plan. Notice Letter from the Wild Fish Conservancy et al. to the Nat'l Park Serv. et al. (Sept. 16, 2011), *available at* http://wildfishconservancy.org/copy_of_news/in-the-news/notice.letter2011.09.16.pdf (last visited Nov. 12, 2011).

42. *See, e.g.*, U.S. Fish & Wildlife Serv., Endangered Species Act Section 7 Consultation—Biological Opinion, Cushman Hydroelectric Project, Project No. 460-033, U.S. Fish & Wildlife Serv. Ref. No. 13410-2010-F-0169, at 53 (Apr. 2010) (on file with author) (recommending the use of fish-passage protocols for the conservation of bull trout on the Skokomish River).

43. *Cf.* Marbled Murrelet v. Babbitt, 83 F.3d 1060, 1068 (9th Cir. 1996) (granting an injunction against a logging company under citizen suit provision of the ESA).

44. Bowman, *supra* note 35, at 741.

45. *Id.*

1. Section 7

Section 7 of the ESA prohibits federal action that destroys or otherwise adversely modifies the critical habitat of a listed species or that jeopardizes the continued existence of a listed species.[46] These are two distinct standards.[47] The "destruction/adverse modification standard" has been defined "in terms of actions that diminish the value of critical habitat for recovery."[48] The so-called "jeopardy standard" "addresses the effect of the action itself on the survival and recovery of the species."[49]

Because Section 7 is limited to actions taken by the federal government, most private dams appear to be beyond the reach of its protection. This is particularly troubling because according to the National Inventory of Dams the federal government owns only about four percent of the more than 80,000 dams inventoried.[50] Fortunately, Section 7 applies to private persons whenever a dam is built. The construction of a dam requires the discharge of dredged or fill material into waters of the United States, an activity governed by Section 404 of the Clean Water Act (CWA).[51] If the dam is built in navigable waters, the discharge must be authorized by the federal government, through the Army Corps of Engineers, to comply with the CWA.[52] States may assume the 404 permitting program only for discharges into nonnavigable waters.[53] Even where a state has jurisdiction, the EPA retains authority to review and reject "larger discharges with serious impacts."[54] The federal government cannot issue a Section 404 "dredge and fill" permit where its issuance would diminish the value of critical habitat for recovery of a protected species or otherwise jeopardize the species' recovery. This is the manner in which Section 7 of the ESA is applied indirectly to private persons.

Besides being limited to actions by the federal government, Section 7 is further applied only to *proposed* actions. Although it can be a challenge to characterize a dam's continued operation as a "proposed action," the federal government has sought Section 7 consultation for a

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46. 16 U.S.C. § 1532 (2009).

47. Sierra Club v. U.S. Fish & Wildlife Serv., 245 F.3d 434, 441 (5th Cir. 2001).

48. *Id.*

49. *Id.*

50. Nat'l Inventory of Dams, *supra* note 27.

51. 33 U.S.C. § 1344 (2010). Section 404 of the CWA established a permit program to regulate the discharge of dredged or fill material into "waters of the United States." *Id.*

52. *Id.*

53. *State or Tribal Assumption of the Section 404 Permit Program*, U.S. ENVTL. PROT. AGENCY, http://www.epa.gov/owow/wetlands/facts/fact23.html (last visited Jan. 12, 2012).

54. *Id.*

hydropower system's annual operations plan.[55] Indeed, there are many instances where Section 7's consultation requirement led to the modification of existing dam operations for the benefit of fish and wildlife.[56]

One further limitation in Section 7's applicability is that the proposed federal action must threaten the "continued existence" of the listed species *as a whole*, meaning more than harm to a few of its individuals.[57] If, after the conclusion of formal consultation, the agency determines that the proposed federal action is likely to jeopardize the listed species, or destroy or adversely modify its critical habitat, a jeopardy finding will be issued in the biological opinion.[58]

This "jeopardy" biological opinion must contain "reasonable and prudent alternatives" (RPAs) to the proposed federal action that are not likely to jeopardize the listed species or destroy or adversely modify its critical habitat.[59] The RPAs, in turn, must be consistent with the original purpose of the proposed federal action.[60] For purposes of dam removal, this means that neither the National Marine Fisheries Service (NMFS) nor the U.S. Fish and Wildlife Service (USFWS) can recommend dam removal as an RPA unless the dam is not central to the purpose of the proposed action.

In instances like dam removal, where no RPA can be developed, the action cannot move forward unless the Endangered Species Committee—the so-called "God Squad"[61]—grants an exemption to the "no jeopardy" rule.[62] The committee considers five factors in deciding whether to grant an exemption: (1) the availability of reasonable and prudent alternatives, (2) the nature and extent of the benefits of the

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55. Idaho Dep't of Fish & Game v. Nat'l Marine Fisheries Serv., 56 F.3d 1071, 1073 (9th Cir. 1995).

56. *See, e.g.*, Fed. Energy Regulatory Comm'n, Final Environmental Impact Statement for Relicensing of the Klamath Hydroelectric Project No. 2082-027 (Nov. 2007), *available at* http://www.ferc.gov/industries/hydropower/enviro/eis/2007/11-16-07.asp.

57. 16 U.S.C. § 1536(a)(2) (2010).

58. 50 C.F.R. § 402.14(h)(3) (2009).

59. *Id.*

60. *Reasonable and Prudent Alternative*, NAT'L MARINE FISHERIES SERV., SW. REG'L OFFICE, http://www.swr.noaa.gov/reasonab.htm (last visited Jan. 12, 2012).

61. The "God Squad" is a small group of officials who can override the ESA if the cost of protecting a species is too great. The group was specifically created by an amendment to the ESA for the purpose of allowing the Tellico Dam to be completed. KENNETH M. MUNCHISON, THE SNAIL DARTER CASE: TVA VERSUS THE ENDANGERED SPECIES ACT 152, 184 (2007). The God Squad instead unanimously refused to exempt construction of the Tellico Dam on account of the snail darter species. Zygmunt J. B. Plater, *Tiny Fish / Big Battle: 30 Years after TVA and the Snail Darter Clashed, the Case Still Echoes in Caselaw, Politics and Popular Culture*, TENN. B. J. (Apr. 2008), http://www.tba.org/Journal_Current/200804/TBJ-200804-coverStory.html.

62. 16 U.S.C. § 1536(e)–(h) (2010).

agency action consistent with conserving the species or its critical habitat, (3) whether the action is in the public interest and of regional or national significance, (4) whether there are any reasonable mitigation measures that should be considered by the committee, and (5) whether the agency and exemption applicant refrained from making irreversible or irretrievable commitments of resources.[63]

Only rarely have the requirements of the ESA significantly delayed or cancelled federal projects.[64] Section 7 has also never singlehandedly removed a dam. However, Section 7 has been tremendously successful in forcing the modification of dam operations for the benefit of protected fish and wildlife, sometimes by requiring certain instream flow levels.

a) ESA-Mandated Reductions in Water Usage Rights

One of the greatest controversies in the history of the ESA involved applying Section 7 to the Bureau of Reclamation's Klamath Project to protect endangered fish. In 2001, an extreme drought hit the Klamath River Basin, located in southern Oregon and Northern California.[65] Hundreds of farmers who had reliably received water for decades from the Klamath Project were told they would receive none.[66] The federal government would instead withhold the water and use it to protect an endangered species of fish.[67] Irrigators and their political allies were outraged, and the controversy gained national media coverage.[68] The following year, the Bureau of Reclamation breached its Section 7 duties and restored full irrigation deliveries.[69] Thousands of salmon died from the resulting low flows and high temperatures of the Klamath River, and the Klamath crisis once again led the national news.[70] Among federal courts, the Ninth Circuit has played a critical role in defining the nature

63. *Id*. § 1536(g)(5).

64. *See* Steven L. Yaffee, Avoiding Species/Development Conflicts Through Interagency Consultation, Balancing on the Brink of Extinction: The Endangered Species Act and Lessons for the Future 86–89 (Kathryn A. Kohm ed., 1991). Yaffee acknowledges that a low rate of project cancellations could also indicate the success of the ESA if agencies are incorporating endangered species protection into project planning. *Id*. at 90–91.

65. Scott Learn, *Klamath Basin's Water Worries Extend to Wells*, THE OREGONIAN, Aug. 30, 2010, http://www.oregonlive.com/environment/index.ssf/2010/08/tapping_wells_in_klamath_basin.html.

66. *Id*.

67. *Id*.

68. *Id*.

69. *Id*.; *see also* Pac. Coast Fed'n of Fishermen's Ass'ns v. U.S. Bureau of Reclamation, 426 F.3d 1082, 1090–91 (9th Cir. 2005) (rejecting Reclamation's ten-year operating plan for the Klamath Project that allowed for delivery of less than the full amount of water necessary to ensure the survival of salmon).

70. Jo Becker & Barton Gellman, *Leaving No Tracks*, THE WASHINGTON POST, June 27, 2007, http://voices.washingtonpost.com/cheney/chapters/leaving_no_tracks/.

and extent of the Bureau of Reclamation's duties under Section 7 of the ESA. In a case involving contractual commitments to water users, the court rejected the argument that the Bureau breached its contracts by reducing water deliveries in dry years.[71] Stated flatly, the Bureau's responsibilities under the ESA "override the water rights of the Irrigators."[72] Within the Ninth Circuit, then, Section 7 of the ESA takes priority over federal contracts to deliver water to water users, and the Bureau of Reclamation must operate its projects in a manner that avoids jeopardy.[73] Yet this was no certain victory for the salmon: a fatal flaw lies beneath the surface of this seemingly simple and protective rule.

b) The Discretionary Rule

When pre-ESA legal obligations require a federal agency to operate in a way that essentially leaves no room for the consideration of a listed species, the so-called "discretionary rule"[74] exempts the agency from complying with the requirements of Section 7: "Section 7 . . . appl[ies] to all actions in which there is discretionary federal involvement or control."[75] No definition of "discretionary" involvement or control is provided in the rule. The word "discretionary" is also absent from the text of Section 7 of the ESA. With so little guidance as to whether a particular federal agency action is discretionary, courts struggle to make the determination.

Nevertheless, the Ninth Circuit's interpretation of the discretionary rule has yielded three general points.[76] First, discretion is determined "by parsing the language of the statutes, rules, and permits most directly involved."[77] Second, no discretion has been found "in cases where a person has an existing permit or approval, and a federal agency either has little or no authority to require changes . . . or has latent discretionary authority but no legal duty to exercise it."[78] Third, all discretionary action cases have involved some private activity.[79] The Ninth Circuit has never addressed a case where a federal agency claimed an absence of discretion in implementing its own programs or projects.[80]

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71. *E.g.*, O'Neill v. United States, 50 F.3d 677, 687 (9th Cir. 1995).

72. Klamath Water Users Protective Ass'n v. Patterson, 204 F.3d 1206, 1213 (9th Cir. 1999).

73. *See Pac. Coast Fed'n of Fishermen's Ass'ns*, 426 F.3d at 1094 (rejecting a ten-year operating plan for the Klamath Project that provided insufficient flows to protect listed salmon).

74. 50 C.F.R. § 402.03 (2009).

75. *Id.*

76. Reed D. Benson, Dams, Duties, and Discretion: Bureau of Reclamation Water Project Operations and the Endangered Species Act, 33 COLUM. J. ENVTL. L. 1, 23 (2008).

77. *Id.*

78. *Id.* (emphasis omitted).

79. *Id.*

80. *Id.*

The U.S. Supreme Court interpreted the discretionary rule for the first time in the landmark case of *National Ass'n of Homebuilders v. Defenders of Wildlife*.[81] The Court upheld as rational the EPA's position that it had no discretionary authority to consider the impacts on endangered species when delegating CWA Section 402 permitting authority to Arizona.[82] The "discretionary rule," at 50 C.F.R. § 402.23, applies Section 7(a)(2) "to all actions in which there is *discretionary* Federal involvement or control."[83] The language of Section 402 of the CWA reads that the EPA "shall approve" a transfer application that satisfies the nine functions specified in the section: "if the nine specified criteria are satisfied, the EPA does not have the discretion to deny a transfer application."[84] Because an agency "cannot simultaneously obey the differing mandates of ESA § 7(a)(2) and CWA § 402(b)," the Court concluded that the EPA deserved deference for its rule that Section 7 applies to agency actions where "discretionary federal involvement or control" exists.[85] Consequently, the Court's holding severely restricts the protection of Section 7 by limiting its application to those actions where a federal agency exercises discretion.

As for dams, whether a federal agency like the Bureau of Reclamation has any discretion to consider endangered species in the operation of a water project depends upon the legal regime of the specific project. In general, three strong arguments can be made in favor of considering the Bureau's operation of a water project as a discretionary activity. First, the Bureau of Reclamation "must constantly assess its duties, the available facts, and predictions about the future . . . and make changes as circumstances dictate."[86] Therefore, "if a discretionary action is one that involves an exercise of judgment[,]" then the operation of a federal water project necessarily demands discretion.[87] Furthermore, "[n]o generally applicable statute strips [the Bureau] of discretion in operating its projects."[88] Finally, the issuance of a water supply contract does not divest the Bureau of operating with discretion.[89] Whether the Bureau of Reclamation has any discretion in operating a project will always be determined by the legal obligations of the particular project,

81. Nat'l Ass'n of Homebuilders v. Defenders of Wildlife, 551 U.S. 644, 661 (2007).
82. *Id.* at 665–67.
83. 50 C.F.R. § 402.23 (2009).
84. Nat'l Ass'n of Homebuilders, 551 U.S. at 661.
85. *Id.*
86. Benson, *supra* note 76, at 23, 41–42.
87. *Id.*
88. *Id.* at 43.
89. *Id.* at 45–46.

but strong arguments can be made against applying the discretionary rule in this context.

2. Section 9

The second section of the ESA that could accomplish dam removal is Section 9. The section's taking prohibition makes it unlawful for any person—including private and public entities—to take individuals of a listed species.[90] "Take" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[91] "Harm" is defined to include significant habitat modification or degradation.[92] Section 9 also makes it unlawful to cause another party to take a listed species.[93] Courts have applied this to government authorization of activities that cause a take.[94]

Certain take activities may nonetheless be exempted from Section 9's taking prohibition through the incidental take process. An agency may issue a permit to take a listed species "if such taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity."[95] Antecedent to the issuance of an incidental take permit is the submission of a habitat conservation plan (HCP) by the applicant.[96] Taking the HCP and public comments into account, the agency must find that the applicant will monitor, minimize, and mitigate the impacts of any incidental taking to the maximum extent practicable, and that the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.[97] Once an incidental take is granted, the "no surprises" rule prohibits the federal government from requiring additional funds or resources from the permit holder.[98]

Unfortunately, the practical effect of the incidental take process has been the loss of many anadromous fish populations. The incidental take

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90. 16 U.S.C. § 1538(a) (2010).

91. *Id.* § 1532(19).

92. *See* Babbitt v. Sweet Home Chapter of Cmtys. for a Great Or., 515 U.S. 687, 725 (1995) (holding the Secretary of the Interior's definition of "harm" as including "significant habitat modification or degradation where it actually kills or injures wildlife.").

93. 16 U.S.C. § 1538(g) (2010).

94. *See, e.g.*, Strahan v. Coxe, 127 F.3d 155, 163 (1st Cir. 1997) (holding the State violated the ESA's take prohibition by authorizing fishing that caused a take of the endangered northern right whale).

95. 16 U.S.C. §1539(a)(1)(B) (2010).

96. *Id.* § 1539(a)(2)(A).

97. *Id.* § 1539(a)(2)(B).

98. Habitat Conservation Plan Assurances ("No Surprises") Rule, 63 Fed. Reg. 8859 (1998) (codified at 50 C.F.R. §§ 17.22, 17.32) "[N]o additional land use restrictions or financial compensation will be required of the permit holder with respect to species covered by the permit, even if unforeseen circumstances arise after the permit is issued indicating that additional mitigation is needed for a given species covered by a permit." *Id.*

permit immunizes dam owners from Section 9 liability so long as the take does not jeopardize the entire species. The "no surprises" rule severely limits the ability of federal agencies to further protect a listed species if the HCP proves insufficient. Through the issuance of incidental take permits, the government sanctions the deaths of thousands of salmon so long as their deaths are merely incidental to a dam's operational goals. Even where no incidental take permit is issued and an impermissible taking occurs, the USFWS and the NMFS can only issue fines for violating Section 9.[99]

Citizens, on the other hand, have more power. A citizen suit can result in an injunction to enforce a takings finding where no incidental take permit has been issued.[100] Effective enforcement of the ESA therefore requires both the government and the citizenry.

In some respects, the ESA falls short of protecting threatened and endangered anadromous fish. On the whole, however, the statute has saved thousands of fish, and is responsible for many of the milestone dam removals in America. The Elwha Ecosystem Restoration Project, for example, was motivated by threat of ESA takings claims.[101] Also in Washington State, conditions attached by FERC to the Condit Dam's hydropower license—a process discussed in detail below—in accordance with the ESA forced the dam's owners to either modernize and install expensive fish passage devices or remove the dam.[102] In addition, the ESA has changed the way many dams operate by altering instream flow levels for the benefit of threatened species.

B. Dam Safety Proceedings

The Association of Dam Safety Officials estimates that 4,400 dams are susceptible to failure due to structural deficiencies.[103] The impact of even a single dam failure can be tremendous. In 1889, a neglected dam in western Pennsylvania experienced a catastrophic failure, killing over

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99. 16 U.S.C. § 1540 (2009).

100. *See* Marbled Murrelet v. Babbitt, 83 F.3d 1060, 1068 (9th Cir. 1996) (The environmental group was able to obtain an injunction under the ESA against a logging company in order to conserve marbled murrelet nesting habitat on private land).

101. *See, e.g.*, NAT'L PARK SERV., FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE ELWHA RIVER ECOSYSTEM RESTORATION 1 (June 1995), *available at* http://www.nps.gov/olym/naturescience/loader.cfm?csModule=security/getfile&PageID=136255. ("The Elwha River ecosystem and native anadromous fisheries are severely degraded as a result of two hydroelectric dams . . . . The Department of the Interior therefore finds there is a need to return this river and ecosystem to its natural, self-regulating state, and proposes removing both dams to accomplish this purpose . . . .").

102. *See infra* notes 156–59 and accompanying text.

103. Henry Fountain, *Danger is Pent up Behind Aging Dams*, N.Y. TIMES, Feb. 21, 2011, http://www.nytimes.com/2011/02/22/science/22dam.html?pagewanted=all.

2,200 people.[104] Twenty million tons of water traveled fourteen miles to Johnstown, where four square miles of the town were completely destroyed by a wall of water forty feet high.[105] The amount of water that would flow over Niagara Falls in thirty-six minutes, 4.8 billion gallons,[106] left a pile of debris that covered thirty acres.[107] A modern twenty-first century version of the Johnstown Flood could be even more disastrous. If, for example, the Lake Isabella Dam in California were to fail, 180 billion gallons of water—over thirty-seven times the amount released in the Johnstown Flood—would inundate downstream Bakersfield.[108]

Dams can fail for any one of several reasons as they age and reach the end of their life spans. For example, the concrete used to construct dams deteriorates over time—typically within fifty to one hundred years[109]—due to the large volumes of water blocked or diverted on a daily basis.[110] If not properly maintained, these ageing dams pose a safety hazard to people and property downstream. In its 2009 *Infrastructure Report Card*, the American Society of Civil Engineers awarded dams a grade of "D," noting the lack of funding "to reverse the trend of increasingly deteriorating dam infrastructure."[111]

Nationwide, there are 13,990 dams whose failure threatens human life.[112] Twelve dams are currently listed in the Army Corp of Engineer's most dangerous category: "a dam with serious problems and serious failure consequences."[113] With over 85,000 dams in the United States that average over fifty-one years old, the number of dams in this unsafe category will only increase as they near the end of their lifespans.[114] The number of high-hazard dams continues to increase as dams age, downstream development increases, and more accurate information on watersheds and earthquake hazards becomes available.[115] Repairing all

104. *Facts About the Johnstown Flood*, JOHNSTOWN FLOOD MUSEUM, http://www.jaha.org/FloodMuseum/facts.html (last visited Nov. 12, 2011).

105. *Id.*

106. *Id.*

107. *Id.*

108. Fountain, *supra* note 103.

109. Michael T. Pyle, *Beyond Fish Ladders: Dam Removal as a Strategy for Restoring America's Rivers*, 14 STAN. ENVTL. L.J. 97, 101 (1995) (citing NAT'L RESEARCH COUNCIL, RESTORATION OF AQUATIC ECOSYSTEMS: SCIENCE, TECHNOLOGY, AND PUBLIC POLICY 219 (1992)).

110. American Rivers et al., Dam Removal Success Stories, at xiv (1999).

111. Policy Statement 470—Dam Repair and Rehabilitation, AM. SOC'Y OF CIVIL ENG'RS (June 22, 2011), http://www.asce.org/Content.aspx?id=8338.

112. Nat'l Inventory of Dams, *supra* note 27.

113. Fountain, *supra* note 103.

114. *Id.*

115. *Id.*

these dams will be expensive. A 2009 report by the Association of State Dam Safety Officials estimates at least $50 billion would have to be spent to repair high-hazard dams alone.[116] In order to protect the public health, safety, and welfare, these dams must either be repaired or removed. Dam safety proceedings present a powerful tool for the removal of these dangerous, dated dams.

1. Federal Dam Safety Programs

Many agencies administer dam safety programs at the federal level. The Federal Emergency Management Agency (FEMA) does not own or regulate dams but coordinates federal safety programs through the National Dam Safety Program.[117] The program's purpose is to

> reduce the risks to life and property from dam failure in the United States through the establishment and maintenance of an effective national dam safety program to bring together the expertise and resources of the federal and non-federal communities in achieving national dam safety hazard reduction.[118]

While it does not specifically govern or regulate dam removal, the National Dam Safety Program encourages cooperation between federal and state dam safety efforts and authorizes FEMA to provide grants to states for the establishment and maintenance of dam safety programs.[119] Other federal agencies are actual owners or operators of dams: the U.S. Department of Agriculture,[120] the Department of Defense,[121] the

116. *Id.*

117. The National Dam Safety Program was created by the Water Resources Development Act of 1996, Pub. L. No. 104-303, § 215, 110 Stat. 3658, 3685 (codified at 33 U.S.C. § 467 (2009)).

118. *Id.*

119. THE HEINZ CTR., supra note 4, at 64.

120. This includes the Natural Resources Conservation Service, the Agriculture Research Service, the U.S. Forest Service, the USDA Rural Housing and Community Programs, and the USDA Rural Utilities Programs. The U.S. Forest Service owns approximately seven hundred mid-size dams and administers permits for around two thousand privately owned dams. "The U.S. Department of Agriculture is a major planner, designer, financier, constructor, owner, or regulator of more than one-third of all the dams in the United States." FED. EMERGENCY MGMT. AGENCY, EXCERPT FROM THE NATIONAL DAM SAFETY PROGRAM BIENNIAL REPORT 2 (2004-2005), *available at* http://www.damsafety.org/media/Documents/FederalCommunity/Pages_from_fema576_Feds_Biennial.pdf.

121. This includes the Army Corps of Engineers and the Departments of the Air Force, Army and Navy who have dam safety responsibility for dams located on their respective bases. The Army Corps oversees 631 dams, including 75 Corps hydropower plants and 67 nonfederal power plants. The Department of the Army has jurisdiction over 212 dams while the Air Force has 24 and the Navy has 33. *Id.*

Department of Interior,[122] Department of Energy,[123] the Department of Labor,[124] FERC,[125] and the Tennessee Valley Authority, among others.[126]

The Federal Power Act tasks FERC with administering dam safety for hydropower projects on (1) navigable streams, (2) public lands of the United States, (3) at any Government dam, and (4) on streams over which Congress has jurisdiction under the Commerce Clause.[127] Dam safety is an integral component of FERC's hydropower licensing program.[128] Staff at FERC inspect dams on an unscheduled basis, and "every five years an independent consulting engineer approved by FERC must inspect and evaluate dams higher than 32.8 feet, or with a total storage capacity of more than 2,000 acre-feet [of water]."[129] Where FERC identifies safety problems at a dam, it will order the dam owner to rectify the problem. These FERC safety inspections have led dam owners to voluntarily remove dams where repair costs more than removal. For example, a FERC safety inspection of Mussers Dam on Middle Creek in Pennsylvania caused the owner to remove the dam rather than make the required repairs.[130] A 2001 report notes that at least four FERC-regulated dams have been removed due to the cost of safety repairs.[131]

A report by FEMA detailed that FERC staff independently reviewed the safety and adequacy of 336 dams by conducting over 4,000 inspections between 2006 and 2007.[132] During that period, FERC completed forty-four dam safety modifications and seventy-four dam safety modifications remained ongoing or under review.[133] Despite these safety measures, there were two major and eighteen minor incidents of

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122. The Department of the Interior "is responsible for the planning, design, construction, operation, and maintenance of nearly 2,000 dams . . . ." *Id.* Bureaus in the Department include the Bureau of Indian Affairs (425 dams), the Bureau of Land Management (515), the Bureau of Reclamation (479), the U.S. Fish and Wildlife Service (193), the National Park Service (538), the Office of Surface Mining (1,370) and the U.S. Geological Survey (one high-hazard dam) *Id.*

123. The Department of Energy owns and had safety jurisdiction over 15 dams. *Id.*

124. The Department of Labor is responsible for the safety of 1,395 dams through the Mine Safety and Health Administration. *Id.*

125. As of September 30, 2005, a total of 2,530 dams were under FERC jurisdiction. *Id.*

126. The Tennessee Valley Authority oversees 49 dams. *Id.*

127. Fed. Emergency Mgmt. Agency, Dam Safety in the United States: A Progress Report On The National Dam Safety Program 23 (2006–2007), *available at* http://www.fema.gov/library/viewRecord.do?id=3677.

128. *Dam Safety and Inspection*, FED. ENERGY REGULATORY COMM'N, http://www.ferc.gov/industries/hydropower/safety.asp (last visited Jan. 15, 2012).

129. THE HEINZ CTR., *supra* note 4, at 64.

130. Fed. Energy Regulatory Comm'n, Order Accepting Surrender of License, American Hydro Power Company, 64 F.E.R.C. ¶ 62,097 (1993).

131. Lee Emery, A Review of Non-Federal Hydropower Dams Removed Under FERC's Regulatory Authority, Waterpower XII Conference (2001).

132. Fed. Emergency Mgmt. Agency, *supra* note 127.

133. Id.

failure at dams under FERC jurisdiction between 2006 and 2007.[134] Considering that more than two-thirds of the approximately 2,600 hydropower dams within FERC's jurisdiction are greater than fifty years old, these safety inspections will likely result in more voluntary dam removals in the future.[135]

The final major federal dam safety program is the Indian Dam Safety Act of 1994.[136] It established a dam safety maintenance and repair program to maintain certain dams on Indian land that would present a threat to human life were structural failure to occur.[137] In 2005, the Bureau of Indian Affairs identified 125 high-hazard and significant-hazard dams, plus over 300 low-hazard dams with the potential to become high-hazard dams.[138] There were over eighty dams still requiring major repairs in 2005.[139] This program, together with the National Dam Safety Program and FERC's mandatory inspections, represent the extent of federal dam safety programs.

The outlook for dam safety should improve at the federal level following the reauthorization of the National Dam Safety Act in 2006.[140] This legislation will assist states in improving their dam safety programs, support increased technical training for state dam safety engineers and technicians, and provide additional funding for dam safety research and maintenance of the National Inventory of Dams.[141] A FEMA report in 2009 showed that ninety-four percent of federal high-hazard potential dams were inspected within the last five years.[142] Increased safety inspections will hopefully result in further voluntary removals of unsafe and obsolete dams whose cost to perform necessary safety repairs exceeds the price of removal.

2. State Dam Safety Programs

State safety-related dam inspections are responsible for more dam removals than federal inspections. In fact, they are "the most common legal proceedings resulting in dam removal,"[143] with "State dam safety

134. *Id.* at 30.

135. THE HEINZ CTR., supra note 4, at 64.

136. 25 U.S.C. § 3801 (2009).

137. *Id.*

138. *Bureau of Indian Affairs—Dam Safety and Dam Maintenance Assessment*, EXPECTMORE.GOV, http://www.whitehouse.gov/omb/expectmore/detail/10003704.2005.html (last visited Mar. 31, 2010).

139. *Id.*

140. *National Inventory of Dams*, U.S. ARMY CORPS OF ENG'RS, http://www.usace.army.mil/Library/Maps/Pages/NationalInventoryofDams.aspx.

141. Dam Safety Act of 2006, Pub. L. No. 109-460, 120 Stat. 3401.

142. Fed. Emergency Mgmt. Agency, *supra* note 127.

143. Bowman, *supra* note 355, at 739.

programs regulat[ing] 80 percent of the 84,000 dams listed in the National Inventory of Dams."[144] Most states have dam safety laws that require the periodic inspection of every dam over a certain size. Vermont, for example, regulates dams that are, or will be, capable of impounding more than 500,000 cubic feet of water.[145] A dam of any size in Vermont is subject to a safety inspection if ten or more people, or a local municipality, petition for an investigation.[146] The investigative findings are then exhibited at a hearing, whereupon the agency having jurisdiction makes a determination as to whether the "dam as maintained or operated is unsafe or is a menace to people or property."[147] Then the agency "shall issue an order directing reconstruction, repair, removal, breaching, draining or other action it considers necessary to make the dam safe."[148] Removal of a small unsafe dam typically costs less than repairing it. Among ten cases examined by American Rivers, the cost of dam removal cost was only thrity-seven percent of the total estimated repair cost.[149]

Consider, for example, a 150-year-old millpond dam in Wisconsin. The dam was deemed unsafe by the state Department of Natural Resources because of concern that rainstorms, combined with the pressure of the millpond, might damage the dam and destroy downstream businesses and residences.[150] The dam owner was ordered to either rebuild the dam to meet safety standards or remove it.[151] With the cost of rebuilding the dam estimated at $1 million, the owner felt that rebuilding and maintaining the dam would be "too expensive and bothersome."[152] Expenses typically associated with aging dams include increasing maintenance costs, liability insurance, and the repeated dredging of silt that accumulates behind the impoundment.[153] The owner also chose

144. ASS'N OF STATE DAM SAFETY OFFICIALS, 2010-11 ANNUAL REPORT 6 (2011), *available at* http://www.damsafety.org/media/Documents/PDF/Annual%20Reports/AnnualRept_FY11.pdf.

145. VT. STAT. ANN. tit. 10, § 1082 (2009).

146. *Id.* § 1095.

147. *Id.*

148. *Id.*

149. AM. RIVERS, PAYING FOR DAM REMOVAL (2000), *available at* act.americanrivers.org/site /DocServer/pdr-color.pdf?docID=727 (last visited Nov. 12, 2011).

150. Kelly Smith, *Zerwekh Dam Settlement Possible, Suit,* LAKE COUNTRY REP., Oct. 17, 2011, http://www.livinglakecountry.com/lakecountryreporter/news/zerwekh-dam-settlement-possible-131981513.html.

151. Kelly Smith, *Hearing Rescheduled on Zerwekh Dam Suit,* LAKE COUNTRY REP., July 27, 2011, http://www.livinglakecountry.com/lakecountryreporter/news/126264218.html.

152. Smith, *supra* note 150.

153. *Dam Removal*, MICH. DEP'T OF NATURAL RES., http://www.michigan.gov/dnr/0,4570,7-153-10364_52259_27415-80303--,00.html (last visited Jan. 15, 2011).

removal for ecological reasons, citing a desire to restore the river to its natural riverbed.[154]

Dam removal is best accomplished as a voluntary undertaking. As described above, state and federal dam safety programs can serve as the impetus for a dam owner's decision to remove a dam. Removal of these dangerous dams protects people and property plus confers great ecological benefits to the watershed. Voluntary removal also avoids any Fifth Amendment taking claims from the dam owner—an important concern that will be explored in depth below.

C. FERC and Hydropower Dam Relicensing

Voluntary dam removal can also stem from FERC's hydropower licensing process, which must comply with the ESA. To protect threatened and endangered fish, FERC attached conditions to the renewal of PacifiCorp's hydropower license for the Condit Dam in Washington State. The dam, construction of which began in 1911, did not provide fish passage.[155] After PacifiCorp applied to FERC for a new license, FERC issued an Environmental Impact Statement in accordance with the ESA that required PacifiCorp to update the dam to allow fish passage.[156] Modernizing the dam would have cost more than three times the price of removal, leading PacifiCorp to choose voluntary removal.[157] Fourteen miles of salmon habitat and thirty-three miles of steelhead habitat were reopened, and 8,000 salmon may one day return again to spawn in the White Salmon River.[158]

The Condit Dam illustrates FERC's change of mind that began with its unprecedented action at the Edwards Dam in Maine. Recognizing for the first time that the ecological cost of dams and the safety hazards they pose now tip the public interest in favor of dam removal, FERC ordered the decommissioning of a hydropower project where the owner actively sought a hydropower license renewal.[159] This historic action—discussed in more detail below—presents a third tool to accomplish dam removal.

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154. Smith, *supra* note 150.

155. Linda V. Mapes, *Condit Dam To Be Demolished Wednesday*, THE SEATTLE TIMES, Oct. 25, 2011, *available at* http://seattletimes.nwsource.com/html/localnews/2016606447_condit26m.html.

156. Associated Press, *Condit Dam Breached to Help Local Fish*, SEATTLEPI.COM, Oct. 26, 2011, http://www.seattlepi.com/local/article/Condit-Dam-breached-2238048.php.

157. *Id.* (The Condit Dam was removed on October 26, 2011)

158. "Before construction, historical accounts from Yakama tribal members indicated some 8,000 adult salmon and steelhead returned to the river." Mapes, *supra* note 155.

159. *See* Fed. Energy Regulatory Comm'n, *Edwards Mfg. Co., Inc.*, 81 F.E.R.C. ¶ 61,255 (1997) (order denying new license and requiring dam removal).

1. The Statutory Scheme for Hydropower Licensing

The potential removal of any private, municipal, or state hydropower dam will involve FERC.[160] Federal hydropower dams, on the other hand, are authorized by Congress and constructed by the Bureau of Reclamation, the Army Corps of Engineers, or the Tennessee Valley Authority, and are subject to National Environmental Policy Act (NEPA) and ESA requirements.[161]

Hydropower projects are regulated by FERC pursuant to the Federal Power Act (FPA).[162] The FPA requires a license for the construction and maintenance of a hydropower project if it is on, or affects, navigable waters, public land, or reservations, or if it uses surplus water from any government dam.[163] In addition, a license may be required for a project on a nonnavigable river if the project will affect interstate or foreign commerce.[164]

During hydropower's heyday—in 1940 over 1,500 hydropower plants produced about one-third of the United States' electricity[165]—FERC issued thousands of hydropower licenses. These operating licenses are valid for between thirty and fifty years.[166] When a license expires, the dam owner must reapply to FERC to obtain a new license.[167] As part of this relicensing process, FERC must determine whether issuing a new license is in the public interest by giving equal consideration to power and nonpower uses of the river:

> In deciding whether to issue any license under this Part for any project, the Commission, in addition to the power and development purposes for which licenses are issued, shall give equal consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife (including

160. THE HEINZ CTR., *supra* note 4, at 61.

161. *Id.* Note that FERC also regulates private hydropower dams on federal land. For example, FERC regulates the Glines Canyon Dam, previously operated by Daishowa Corp. that is located in Olympic National Park. *Elwha River Restoration: Background and History*, AM. RIVERS, http://www.americanrivers.org/our-work/restoring-rivers/dams/projects/elwha-river-background.html (last visited Nov. 12, 2011).

162. Federal Power Act, 16 U.S.C. § 791 (2009).

163. *Id.* § 797(e). Navigable waters "means those parts of streams or other bodies of water over which Congress has jurisdiction under its authority to regulate commerce . . . and which either in their natural or improved condition . . . are used or suitable for use for the transportation or persons or property in interstate or foreign commerce . . . ." *Id.* § 796(8).

164. *Id.* § 817.

165. *The History of Hydropower Development in the United States*, BUREAU OF RECLAMATION, http://www.usbr.gov/power/edu/history.html.

166. Office of Hydropower Licensing, *Origin of Hydroelectric Regulation*, FED. ENERGY REGULATORY COMM'N, http://www.ferc.gov/industries/hydropower/gen-info/regulation/origin.asp (last visited Nov. 1, 2012).

167. 16 U.S.C. § 808 (2009).

> related spawning grounds and habitat), the protection of recreational opportunities, and the preservation of other aspects of environmental quality.[168]

This section of the FPA, section 4(e), is referred to as the equal consideration requirement.

In 1994, FERC issued a policy statement asserting authority under the FPA "to deny new licenses to hydroelectric projects when existing licenses expire."[169] This authority comes from Section 10(a) of the FPA and represents the core of FERC's licensing responsibilities.[170] Known as the "comprehensive development standard," Section 10(a) reads:

> That the project adopted . . . will be best adapted to a comprehensive scheme for improving and developing a waterway or waterways for the use and benefit of interstate and foreign commerce, for the improvement and utilization of water power development, for the adequate protection, mitigation, and enhancement of fish and wildlife (including related spawning grounds and habitat), and for other beneficial public uses . . . .[171]

A third important provision of the FPA is Section 10(j), which requires expressly that in every license it issues, FERC must establish conditions for the adequate and equitable protection of, mitigation of damages to, and enhancement of fish and wildlife.[172] These three provisions of the FPA form the current statutory scheme within which FERC operates when issuing hydropower licenses—a scheme that tasks FERC with reaching "an appropriate balance between power . . . and the protection of nondevelopment resources, such as fish and wildlife."[173] This balance can normally be accommodated through license conditions, but as the 1994 policy statement asserted, where conditioning authority is "inadequate to do the job, i.e., where there was unacceptable environmental damage that proved irremediable . . . [FERC] does not read the Act as requiring it to issue a license."[174] If a license cannot be crafted that comports with the standards set forth in Section 10(a), FERC has the power to deny the license.[175]

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168. *Id.* § 797.

169. FERC Policy Statement, *supra* note 33.

170. *Id.* at 342 ("[T]he strictures of section 10(a), which the courts have long recognized rests at the core of the Commission's licensing responsibilities.").

171. 16 U.S.C. § 803(a).

172. *Id.* § 803(j).

173. FERC Policy Statement, *supra* note 33, at 342.

174. *Id.*

175. *Id.* at 343.

Outright denial of a license is, of course, highly unusual. The more likely scenario is that the issuance of a license will be conditioned upon environmental mitigation measures, and the licensee may be unwilling to accept the conditions because they render the project unprofitable.[176] In such a case, the hydropower project may have to shut down. The Commission rejects the notion that "a condition in a power license is per se unreasonable if, as a result of imposing the condition, the project is no longer economically viable."[177] The statute calls for a balancing of development and nondevelopment interests. To favor power and development interests over environmental concerns is contrary to the Federal Power Act.[178] Furthermore, the Act makes no guarantee of profitability.[179] As the Seventh Circuit Court of Appeals noted, "there can be no guarantee of profitability of water power projects under the Federal Power Act; profitability is at risk from a number of variable factors, and values other than profitability require appropriate consideration."[180] Consequently, FERC is free to condition the issuance of a hydropower license on protecting or restoring environmental values, even if the cost of meeting these conditions makes the project economically unviable and forces it to shut down. And when a hydropower project shuts down, the 1994 policy statement stipulates that the project owner is responsible for the costs of decommissioning, which can include dam removal.[181]

The Commission does not have to wait until the end of a license term to order decommissioning. Section 6 of the FPA governs surrender or termination of a license.[182] A licensee can explicitly or implicitly apply for license surrender.[183] The terms of some licenses even expressly permit the Commission to order decommissioning within the license term.[184] Finally, the Commission can also initiate a revocation proceeding.[185] In all other instances, the licensee is secure against mid-term surrenders.[186]

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176. *Id.*

177. *Id.*

178. Id.

179. *Id.*

180. Wis. Pub. Serv. Corp. v. FERC, 32 F.3d 1165, 1168 (7th Cir. 1994).

181. "[N]ormally . . . the Commission anticipates that the licensee will be responsible for paying the costs (up to a reasonable level) of the steps needed to decommission the project, since the licensee created the project and benefitted from its operations . . . ." FERC Policy Statement, *supra* note 33, at 346.

182. 18 C.F.R. § 6.1 (2007).

183. FERC Policy Statement, *supra* note 33, at 344 n.43.

184. *Id.*

185. *Id.* Sections 26 and 31 of the FPA govern revocation proceedings.

186. *Id.*

2. The Statutory Scheme in Action: FERC Orders the Historic Removal of the Edwards Dam

In 1997, FERC made history. For the first time ever, it denied an application for hydropower license renewal and instead ordered the Edwards Dam in Maine be decommissioned.[187] The Edwards Dam was built on the Kennebec River in 1837 to provide mechanical power for mills.[188] Electrical power generators were installed in 1913 to provide power for Edwards Manufacturing Co.[189] The mill closed in the 1980s, but electrical power generation continued with the company contracting to sell the electricity.[190] With the hydropower project license set to expire at the end of 1993, Edwards filed an application for a new hydropower license in 1991.[191]

The Commission's response was unheard-of: the license was denied and removal of the dam was ordered, even though the licensee actively sought a new license.[192] Explaining its reasoning behind the order, the Commission states:

> We believe that the public interest in this proceeding lies in our denying the license application and requiring the licensees to remove Edwards Dam. The environmental benefits of so doing substantially outweigh the environmental benefits of relicensing, even with extensive mitigation measures. . . . A critical factor is that several important fish species native to the Kennebec River cannot be restored to their historical habitat without dam removal, because of their inability to use fish passage facilities.[193]

For the removal of private, state, and municipal hydropower dams, the events at Edwards Dam illustrate the power of FERC's licensing process and the triumph of the public interest. The federal government has finally recognized the value of a free-flowing river over electric power generation and private profit: "[B]y the time the first licenses began to expire, the concept of the inevitability of power operation from a particular project was eroding."[194]

The Commission's policy statement and the decommissioning of the Edwards Dam were unprecedented uses of its power under the FPA,

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187. *See* Fed. Energy Regulatory Comm'n, *Edwards Mfg. Co., Inc.*, 81 F.E.R.C. ¶ 61,255 (1997) (order denying new license and requiring dam removal).

188. *Edwards Dam Removal Update*, ME. STATE PLANNING OFFICE, www.maine.gov/spo/specialprojects/docs/edwsdam_theriverrunsfree.pdf (last visited Jan. 15, 2012).

189. *Id.*

190. *Id.*

191. Fed. Energy Regulatory Comm'n, *Edwards Mfg. Co., Inc.*, 81 F.E.R.C. ¶ 61,255 (1997).

192. *Id.*

193. *Id.*

194. FERC Policy Statement, *supra* note 33, at 342.

and some are now questioning whether it acted within the bounds of its authority. The hydroelectric industry, for example, has claimed that FERC lacks authority to impose conditions that make a project economically unviable, and that such an action is both a breach of contract and a Fifth Amendment taking of private property when the licensee receives no compensation.[195] The Commission also asserts authority to order dam removal at the owner's expense.[196] Under current FERC policy, dam owners are instructed to make provisions for dam decommissioning costs.[197]

The Edwards Dam removal avoided these issues because all parties actively involved in the relicensing signed a settlement agreement providing for a transfer of the dam's ownership to the State of Maine for dam removal purposes.[198] Funding for the removal will come entirely from private sources.[199] Dam removal costs and a decade of fish restoration efforts are to be financed principally by upriver dam owners (in exchange for delaying their fish passage obligations) and by a downstream shipbuilder (as mitigation for expanding its shipyard operations).[200] As many of the hydropower industry's arguments remain unaddressed by courts, the following analysis will explore whether a valid Fifth Amendment taking claim may result where dam removal is ordered.

III. TESTING FOR A FIFTH AMENDMENT TAKING

Dam removal may result in a number of Fifth Amendment taking claims from affected parties. A taking claim asserts that a government action has "taken" a protected property interest without the necessary eminent domain proceedings. The Constitution offers protection from takings: "[N]or shall private property be taken for public use, without just compensation."[201] This allows a property owner to sue the government and seek compensation for the private property taken. Generally, three forms of a taking are recognized: a physical taking, a regulatory taking, and a hybrid of both known as an exaction.[202]

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195. Beth Bryant, FERC's Dam Decommissioning Authority Under the Federal Power Act, 74 WASH. L. REV. 95, 98 (1999).

196. FERC Policy Statement, *supra* note 33, at 346.

197. *Id.* at 340.

198. Am. Rivers, Friends of the Earth & Trout Unlimited, Dam Removal Success Stories: Restoring Rivers Through Selective Removal of Dams that Don't Make Sense 61 (1999).

199. *Id.*

200. *Id.*

201. U.S. CONST. amend. V.

202. Only the first two forms will receive in-depth examination. An exaction is a hybrid between a physical and regulatory taking that occurs when the government attaches a condition on the development of land. The landowner must agree to dedicate a portion of the land for a public

A. Physical Taking

When the government physically invades private property, or causes it to be invaded by persons or things, a physical taking has occurred.[203] Under *Loretto v. Teleprompter Manhattan CATV Corp.*, permanent physical occupations of property are per se takings.[204] Examples include "flooding from a government dam that is continuous or at least inevitably recurring, regular and low overflights by government airplanes, government installation of relatively permanent structures on private property[, and] shoreline erosion caused by government jetties."[205] "In contrast with regulatory takings, [discussed next,] the magnitude of the intrusion[,] the economic impact on the property owner, or the importance of the government interest advanced," are "immaterial" in the context of a physical taking.[206]

Appropriations of private property to the government are given the same per se treatment as permanent physical occupations: "The paradigmatic taking . . . is a direct government appropriation or physical invasion of private property."[207] Recently, when the amount of water available to water rights holders from federal reclamation projects was reduced in order to protect fish listed under the ESA it was treated as a physical—rather than a regulatory—taking.[208]

B. Regulatory Taking

The Fifth Amendment protection from taking, once limited to physical occupation of property, now encompasses protection from government regulation that "goes too far."[209] Courts have developed several tests to determine when a regulation goes too far, believing that the Takings Clause "was designed to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole."[210] Total regulatory taking claims are subject to the *Lucas v. South Carolina Coastal Council*[211] test,

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purpose. ROBERT MELTZ, SUBSTANTIVE TAKINGS LAW: A PRIMER 38 (2009). Exactions typically do not arise in the context of dam removal.

203. *See* Lingle v. Chevron U.S.A., Inc., 544 U.S. 528, 537 (2005) ("The paradigmatic taking requiring just compensation is a direct government appropriation or physical invasion of private property.").

204. Loretto v. Teleprompter Manhattan CATV Corp., 458 U.S. 419, 426 (1982).

205. MELTZ, *supra* note 202, at 34.

206. *Id.*

207. *Lingle*, 544 U.S. at 537.

208. Casitas Mun. Water Dist. v. United States, 543 F.3d 1276, 1292 (Fed. Cir. 2008).

209. Pa. Coal Co. v. Mahon, 260 U.S. 393, 415 (1922).

210. MELTZ, *supra* note 202, at 15 (quoting Armstrong v. United States, 364 U.S. 40, 49 (1960)).

211. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1028–29 (1992).

while partial regulatory taking claims are decided under the *Penn Central Transportation Co. v. City of New York* test.[212]

1. The *Lucas* "Total Taking" Rule

In *Lucas*, a South Carolina statute prohibited the building of permanent structures on beachfront real estate.[213] Petitioner Lucas argued that because the regulation prohibited development of his beachfront lots the regulation amounted to a taking of property.[214] The U.S. Supreme Court agreed and held that just compensation is required if the regulation deprives a landowner of all economically beneficial use of the land, regardless of any public purpose that the regulation may serve.[215]

Two important caveats come with this holding. First, despite a total elimination of use and/or value, a restriction is not a taking if it merely duplicates what could have been achieved under "background principles of the State's law of property and nuisance," which existed when the owner acquired title to the property.[216] These background principles limit the rights acquired by the property owner, meaning there can be no taking when the government restriction eliminates a right the landowner never possessed. One cannot lose a right that one never had.

Second, the "total taking" must deprive the landowner of one hundred percent of the property's use and/or value for a *Lucas* claim. In *Lucas*, the Court specifically acknowledged that a landowner suffering a ninety-five percent loss of value would not come under the total taking rule.[217] Consequently, regulation that denies all economically beneficial or productive use of land is relatively rare.[218]

2. *Penn Central*'s "Partial Regulatory Taking" Test

For regulations that remove less than one hundred percent of the property's use and/or value, the *Penn Central* balancing framework is used. "To determine whether a partial regulatory taking has occurred, examine the government action for its (1) economic impact on the property owner, (2) degree of interference with the owner's 'distinct' investment-backed expectations, and (3) 'character of government

212. Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978).

213. *Lucas*, 505 U.S. at 1007–08.

214. *Id.* at 1009.

215. *See id.* at 1015 ("The second situation in which we have found categorical treatment appropriate is where regulation denies all economically beneficial or productive use of land.").

216. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1027 (1992).

217. *Id.* at 1019 n.8.

218. *Id.* at 1018.

action.' "[219] Courts will generally assess all three factors, although any single factor, if sufficiently compelling, can be conclusive that a taking has occurred.[220] The Court has shed little light on the content of each of the factors, or how to balance them, leaving an *ad hoc* test of "vexing subsidiary questions."[221]

The first *Penn Central* factor, economic impact, is measured by most courts in terms of remaining economic use, but the Federal Circuit and Court of Federal Claims focus instead on remaining market value.[222] For this factor to favor a taking, the economic impact must be "very substantial, arguably severe, when the other factors are not determinative."[223] The degree of economic loss must be so severe as to be the functional equivalent of a physical invasion or physical appropriation of the land.[224] Even deprivation of a parcel's "highest and best" use is not, without more, a taking.[225] Some decisions have noted the importance of leaving the landowner with the possibility of a "reasonable return," usually in the context of a pre-existing property use.[226] The Federal Circuit and CFC use the recoupment of cost as a metric for economic impact.[227] This is the formula preferred by a hydropower project owner seeking to recover its cost basis in the project.

The second *Penn Central* factor, investment-backed expectations, "is often seen as having two steps: (1) [d]id the claimant have *actual* investment-backed expectations[,] and (2) [w]ere those expectations *objectively reasonable*?"[228] It is worth noting that those who voluntarily enter a heavily regulated field are presumed to lack a reasonable expectation that the legislature will not enact new requirements as necessary.[229] Hydropower is certainly a heavily regulated field, so

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219. MELTZ, *supra* note 202, at 16 (citing Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978)).

220. *Id.*

221. Lingle v. Chevron U.S.A., Inc., 544 U.S. 528, 539 (2005).

222. MELTZ, *supra* note 202, at 19.

223. *Id.*

224. *Lingle*, 544 U.S. at 539.

225. Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 125 (1978). "Highest and best use" refers to the reasonably probable and physically possible, legal use of a property resulting in the greatest value. MELTZ, *supra* note 202, at 20.

226. *See, e.g.*, Cienega Gardens v. United States, 331 F.3d 1319, 1342–43 (Fed. Cir. 2003) (ninety-six percent reduction in rate of return favors the existence of a taking).

227. *See, e.g.*, Florida Rock Indus., Inc. v. United States, 791 F.2d 893, 905 (Fed. Cir. 1986) ("In determining the severity of economic impact, the owner's opportunity to recoup its investment or better . . . cannot be ignored."); Walcek v. United States, 49 Fed. Cl. 248, 266 (2001) ("[C]ase law thus makes it clear that profit or return on investment is a factor to be considered in assessing economic impact. . . ."), *aff'd*, 303 F.3d 1349 (Fed. Cir. 2002).

228. MELTZ, *supra* note 202, at 22.

229. *Id.* at 23.

projects owners can be presumed to lack reasonable investment-backed expectations when operating in a constantly evolving regulatory field.

The third and final *Penn Central* factor looks to the character of the government action. This includes the government's purpose and the regulation's value, public benefit, or effectiveness. *Lingle v. Chevron U.S.A., Inc.*, however, suggests that this factor is less important than the previous two *Penn Central* factors.[230]

One final quirk of the *Penn Central* test is the parcel as a whole rule. Any given parcel of land includes three dimensions: spatial, functional, and temporal.[231] But the law of takings "does not divide a single parcel into discrete segments and attempt to determine whether rights in a particular segment have been entirely abrogated . . . this Court focuses . . . [on the] extent of the interference with rights in the parcel as a whole . . . ."[232] Described another way, "where an owner possess a full 'bundle' of property rights, the destruction of one 'strand' of the bundle is not a taking because the aggregate must be viewed in its entirety."[233]

This rule is not always followed as it is not applied in cases where the property rights are considered so fundamental as to tolerate little or no infringement.[234] Generally, however, a property owner must be deprived of all economically viable use of the entire parcel of property, not just a portion of the parcel, to support a finding that a regulatory taking has occurred.

IV. TAKING CLAIMS FROM DAM OWNERS

A. FERC's Decommissioning of a Hydropower Dam

When FERC issues an order to decommission, a hydropower license is denied, the dam structure is destroyed, and future revenues from hydropower generation are lost. Is compensation due to the project owners? The first inquiry in any takings claim is whether the claimant can point to a protected property interest. This necessitates determining the nature of the licensee's property interest. Dam owners may claim a property interest in the entire hydropower project or in the project's several smaller component interests. These include the project works, surrounding lands, and water use rights.

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230. *Id.* at 24.

231. *Id.* at 28.

232. Tahoe-Sierra Pres. Council, Inc., v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 327 (2002) (quoting Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 130–31 (1978)).

233. *Id.*

234. MELTZ, *supra* note 202, at 30. An example includes the fundamental right to bequeath property. *See, e.g.*, Hodel v. Irving, 481 U.S. 704, 716 (1987).

If the licensee has a property interest, the reduction of the economic value of that property by the regulation must be calculated, looking at the licensee's parcel as a whole. Where one hundred percent of the property's economic value is lost, the *Lucas* test requires compensation.[235] If less than a total loss of all economic value occurs, the *Penn Central* test must be applied. Thus, whether a dam owner is entitled to just compensation for any of these interests will depend on the nature of the property interest and the extent of the loss in economic value of the property.

1. Loss of the Dam and Other Associated Structures

When a hydropower project owner is ordered to remove the dam, as was the case with the Edwards Dam,[236] the owner may claim a *total* one hundred percent loss in the economic value of the dam and other associated structures removed from the water. These taking claims are easily defeated on two grounds.

First, the parcel as a whole rule should defeat most taking claims by project owners. Under both *Penn Central* and *Lucas*, a court must assess the economic loss to the property owner compared with what the owner still has.[237] In performing this assessment, courts look to the parcel as a whole. Even after FERC orders removal of a hydropower dam on a nonnavigable river, some portions of the property—those on land—remain unaffected, and even those that are affected retain some economic uses other than hydropower generation. The licensee is normally free to develop or resell the remaining surrounding land.

Second, while the parcel as a whole rule discussed above should defeat most taking claims, the federal navigation servitude can also render many takings claims inappropriate—so long as the dam is located on a navigable waterway. The servitude is a right held for the public in all navigable-for-title waters.[238] In practical effect, it is an interest that permits the federal government to destroy private, state-recognized property rights for the benefit of public navigation without paying compensation for a taking of property.

Authority for the navigation servitude comes from the Commerce Clause of the U.S. Constitution.[239] Power to regulate commerce

235. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1030 (1992).

236. *See supra* text accompanying notes 187–95.

237. Keystone Bituminous Coal Ass'n v. DeBenedictis, 480 U.S. 470, 497 (1987).

238. *See* Union Bridge Co. v. United States, 204 U.S. 364, 394 (1907) (holding forced modifications to an obstructing bridge under the Rivers and Harbors Act noncompensable).

239. U.S. CONST. art. 1, § 8, cl. 3.

necessarily includes power to regulate navigation.[240] The government "may legislate to forbid or license dams in waters; its power over improvements for navigation in rivers is absolute."[241] The Supreme Court has recognized that the "right to control, improve, and regulate the navigation of [navigable] waters is one of the greatest of the powers delegated to the United States by the power to regulate commerce."[242]

When this right conflicts with private property rights, "they are not to be reconciled as between equals, but the private interest must give way to a superior right, or perhaps it would be more accurate to say that as against the Government such private interest is not a right at all."[243] Private title to submerged lands is subservient to the government's interest in improving navigation.[244] To require otherwise "would be to create private claims in the public domain."[245] The servitude applies to any government action that aids navigation.[246] All dams in navigable waters therefore exist subordinate to the federal navigation servitude. As a result, *Lucas*'s background principles of property and nuisance[247] prevent the dam owner from ever acquiring the right to obstruct a navigable water; there can be no taking of a right never possessed.[248] Dam owners will not have a taking claim for loss of the physical dam structure so long as it is located on a navigable waterway.

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240. *See* Gibbons v. Ogden, 22 U.S. (9 Wheat.) 1, 75 (1824) ("The power of Congress, then, comprehends navigation, within the limits of every State in the Union; so far as that navigation may be, in any manner, connected with commerce with foreign nations, or among the several States . . . .").

241. United States v. Appalachian Elec. Power Co., 311 U.S. 377, 405 (1940).

242. Lewis Blue Point Oyster Co. v. Briggs, 229 U.S. 82, 87 (1912).

243. United States v. Willow River Power Co., 324 U.S. 499, 510 (1945).

244. *See Lewis*, 229 U.S. at 87 ("If the public right of navigation is the dominant right, and if, as much the case, the title of the owner of the bed of navigable waters holds subject absolutely to the public right of navigation, this dominant right must include the right to use the bed of the water for every purpose which is in aid of navigation.").

245. United States v. Rands, 389 U.S. 121, 125 (1967) (quoting Gilman v. Philadelphia, 70 U.S. (3 Wall.) 713, 724–25 (1866)).

246. Palm Beach Isles Assocs. v. United States, 58 Fed. Cl. 657, 674 (Fed. Cl., 2003) ("[T]he presence of multiple governmental purposes, so long as navigation is one of those purposes, will not defeat a navigational servitude defense."). *But cf.* United States v. Gerlach Live Stock Co., 339 U.S. 725, 739 (1950) (finding the Central Valley Project was a reclamation project and not a navigation project, despite a general Congressional declaration that the project's purpose was to improve navigation).

247. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1027 (1992).

248. *Id.* at 1028–29 (preexisting federal navigation servitude bars physical taking); *see also* Lewis Blue Point Oyster Co. v. Briggs, 229 U.S. 82, 88 (1912) (holding that implicit in the navigation servitude is that title to submerged lands is subject to the government's interest in improving navigation, and the Court also held no private property was taken that would entitle the plaintiff to compensation).

2. Loss of Lands Surrounding the Hydropower Project

If the Edwards Dam removal[249] serves as a bellwether—and there is no reason why it should not—a dam removal order will typically not deprive the licensee of the surrounding project lands. The Edwards Dam removal order required removal of the dam, but did not order the surrender of any land.[250] Even though the water may no longer be used to produce power, a dam removal order does not deprive the land of *all* economic value. Again, the licensee remains free to sell or develop the remaining riparian land. Consequently, a *Penn Central* (less than total taking) analysis is appropriate.

Examining the economic impact upon which the *Penn Central* inquiry "turns in large part, albeit not exclusively,"[251] it is clear that loss of the economic value of electricity generation will constitute a large percentage of the land's preregulation value. The Supreme Court has never specified a set percentage minimum reduction in value for a taking, nor does any amount (short of one hundred percent) automatically establish a taking.[252] If *Lingle* serves as a guide, the regulatory taking must be the functional equivalent of a physical occupation or appropriation of the land.[253] A mere diminution in property value, even as great as 92.5%, cannot by itself establish a taking.[254] Even deprivation of a hydropower parcel's most profitable, "highest and best use," electric power generation, is not, without more, a taking.[255] Some decisions have noted the importance of leaving the claimant with a "reasonable return," or the ability to recoup costs, yet such an argument is easily defeated by the fixed duration of a hydropower license, which project owners enter into knowingly and with no guarantee of renewal or recoupment of investment.[256] While the economic impact may be severe to the project owner, the reduction in value is less than one hundred percent. The first of the three *Penn Central* factors therefore does not conclusively establish a regulatory taking.

Moving to the second factor, the degree of interference with the owner's investment-backed expectations, the license's limited duration and terms also weigh against the reasonableness of any "distinct"

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249. *See supra* text accompanying notes 187–200.

250. Fed. Energy Regulatory Comm'n, *Edwards Mfg. Co., Inc.*, 81 F.E.R.C. ¶ 61,255 (1997).

251. Lingle v. Chevron U.S.A., Inc., 544 U.S. 528, 540 (2005).

252. MELTZ, *supra* note 202, at 317.

253. *Lingle*, 544 U.S. at 539.

254. *See, e.g.*, Village of Euclid v. Ambler Realty Co., 272 U.S. 365, 384 (1926) (a seventy-five percent diminution in value not a taking); Hadacheck v. Sebastian, 239 U.S. 394, 405 (1915) (reduction in value of tract of land from $800,000 to $60,000 (a 92.5% diminution) not a taking).

255. Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 125 (1978).

256. *See infra* text accompanying notes 259–75.

investment-backed expectations as contemplated by the *Penn Central* inquiry. Courts have agreed with FERC: there is no guarantee of profitability under the Federal Power Act.[257] Hydropower project owners cannot reasonably expect that the land will forever remain profitable. Finally, *Penn Central*'s third factor, the character of the government action, also does not favor a taking as the government's action will always bestow a public benefit. The Commission cannot issue a decommission order unless it is in the public interest.[258] None of the three *Penn Central* factors conclusively establishes a regulatory taking. Hydropower project owners should not prevail on any taking claims for economic loss of the project's surrounding lands.

3. Investment-Backed Expectations: the Hydropower License as a Protected Entitlement

Licensees may also claim a vested property right in the license to install and operate the dam,[259] at least to the extent that a reasonable return could be achieved or the capital investment in the project recovered.[260] Under the second part of the *Penn Central* regulatory taking test, the court looks to the degree of interference with the owner's investment-backed expectations. Under this part of the test, the court asks two questions: (1) Did the claimant have actual investment-backed expectations? And (2) were those expectations objectively reasonable?[261] Some decisions applying *Penn Central*'s partial regulatory taking test "note the importance of leaving the claimant with a 'reasonable return.' "[262] This element is most relevant where the regulation threatens a property use that existed when the investment was made or the property acquired.[263] The so-called notice rule, however, says that no regulatory taking can occur when the government restricts use of the parcel under laws or regulations that existed at the time it was acquired.[264] Although it is now given less-than-dispositive weight, many court decisions "give substantial, almost dispositive weight to pre-acquisition regulatory

257. Wis. Public Service Corp. v. FERC, 32 F.3d 1165, 1168 (7th Cir. 1994); FERC Policy Statement, *supra* note 33.

258. *See supra* note 193 and accompanying text.

259. Carney, *supra* note 9, at 335.

260. Katherine Costenbader, Comment, *Damning Dams: Bearing the Cost of Restoring America's Rivers*, 6 GEO. MASON L. REV. 635, 656 (1998).

261. Cienega Gardens v. United States, 331 F.3d 1319 (Fed. Cir. 2003).

262. MELTZ, *supra* note 202, at 21.

263. *See, e.g.*, Bair v. United States, 515 F.3d 1323, 1328 n.2 (Fed. Cir. 2008) ("We also have made clear that . . . the distinct investment-backed expectations factor of the *Penn Central* test is to be judged at the time the personal property was acquired.").

264. MELTZ, *supra* note 202, at 22.

schemes," such as the federal surface mining statute and the federal wetlands permitting program.[265]

This notice rule poses an even greater obstacle for plaintiffs in heavily regulated fields.[266] Players in such fields are presumed to lack a reasonable expectation that the regulatory environment will not change as the legislature enacts new requirements and reforms.[267] Employee pension plans, coal mining, liquor stores, banking, gaming, the sale of firearms, and adult entertainment establishments are all considered by courts to be heavily regulated fields.[268] Electric power generation is certainly also heavily regulated. Project owners' investment-backed expectations are not objectively reasonable when operating in the constantly evolving regulatory field of hydropower. While an order to decommission a hydropower project "particularly interferes" with the primary use or owner's expectation for the parcel,[269] the heavily regulated nature of the field continues to weigh against the objective reasonableness of any investment-backed expectation necessary for a regulatory taking.

There is also a more fundamental reason to refuse to recognize an objectively reasonable investment-backed expectation. As a matter of policy, the idea that there is an obligation on the part of the government to renew a license runs contrary to Congress's motive for limiting license terms.[270] The renewal licensing process is designed to provide an opportunity to reevaluate whether renewal of the hydropower licenses serves the current public interest.[271]

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265. *Id.* at 23 (citing Appolo Fuels, Inc. v. United States, 381 F.3d 1338 (Fed. Cir. 2004) (federal surface mining statute); Rith Energy, Inc. v. United States, 270 F.3d 1347 (Fed. Cir. 2001) (federal surface mining statute); and United States v. Donovan, 466 F. Supp. 2d 590 (D. Del. 2006) (federal wetlands permitting program)).

266. *Id.* ("Those who voluntarily enter a "heavily regulated field" find regulatory takings claims particularly difficult to maintain.").

267. *Id.*

268. *See, e.g.*, Concrete Pipe & Prods. of Cal., Inc. v. Constr. Laborers Pension Trust, 508 U.S. 602, 645–46 (1993) (employee pension plans); *Appolo Fuels*, 381 F.3d at 1349 (coal mining); People's Super Liquor Stores, Inc. v. Jenkins, 432 F. Supp. 2d 200, 215 (D. Mass. 2006) (liquor stores); Branch v. United States, 69 F.3d 1571, 1581 (Fed. Cir. 1995) (banking); Hawkeye Commodity Promotions, Inc. v. Vilsack, 486 F.3d 430, 442 (8th Cir. 2007) (gaming); Akins v. United States, 82 Fed. Cl. 619, 623 (Fed. Cl. 2008) (the sale of firearms); McCrothers Corp. v. City of Mandan, 728 N.W.2d 124, 141 (N.D. 2007) (adult entertainment establishments).

269. MELTZ, *supra* note 202, at 24.

270. 16 U.S.C. § 799 (2009) ("Licenses . . . shall not be issued for a period exceeding fifty years.").

271. The FPA protects the public interest: "[T]he project adopted . . . will be best adapted . . . for the use or benefit of interstate or foreign commerce, for the improvement and utilization of water power development, for the adequate protection, mitigation, and enhancement of fish and wildlife . . . and for other beneficial uses . . . ." *Id.* § 803(a).

Since a hydropower project is constructed under a license of limited duration, and with no guarantee of renewal, the project owner cannot claim a protected entitlement to make economic use of the facilities it constructed in order to take advantage of the original FERC license.[272] Licenses are a privilege, not a right.[273] As the Supreme Court opined, "[P]roperty interests, of course, are not created by the Constitution. Rather, they are created and their dimensions are defined by existing rules or understandings that stem from an independent source . . . ."[274] Once the license expires, the contract between the licensee and the government ends and the property right is extinguished.[275]

4. Property Interests in the Value of the Water Power and the Land as a Hydropower Site

A project owner may claim a property interest in the potential value of the water power or land as a hydropower site. The U.S. Supreme Court has consistently rejected this claim.[276] In *United States v. Chandler-Dunbar Water Power Co.*, the government exercised the federal navigation servitude and revoked Chandler-Dunbar's hydropower license.[277] Although Chandler-Dunbar owned the riparian land, the Court noted it "had no such vested property right in the water power inherent in the falls and rapids of the river."[278] The federal government's dominant right to take the navigable river flow for interstate commerce defeated compensation claims for the loss of water for power production.[279] The

272. *See* Am. Pelagic Fishing Co., L.P. v. United States, 379 F.3d 1363, 1372–73 (Fed. Cir. 2004) (holding revocation of a fishery's permits under the 1997 and 1998 Appropriations Acts which would bar it from receiving future permits did not constitute a regulatory taking of the fishery's vessel).

273. *See* Acceptance Ins. Co. v. United States, 583 F.3d 849, 857 (Fed. Cir. 2009) (rejecting a claim by an insurance company that a decision of the Department of Agriculture's Risk Management Agency not to approve the claimant's planned sale of a portfolio of crop insurance policies is a taking because such sales are subject to pervasive federal regulatory review). For more on the "heavily regulated industry" concept, see MELTZ, *supra* note 202, at 23.

274. Ruckelshaus v. Monsanto Co., 467 U.S. 986, 1001 (1984).

275. *See Ruckelshaus*, 467 U.S. at 1001 ("[P]roperty interests, of course, are not created by the Constitution. Rather they are created and their dimensions are defined by existing rules or understandings that stem from an independent source . . . .").

276. *See, e.g.*, United States v. Chandler-Dunbar Water Power Co., 229 U.S. 53, 68–69 (1913) (holding a project owner does not acquire a property interest in the water power value of a site); United States v. Grand River Dam Auth., 363 U.S. 229, 236 (1960) (finding Fifth Amendment compensation provision does not apply to lost water power value or opportunity to produce hydropower); United States v. Twin City Power Co., 350 U.S. 222, 223 (1956) (stating that "the exclusion of riparian owners from the benefits of the power in a navigable stream without compensation is entirely within the Government's discretion.").

277. Chandler-Dunbar Water Power Co., 229 U.S. at 67.

278. *Id.* at 76.

279. *Id.* at 74.

hydropower project was "placed in the river under a permit which the company knew was likely to be revoked at any time" on account of the federal navigation servitude.[280] Speaking eloquently, the Court held that the hydropower owner has no property interest in the water power value of a site: "[T]hat the running water in a great navigable stream is capable of private ownership is inconceivable."[281]

5. Loss of Water Rights

A hydropower licensee may argue that denial of a hydropower license deprives it of either *some* or *all* of the value of its water rights, but no vested property right exists in the value of water to generate electricity,[282] and a licensee maintains whatever water use rights it had prior to decommissioning. In states that follow the prior appropriation system of water rights, however, a licensee's water rights may be completely lost after a hydropower license is denied. Prior appropriation is the predominant water rights allocation system in the western United States.[283] Under the doctrine of prior appropriation, available water is allocated on a first-come, first-served basis to anyone who puts the water to a beneficial off-stream use. [284]

Unlike the riparian water use system, mere ownership of land does not give rights to water use.[285] To possess a water right in a prior appropriation system, three criteria must be satisfied: (1) there must be an intent to apply the water to a beneficial use, (2) there must be an actual diversion of water from its natural source, and (3) there must be continued application of the water to a beneficial use.[286] This beneficial use requirement means that the hydropower licensee would lose its appropriative water right by ceasing to make a beneficial use of the right following dam removal.[287] Alaska, for example, broadly defines beneficial uses to include the protection of fish and wildlife habitat,

280. *Id.* at 68.

281. *Id.* at 69.

282. *See supra* notes 167–75 and accompanying text.

283. Bureau of Land Mgmt., *Water Appropriation Systems*, WESTERN STATES WATER LAWS, http://www.blm.gov/nstc/WaterLaws/appsystems.html (last visited Jan. 16, 2012).

284. Joseph L. Sax et al., Legal Control of Water Resources: Cases and Materials 125 (4th ed. 2006).

285. *Id.*

286. *Id.*

287. *Id.* at 157. Sax posits that the doctrine of beneficial use may be able to impose a new requirement on a hydropower dam to maintain specified flows at specified times for fish and recreation if the original hydropower appropriation is deemed no longer beneficial.

recreation and parks, navigation, and sanitation and water quality.[288] Wyoming, however, only recognizes fisheries as a beneficial use, so unless the project owner applies its water right to fish propagation, it would lose its water right.[289]

Sadly, seemingly beneficial uses like the preservation of the natural environment are not viewed as "beneficial" by all states. This creates disincentives—if not roadblocks—to applying water rights toward conservation efforts. State statutes generally provide for a loss of water rights through forfeiture, defined as unexcused non-use for a period of years.[290] The extent of the economic loss from the water right will also depend on how forgiving the state is in authorizing changes in use or transfers to new diverters. Most prior appropriation states impose strict conditions on, or disallow, the transfer of nonconsumptive uses to consumptive ones.[291] Hydropower generation is a nonconsumptive use.[292] Granted, protection of fish and wildlife habitat are nonconsumptive uses, but they have little economic worth to the licensee. If the licensee is unable to transfer the water right, or put it to beneficial use, a *total* loss of the value of the water right may occur, necessitating a *Lucas* taking inquiry.

The state's appropriative system may also be subject to the public trust doctrine, which holds that water is public property belonging to all the citizens of a state.[293] The public trust doctrine precludes anyone from acquiring a vested right to harm the public trust and imposes a continuing duty on the state to take public uses into account when allocating water resources. In California, the public trust doctrine is subsumed in the state's water rights system.[294] Colorado, however, has rejected the public trust doctrine.[295] The extent to which the public trust doctrine may limit a hydropower project owner's compensable property interest in water

288. Bureau of Land Mgmt., *Western States Instream Flow Summary*, WESTERN STATES WATER LAWS, http://www.blm.gov/nstc/WaterLaws/stateflowsummary.html (last visited Jan. 16, 2012).

289. *Id.*

290. *Id.* at 125.

291. William Goldfarb, Water Law 34–35. (2d ed. 1988).

292. James J. Jacobs & Donald J. Brosz, Wyoming's Water Resources (June 1993) (unpublished manuscript), *available at* http://library.wrds.uwyo.edu/wrp/93-12/93-12.html.

293. *See* In Re Water Use Permit Applications, 9 P.3d 409, 440–41 (Haw. 2000) (upholding the use of the public trust doctrine to force appropriators to release impounded water for the benefit of a stream).

294. Nat'l Audubon Soc'y v. Superior Court of Alpine City, 658 P.2d 709, 723 (Cal. 1983) (holding reallocation of water for scenic preservation is not a taking under the Fifth Amendment because the water rights holder's property interest was subject to the public trust).

295. People v. Emmert, 597 P.2d 1025, 1028 (Colo. 1979) (holding that the framers of the state constitution intended that the waters of natural streams be dedicated to appropriation and use).

rights thus depends upon the law of the state in which the project is located.

Even in states that follow the riparian system of water rights, a licensee may have a very limited ability to use or market its water use rights following project decommissioning and dam removal. In a riparian system, the right to use water is defined in terms of ownership of riparian land.[296] Riparian lands are the portions of a parcel that abut a water body. Water rights are owned by the property owner riparian to the waterway.[297] Historically, the use of water on distant, nonriparian parcels, though owned by a riparian landowner within the same watershed, was viewed as unreasonable.[298] This limitation is still in effect, although modern reasonable use jurisdictions now generally require proof of actual harm caused by the water's use on nonriparian lands.[299] The riparian system further restricts water rights by limiting their use to an owner's land within the same watershed.[300] Most jurisdictions view water use outside the watershed as per se unreasonable, but many will not prevent it unless another riparian is actually harmed.[301] These limitations on use, combined with the appurtenant, place-specific nature of riparian rights, can render a project owner's remaining water rights difficult to transfer.

In conclusion, a decommissioning order does not deprive a licensee of its water use rights; the licensee maintains whatever water use rights it had prior to decommissioning. The FPA does not affect state laws or water rights.[302] Any limitations on the use or transferability of those water rights are a result of state law, making the limitations *Lucas* background principles of property that prevent the licensee from ever possessing the rights in the first place.[303] This simple precept should bar taking claims from project owners in all states and water rights systems for any loss of water rights due to FERC's license denial and decommissioning order. Complaints concerning the marketability of residual water use rights should be directed at state legislatures, not the federal government.

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296. David H. Getches, Water Law in a Nut Shell 24 (4th ed. 2009).

297. SAX, *supra* note 284, at 27.

298. *Id.* at 53.

299. *Id.*

300. *Id.* at 30.

301. *Id.* at 31.

302. 16 U.S.C. § 821 (2009) ("Nothing herein contained shall be construed as affecting or intending to affect or in any way interfere with the laws of the respective States relating to the control, appropriation, use, or distribution of water . . . or any vested right acquired therein.").

303. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1027 (1992).

The preceding analysis shows that FERC faces little liability from project owners when denying renewal of a hydropower license and issuing a dam removal order to serve the public interest. An order from FERC to decommission a hydropower project and remove a dam will not result in a compensable Fifth Amendment taking. Hydropower project licensees generally lack the prerequisite vested property interests required for a taking, and any effects on truly vested property interests fail to qualify as a compensable taking.

B. The Endangered Species Act and Fifth Amendment Taking Claims

1. The Doctrine of Public Ownership of Wildlife

The ESA has frequently been attacked under the Fifth Amendment taking doctrine. Opponents of the ESA have argued that its true purpose "is really about [the] unconstitutional, uncompensated taking of private property."[304] This argument came to a head with the proposed Just Compensation Act of 1993, which would have required federal agencies to compensate private property owners for any diminution in value caused by a regulatory action taken under certain environmental laws, including the ESA.[305] The bill remains unenacted, perhaps because, as former Secretary of the Interior Bruce Babbitt contends, "It is a pernicious way of saying we are going to destroy the efficacy of government."[306] Instead, Babbitt counters, use of the ESA is a valid exercise of sovereign power, similar to planning and zoning laws: "Regulatory action taken for a valid public purpose can have consequences that legally inconvenience people and, from time to time, do diminish someone's rights."[307] Yet the ESA is not a land-use law; "It is a law which says we are going to protect public property—wild and endangered species—but it acknowledges that in many cases the only efficacious way to protect an endangered species is to protect habitat."[308] By protecting habitat, the ESA inevitably impinges on some property interests, but are these protected interests that require compensation if taken?

Long before the ESA existed, federal and state courts answered that question in the negative. The public ownership doctrine was invoked to uphold state authority to regulate uses of private property without

304. Bruce Babbitt, The Endangered Species Act and "Takings": A Call for Innovation Within the Terms of the Act, 24 ENVTL. L. 355, 357 (1994).

305. Just Compensation Act of 1993, H.R. 1388, 103d Cong. (1st. Sess. 1993).

306. Babbitt, *supra* note 304, at 359.

307. *Id.*

308. *Id.* at 360.

requiring compensation for the protection or restoration of wildlife. In 1884, the Illinois Supreme Court applied the concept to fish protection:

> The nature of fish impels them periodically to pass up and down streams for breeding purposes, and in such streams no one, not even the owner of the soil over which the stream runs, owns the fish therein, or has any legal right to obstruct their passage up or down, for to do so would be to appropriate what belongs to all to his own individual use, which would be contrary to the common right, and all having a common and equal ownership, nothing short of legislative power can regulate and control the enjoyment of this common ownership.[309]

Therefore, the public ownership doctrine can lead to the state-ordered destruction of private dams blocking fish migration.[310] Courts have upheld a state's power to do so. For example, the Supreme Judicial Court of Massachusetts held that it was not a taking to order the destruction of a private dam, noting that an implied limitation on a landowner's operation of a dam is that "fish should not be interrupted in their passage up the river to cast their spawn . . . [and this] limitation must extend to give a right to the government to enter and remove obstructions, which, if not removed, would defeat the limitation."[311] The Maine Supreme Judicial Court reached a similar holding in rejecting a private dam owner's challenge to the state's right to enter his property and destroy his dam.[312] State officials have the right to take such an action, because "the common law rights of the riparian proprietor . . . yielded to the paramount claims of the public."[313] These early cases establish public rights in wild animals, but they do not address the question of whether public ownership of wildlife bars Fifth Amendment taking claims that arise from application of the ESA.

The prelude to any Fifth Amendment taking analysis is whether the claimant possesses a protected property interest. Under *Lucas*, a taking claim is barred if the limitation "inheres in the title itself, in the restrictions that background principles of the State's law or property and

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309. Parker v. People, 111 Ill. 581, 588–89 (1884); *see also* Commonwealth v. Essex Co., 79 Mass. (13 Gray) 239, 249 (1859) (holding "the right of the public to the passage of fish in rivers, and the private rights of riparian proprietors, incident to and dependent on the public right, have been subject to the regulation of the legislature"); State v. Roberts, 59 N.H. 484, 486 (1879) (holding the state has the right "to regulate the destruction or preservation of fish, their free passage, and the use of the water as a highway," even where such streams are nonnavigable and cross private land).

310. John Echeverria & Julie Lurman, "Perfectly Astounding" Public Rights: Wildlife Protection and the Takings Clause, 16 TUL. ENVTL. L.J. 331, 347 (2003).

311. Inhabitants of Stoughton v. Baker, 4 Mass. (3 Tyng) 522, 529 (1808).

312. Cottrill v. Myrick, 12 Me. 222, 232–34 (1835).

313. *Id.* at 229.

nuisance already place upon land ownership."[314] A strong argument can be made that public ownership of wildlife establishes a "preexisting" limitation on private title, thus limiting the landowner's right to maintain a dam blocking migratory fish.[315] Actions mandated by the ESA may also fall under the umbrella of background principles of nuisance law,[316] "nuisance" being defined as "an unreasonable interference with a right common to the general public."[317] Ownership rights in wildlife are common to all members of the public.[318] The death of a wild animal—a threatened or endangered one, no less—can therefore be characterized as an "unreasonable interference" with public rights.[319] Maintenance of a dam, or any other activity that invades public rights in wildlife, is a nuisance under *Lucas* and not a protected property right.

The public ownership argument has been used successfully to defeat Fifth Amendment taking claims based on laws protecting endangered species. In 2000, the New York Supreme Court relied on the argument and the ESA to reject a taking claim involving a property owner wishing to mine his property and the New York Department of Environmental Conservation (DEC), the state agency implementing the ESA.[320] The plaintiff had begun the process of applying for a mining permit when the den of a timber rattlesnake, a threatened species under New York law, was discovered on an adjacent parcel.[321] The den's close proximity to plaintiff's parcel meant that the snakes would use portions of plaintiff's property as forage habitat.[322] The plaintiff therefore constructed a fence to keep the snakes off his property.[323] In response, the DEC filed suit seeking an injunction requiring the removal of the fence.[324] The owner opposed, claiming that the injunction was a taking under the Fifth Amendment.[325] The court affirmed the grant of an injunction and rejected the taking claim, holding that

> the State, through the exercise of its police power, is safeguarding the welfare of an indigenous species that has been found to be

314. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1029 (1992).

315. Echeverria et al., *supra* note 310, at 352–53.

316. *Id.*

317. Restatement (Second) of Torts §851B (1979).

318. Echeverria, *supra* note 310, at 352.

319. *Id.* (citing Parker v. People, 111 Ill. 581, 588 (1884)) ("No one . . . owns the fish . . . or has the legal right to obstruct their passage up or down, for to do so would be to appropriate what belongs to all to his own individual use.").

320. *See* State v. Sour Mountain Realty, Inc., 714 N.Y.S.2d 78 (N.Y. App. Div. 2000).

321. *Id.* at 80.

322. *Id.* at 81.

323. *Id.* at 80.

324. *Id.*

325. *Id.* at 82.

> threatened with extinction. The State's interest in protecting its wild animals is a venerable principle that can properly serve as a legitimate basis for the exercise of its police power.[326]

California courts have similarly recognized the power of the public ownership doctrine to defeat a taking claim. The California District Court of Appeals concluded that the doctrine of public ownership supports rejecting a taking claim based on an endangered species regulation:[327] "[W]ildlife regulation of some sort has been historically a part of the preexisting law of property."[328] This shows that the public ownership doctrine operates as a *Lucas* "background principle" of state law precluding takings liability.[329] These later-ESA cases, and earlier pre-ESA cases involving dams obstructing fish passage,[330] demonstrate that the doctrine of public ownership of wildlife can support the removal of private dams while shielding the government from Fifth Amendment taking claims.

2. The Federal Government and Taking Claims from Water Users

As previously discussed, due to the discretionary rule,[331] an agency's obligation to perform a Section 7 consultation ultimately comes down to the existence of, or lack of, agency discretion.[332] When an agency has discretion, it may seek a biological opinion (BiOp), pursuant to Section 7's consultation requirement, to avoid Section 9 liability for taking a listed species. A BiOp ensures that the proposed federal action will not jeopardize the survival and recovery of a listed species. If the BiOp concludes that the proposed agency action is likely to jeopardize the continued existence of a listed species, "reasonable and prudent alternatives" are recommended that will avoid jeopardy if implemented.[333] The BiOp may recommend a reduction in water deliveries, and some water users may claim a taking of their water rights.

The Ninth Circuit has traditionally rejected those taking claims. For example, in *O'Neill v. United States*, water users moved to enforce a

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326. *Id.* at 94.

327. *See* Sierra Club v. Dep't of Forestry & Fire Prot., 26 Cal. Rptr. 2d 338, 344–45 (Cal. Dist. Ct. App. 1993) (rejecting the claim that "a state or federal statute enacted in the interest of protecting wildlife is unconstitutional because it curtails the use to which real property may be put").

328. *Id.* at 347.

329. Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1027 (1992).

330. *See supra* notes 309–28 and accompanying text.

331. 50 C.F.R. § 402.03 (2009).

332. When pre-ESA legal obligations require a federal agency to operate in a way that leaves no room for the consideration of a listed species, the discretionary rule limits the applicability of Section 7's consultation requirement. *See supra* notes 74–89 and accompanying text.

333. 16 U.S.C. § 1536(b)(4) (2010).

judgment requiring the United States to perform its water service contract.[334] The court held that a provision in the contract stating that the government would not be liable for damages arising from shortages in water supplied due to "errors in operation, drought, or any other cause[]" relieved the government from liability for not delivering water on account of valid legislation, even if that legislation was enacted subsequent to the contract.[335]

After *O'Neill*, the Ninth Circuit was again confronted with a conflict between federal water contracts and the ESA. In *Natural Resources Defense Council v. Houston*,[336] which involved pre-ESA water renewal contracts renegotiated after enactment of the ESA, the water users argued that the Bureau of Reclamation lacked "discretion to alter the terms of the renewal contracts, particularly the quantity of water delivered."[337] The court rejected this argument and refused to apply the discretionary rule that would have exempted compliance with the ESA.[338] The Bureau of Reclamation had discretion when renegotiating renewal contracts to alter key terms and "may be able to reduce the amount of water available for sale if necessary to comply with ESA."[339]

Following *Houston*, the case of *Klamath Water Users Protective Ass'n v. Patterson* was another victory for the ESA over a federal contract for water rights.[340] In *Klamath*, petitioners sought enforcement of a water delivery contract negotiated in 1956, pre-dating the enactment of the ESA.[341] Rejecting their argument, the court, based on the terms of the contract, held that the Bureau of Reclamation "retains overall authority over decision in use of Project waters,"[342] which includes "the authority to direct Dam operations to comply with the ESA."[343] Within the Ninth Circuit, the federal government is free to modify water delivery contracts for the benefit of a listed species.

Although the Ninth Circuit has rejected Fifth Amendment taking claims from water rights users, the Court of Federal Claims has not. In *Tulare Lake Basin Water Storage District v. United States*, the Court of Federal Claims set a precedent by recognizing a per se physical taking. Monetary damages were awarded when, in order to retain some instream

334. O'Neill v. United States, 50 F.3d 677, 680 (9th Cir. 1995).
335. *Id.* at 686.
336. Natural Res. Def. Council v. Houston, 146 F.3d 1118 (9th Cir. 1998).
337. *Id.* at 1125.
338. *Id.* at 1126 ("Where there is no agency discretion to act, the ESA does not apply.")
339. *Id.*
340. Klamath Water Users Prot. Ass'n v. Patterson, 204 F.3d 1206, 1213 (9th Cir. 1999).
341. *Id.* at 1209–10.
342. *Id.* at 1213.
343. *Id.*

flows for fish habitat to comply with the ESA, the Bureau of Reclamation did not deliver water to irrigators as required by state water delivery contracts.[344] Instead of applying a regulatory takings analysis, the *Tulare* court found a per se taking by physical invasion of the plaintiff's property rights.[345] This unusual holding is limited by the unique facts of the case. The contracts at issue were with the State of California, not the federal government. The irrigators therefore did not have to surmount a common clause in Bureau of Reclamation contracts that excuses the federal government from liability for failure to deliver a full water supply.[346] The water contract was also atypical in that it specified the volume of water to be delivered.[347]

After *Tulare*, the Court of Federal Claims revisited the issue in a case from the Klamath Project and reached the same conclusion on very different grounds. The court first held that the only available remedy to the irrigators would be a breach of contract claim, not a taking claim: "Like it or not, water rights, though undeniably precious, are subject to the same rules that govern all forms of property—they enjoy no elevated or more protected status. . . . [T]hose rights, such as they exist, take the form of contract claims and will be resolved as such."[348] The contract claims were later rejected because enactment of the ESA was a sovereign act that can give no rise to contractual liability for the government.[349]

The CFC thus favored enforcement of the ESA over federal contracts for water, but only for a limited time. Years later, in *Casitas Municipal Water District v. United States*, the same Court of Federal Claims judge would retreat from this physical takings approach, concluding that the intervening *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*[350] decision required a regulatory taking analysis for the reduction in water availability resulting from an ESA requirement that water be left instream.[351] On appeal, the Federal

344. Tulare Lake Basin Water Storage Dist. v. United States, 59 Fed. Cl. 246, 254 (Fed. Cl. 2003).

345. *Id.*

346. Walcek v. United States, 49 Fed. Cl. 248, 321 (Fed. Cl. 2001).

347. See Tulare Lake Basin Water Storage Dist., 49 Fed. Cl. at 320–21 (distinguishing O'Neill).

348. Klamath Irrigation Dist. v. United States, 67 Fed. Cl. 504, 540 (Fed. Cl. 2005).

349. Klamath Irrigation Dist. v. United States, 75 Fed. Cl. 677, 685, 695 (Fed. Cl. 2007).

350. Tahoe-Sierra Pres. Council, Inc., v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 323–24 (2002) (holding that the question of whether the Takings Clause requires compensation when government enacts temporary regulation denying property owner all viable economic use of property is to be decided by applying factors of *Penn Central*, not by applying any categorical rule).

351. Casitas Mun. Water Dist. v. United States, 76 Fed. Cl. 100, 106 (Fed. Cl. 2007) ("[*Tahoe-Sierra*] compels us to respect the distinction between a government takeover of property (either by physical invasion or by directing the property's use to its own needs) and the government restraints on an owner's use of that property.").

Circuit reversed because it saw the ESA-compelled physical diversion of water as a physical taking of water rights—as opposed to a regulatory restriction on the amount available for use.[352] In reaching this holding, the Federal Circuit decided a case that was different from that decided by the Court of Federal Claims.[353] Contrary to the Court of Federal Claims' view of the case, which focused on the water that was required to be left in the river, the Federal Circuit insisted that the crucial fact in its analysis was that the regulation did not merely require that water be left in the river, but instead required the plaintiff to direct water, once it was diverted out of the river and into the diversion canal, through the fish passage facility.[354] In 2009, the Federal Circuit reaffirmed its decision that a physical taking had occurred.[355]

There is "no support" whatsoever in precedent for the *Casitas* decision for evaluating regulations that require water to be left in a water body as potential per se takings.[356] When the Supreme Court last addressed the issue over a century ago, it rejected the theory that a state legislative restriction on the export of water to neighboring states affected a taking of a riparian water right.[357] A per se taking analysis is therefore incorrect, and a traditional *Penn Central* analysis should apply to regulations such as the ESA that limit water use.

Going forward, the *Casitas* decision should be read narrowly. It established a precedent applicable only in the particular situation where a water right holder is subject to an affirmative mandate to direct water through a fish ladder or some other type of off-river structure.[358] The United States has several strong arguments against future taking claims that rely on *Casitas*. For example, even if a per se taking analysis continues to be applied to an ESA-mandated requirement to divert water through a fish ladder, the larger regulatory scheme in which the requirement is imposed indicates that the taking claim should be

352. Casitas Mun. Water Dist. v. United States, 543 F.3d 1276, 1296 (Fed. Cir. 2008).

353. *See* John Echeverria, Four Propositions About the *Casitas* Litigation (Nov. 6–7, 2009) (unpublished manuscript), *available at* http://www.vermontlaw.edu/Documents/2009TakingsConference/EcheverriaConferencePaper.pdf.

354. *Id.*

355. Casitas Mun. Water Dist. v. United States, 556 F.3d 1329, 1333 (Fed. Cir. 2009).

356. Echeverria, *supra* note 353.

357. Hudson County Water Co. v. McCarter, 209 U.S. 349, 356 (1908).

358. Echeverria, *supra* note 353, at 6.

evaluated as an exaction under *Nollan v. California Coastal Comm'n*[359] and *Dolan v. City of Tigard*.[360]

The third form of a Fifth Amendment taking, an exaction—a regulatory/physical taking hybrid[361]—arises where a government agency grants a property owner permission to exploit a property interest, subject to a condition that would normally be independently viewed as a per se taking.[362] The ESA-mandated diversion in *Casitas* should have been viewed as an exaction because the requirement was imposed as a condition attached to a BiOp which grants regulatory permission for operation of the dam.[363] The taking test for an exaction has two prongs, known as "essential nexus" and "rough proportionality."[364] Failure to satisfy either prong of the test is a taking. The essential nexus prong requires that "an exaction condition . . . must substantially advance a government purpose that would justify denial of the permit."[365] The second prong, rough proportionality, requires "the burden imposed on the property owner by the exaction must be no greater than 'roughly proportional' to the impact of the proposed development on the community."[366] Application of the essential nexus and rough proportionality prongs of the exaction test should yield a conclusion that the regulation did not result in a taking.[367] The requirement to divert water through the fish way for the protection of the fishery is logically related to—shares an essential nexus with—the government's regulatory purpose of reviewing dam operations. The modest amount of water diverted is more than roughly proportional to the harms caused by the dam operations that the government is attempting to redress.

In conclusion, there are defenses to counter any Fifth Amendment taking claim where the ESA alters dam operations or reduces a water delivery. The public trust doctrine, in those states in which it is subsumed in the water rights system, provides an additional argument against future

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359. Nollan v. Cal. Coastal Comm'n, 483 U.S. 825, 837 (1987) (requiring an "essential nexus" between the nature of the exaction condition and a legitimate state interest that would justify denial of the permit).

360. Dolan v. City of Tigard, 512 U.S. 374, 391 (1994) (requiring the extent of the burden imposed on the landowner by an exaction condition be "roughly proportional" to the burden that would be imposed on the community).

361. MELTZ, *supra* note 202, at 38.

362. *Id.* Some public purposes include a road, school, or wildlife preservation.

363. Echeverria, supra note 353 at 2, 11.

364. *Id.*

365. Nollan v. Cal. Coastal Comm'n, 483 U.S. 825, 837 (1987).

366. ROBERT MELTZ, CONG. RESEARCH SERV., THE ENDANGERED SPECIES ACT (ESA) AND CLAIMS OF PROPERTY RIGHTS "TAKINGS" 9 (Apr. 21, 2011), *available at* http://www.nationalaglawcenter.org/assets/crs/RL31796.pdf; *see* Dolan v. City of Tigard, 512 U.S. 374, 391 (1994).

367. Echeverria, *supra* note 353, at 11.

taking claims that rely on *Casitas*. Where the claimant cannot point to a protected property interest that has been "taken" by the challenged regulation, the taking claim cannot succeed. The public trust doctrine prohibits a water right holder from claiming a property entitlement to exploit water in a way that is harmful to public trust resources—in this case wild and endangered species.[368] Finally, the doctrine of public ownership of wildlife and *Lucas* background principles of state nuisance law enable the removal of private dams while shielding the government from Fifth Amendment taking claims.

V. TAKING CLAIMS FROM RIPARIAN PROPERTY OWNERS

Owners of property riparian to waters affected by dam removal may demand compensation.[369] Upstream of the dam, the reservoir can diminish substantially or disappear following dam removal, exposing previously submerged lands. When this happens, depending upon who owns title to the newly surfaced lands, riparian landowners may find themselves severed from contact with the water and assert a loss of associated riparian rights. In Wisconsin, for example, a dam owner's decision to remove a dam resulted in the filing of a civil suit by the dam owner's neighbors.[370] The suit alleged that removal of the dam reduced residential real estate values and altered the quality of their lives and the enjoyment of their property.[371] Downstream, the effects of removing the dam are reversed. Rivers may swell after a dam is removed, causing property damage above the high-water mark. Although the previously discussed federal navigation servitude generally exempts the government from paying compensation in situations where navigable waters are involved, a more precise analysis of the servitude's powers and jurisdiction is necessary to determine the extent of any potential Fifth Amendment taking liability.

A. Riparian Rights and Artificial Watercourses

Determining the legal effects upstream of dam removal involves two separate but related issues: (1) whether the ordinary rules of riparian rights apply to artificially created water bodies, and (2) who holds title to the previously submerged lands.

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368. Nat'l Audubon Soc'y v. Superior Court, 658 P.2d 709, 727 (Cal. 1983) (holding the public trust doctrine "prevents any party from acquiring a vested right to appropriate water in a manner harmful to the interests protected by the public trust.").

369. Smith, *supra* note 150.

370. *Id.*

371. *Id.*

Riparian rights attach to riparian land, those tracts of land that are contiguous with the water's edge.[372] A riparian landowner does not own any portion of the waterbody, but instead owns numerous rights in it known as usufructuary rights.[373] These rights include the following: the right to the flow of the stream, the right to make a reasonable use of the waterbody, the right of access to the waterbody, the right to fish, the right to wharf out, the right to prevent erosion of the banks, the right to purity of the water, and the right to claim title to the beds of nonnavigable lakes and streams.[374]

The *Restatement of Torts* defines "artificial watercourses" as "waterways that owe their origin to acts of man, such as canals, drainage and irrigation ditches, aqueducts, flumes, and the like."[375] *Black's Law Dictionary* similarly defines "artificial watercourse" as "a man-made watercourse."[376] One example of an artificial waterbody is a lake formed by a dam and reservoir system that enlarges the water surface of a preexisting river or stream. These can range in size from small, New England millponds to the enormous Hoover Dam and Lake Mead.

Conventional wisdom holds that the normal rules of riparian rights do not attach to artificial watercourses because the expectations of those owners abutting artificial watercourses are not the same as those of riparians along a natural watercourse.[377] The "artificial" riparian has no common law right to the maintenance of the artificial watercourse and cannot compel the maintenance of the water at any particular level.[378]

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372. Panetta v. Equity One, Inc., 920 A.2d 638, 644 (N.J. 2007) ("Riparian lands are lands lying along the banks of a stream or water body.").

373. City of Barstow v. Mojave Water Agency, 5 P.3d 853, 860 n.7 (Cal. 2000) ("[R]iparian rights . . . are usufructuary only, and while conferring the legal right to use the water that is superior to all other users, confer no right of private ownership in public waters.").

374. GETCHES, *supra* note 296, at 23.

375. Restatement (Second) of Torts § 841(5)(h) (1979).

376. BLACK'S LAW DICTIONARY 1729 (9th ed. 2009).

377. A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 3:25 (2009); *see, e.g.*, Tusher v. Gabrielsen, 80 Cal. Rptr.2d 126, 135 (1998) ("Ordinarily, riparian rights attach only to a natural watercourse, and not to an artificial channel . . . ."); Anderson v. Bell, 433 So. 2d 1202, 1209 (Fla. 1983) ("[T]he owner of property that lies adjacent to or beneath a man-made, nonnavigable water body is not entitled to the beneficial use of the surface waters of the entire water body by sole virtue of the fact that he/she owns contiguous lands."); Tyler v. Lincoln, 513 S.E.2d 6, 9 (Ga. Ct. App. 1999) (explaining doctrine of riparian rights "is simply inapplicable" in situations where surface water is conveyed to a property "by means of a man-made structure, i.e., a culvert"), *rev'd on other grounds*, 272 Ga. 118 (2000); Thompson v. Enz, 154 N.W.2d 473, 481 (Mich. 1967) (finding riparian rights of access to a lake do not attach to land connected by an artificial canal); Crenshaw v. Graybeal, 597 So. 2d 650, 652 (Miss. 1992) (quoting Dycus v. Sillers, 557 So. 2d 486, 502 (Miss. 1990)) (stating titleholders of artificial lakes exclusively own the waters "whether the lake or pond has been built for commercial, drainage, recreation or aesthetic reasons").

378. *See* Wood v. S. River Drainage Dist., 422 S.W.2d 33, 38–39 (Mo. 1967) (denying relief to a resort owner who was located on a bay of the Mississippi River that was dammed as part of a drainage project when the bay was subsequently lowered for drainage reasons).

More specifically, riparian rights only attach to the "normal flow" of waters, as opposed to "floodwaters," into which category a dam's large reservoir could be placed.[379] At least one court has adopted this view in holding that waters impounded by dams are floodwaters that confer no riparian rights.[380]

What if an artificial watercourse becomes "natural"? Given enough time, an artificial watercourse such as a reservoir may "take on the characteristics of a natural watercourse and come to be regarded . . . as such."[381] In order to determine whether an artificial watercourse has become "natural," courts look to three criteria: "(1) whether the [watercourse] is temporary or permanent,[382] (2) the circumstances under which it was created,[383] and (3) the mode in which it has been used or enjoyed."[384] The main question underlying the three criteria is "whether surrounding landowners have come to treat the [watercourse] as a natural part of the landscape and adjusted their behavior and expectations accordingly."[385] "The longer an artificial watercourse is maintained at a constant level, the stronger the expectations are of shoreland owners that riparian rights will be recognized."[386]

Prescription can be a basis for attaching riparian rights to artificial waters.[387] "Prescriptive rights [are] frequently . . . claimed [in lakes] maintained at [artificially] high levels for [a] long period[] of time. [Some riparian] owners whose lands have been subject to prescriptive easements have asserted a reciprocal negative easement to prevent the lake from being lowered."[388]

Courts have found ways to protect the expectations of these riparian owners. Removal of a milldam was enjoined because the construction of cabins along the shore of the artificial lake and their maintenance for the prescriptive period gave the owners a reciprocal right to compel

379. Cummins v. Travis Cnty. Water Control & Improvement Dist. No. 17, 175 S.W.3d 34, 45 (Tex. App. 2005).

380. Roberson v. Red Bluff Water Power Control Dist., 142 S.W.2d 248, 254 (Tex. App. 1940).

381. TARLOCK, *supra* note 377, at § 3:26.

382. *Id.* (citing Lake Drummond Canal & Water co. v. Burnham, 60 S.E. 605 (N.C. 1908)).

383. *Id.* (citing Nu-Dwarf Farms, Inc. v. Stratbucker Farmers, Ltd., 470 N.W. 2d 772 (Neb. 1991)).

384. *Id.*

385. *Id.*

386. *Id.*

387. Ace Equip. Sales, Inc. v. Buccino, 848 A.2d 474, 481 (Conn. App. Ct. 2004) (holding a 50-year old pond created by dam had become a natural water body), *rev'd*, 273 Conn. 217 (2005).

388. TARLOCK, *supra* note 377, at § 3:27.

maintenance of the dam.[389] The dam, a "permanent obstruction" having been maintained for a great length of time, transformed the "artificial conditions created thereby . . . [to] natural conditions." [390] The court observed, "even nature herself became adapted to the new surrounding."[391] A native growth of hardwood timber had sprung up, "giving a natural effect and appearance to the conditions created by the dam."[392]

Prescriptive rights could also apply to those who depend on dams to keep their property dry. A landowner who mined and processed brines from a lakebed exposed by water diversions recovered damages when the lake flooded and inundated his plant because substantial expenditures had been made in reliance on the continued diversions.[393] Prescriptive rights have been asserted on the theory that a dam owner effectively dedicates the artificial level to the public, although courts generally reject the argument.[394]

Where a court refuses to recognize prescriptive rights in artificial lake levels, the following reasoning of the Nebraska Supreme Court is typical:

> Construction and maintenance of a dam over a long period of time may well tend to lead persons owning property above the dam to believe that a permanent and valuable right has been acquired, or is naturally present. The very fact that a man-made dam is obviously present, however, is sufficient to charge them with notice that the water level is artificial as distinguished from natural, and that its level may be lowered or returned to the natural state at any time. . . .
>
> We hold that where a dam has been built for the private convenience and advantage of the owner, he is not required to maintain and operate it for the benefit of an upper riparian owner who obtains advantages from its existence; and that the construction and maintenance of such a dam does not create any reciprocal rights in upstream proprietors based on prescription, dedication, and estoppel.[395]

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389. Brown v. Tomlinson, 272 S.E.2d 258, 259–60 (Ga. 1980) (holding appellant has a prescriptive easement prohibiting appellee from draining an artificially created water body from appellant's land by breaching a dam located on appellee's property).

390. Kray v. Muggli, 86 N.W. 882, 885 (Minn. 1901).

391. *Id.*

392. *Id.*

393. Natural Soda Prods. Co. v. Los Angeles, 143 P.2d 12, 16 (Cal. 1943).

394. Whitcher v. State, 181 A. 549, 554 (N.H. 1935).

395. Kiwanis Club Found., Inc. v. Yost, 139 N.W.2d 359, 361 (Neb. 1966); *accord* Green v. City of Williamstown, 848 F. Supp. 102, 106–07 (E.D. Ky. 1994) (finding *Kiwanis* rationale "persuasive").

Landowners thus face the challenge of proving riparian rights attach to their property—either because the watercourse is natural or should be considered natural. Even if riparian rights are recognized, the Supreme Court held in *Walton County v. Stop the Beach Renourishment* that riparian rights do not include an independent right of contact with the water under Florida law.[396] Instead, the right to contact with the water is a component of the riparian right of access to the water, and exists only to preserve the core riparian right of access.[397] Therefore, so long as access to the water is maintained, possibly through a public easement, a landowner's loss of contact with the water following dam removal may not be a compensable claim.

B. Before Dam Removal: Title to Submerged Lands

If an artificial riparian right is recognized as a compensable property right for purposes of a Fifth Amendment taking, the next question to ask is whether the right is lost. More specifically, is the riparian right lost because title to the newly exposed lands rests with someone other than the previously riparian landowner? Under the doctrine of navigability for title, each state owns the lands beneath its rivers and lakes that are navigable at the time of statehood.[398] Whether a river is navigable is a federal question to be determined by the navigability-in-fact test as stated in *The Daniel Ball*.[399] A river is navigable in fact when, in its ordinary state, it is used as, or capable of use as, a "highway[] for commerce, over which trade and travel are or may be conducted."[400] A state holds title to land under navigable-in-fact waters in trust to secure public use so that the people "may enjoy the navigation of the waters, carry on commerce over them, and have liberty of fishing therein freed from the obstruction or interference of private parties."[401]

To facilitate the building of dams, federal statutes empower a licensee to condemn or otherwise pay for the land to be flooded.[402] After the impoundment submerges new lands, title to the original riverbed of a navigable river remains with the state after the water's artificial

396. Walton Cnty. v. Stop the Beach Renourishment, Inc., 998 So. 2d 1102, 1114 (Fla. 2008), *aff'd sub nom.* Stop the Beach Renourishment, Inc. v. Fla. Dep't of Envtl. Prot., 130 S.Ct. 2592 (2010).

397. *Id.* at 1119.

398. Utah v. United States, 403 U.S. 9, 10 (1971) ("If indeed the lake were navigable at [the time of statehood], the claim of Utah would override any claim of the United States.").

399. The Daniel Ball, 77 U.S. (10 Wall.) 557, 563 (1871).

400. *Id.*

401. Ill. Cent. R.R. Co. v. Illinois, 146 U.S. 387, 452 (1892).

402. *See, e.g.*, 16 U.S.C. § 814 (2009).

expansion.[403] Defining the extent of the state's ownership, however, requires identifying submerged boundaries—no easy task. In order to answer the question of who holds title to these lands when they resurface, it must be determined who holds title to them after they are submerged. Title to the lands artificially flooded under the Federal Power Act and other federal legislation could be owned by the state, the condemner, or the abutting riparian owners.

The issue is further complicated by the additional question of which law to apply: federal or state. Federal courts ordinarily defer to state law to define property rights below the high-water mark.[404] "In the case of artificial reservoirs, however, it is unclear whether federal courts will apply [state or federal law]."[405] An exception to the rule of federal deference to state water law occurs in conflicts involving the federal navigation servitude.[406] Another occurs "where [riparian] title rests with or was derived from the Federal Government," in which case federal law governs.[407] Hydropower project licensees, preferring the application of federal law, sometimes rely upon this last exception, but artificial reservoirs are not typically created on federal land.[408] Instead, a federal licensee's title is generally derived from condemnation privileges; title to the land comes from state or private owners.[409] Hence, the creation of an artificial reservoir on state or private land will "not present a situation where the United States Government has never parted with title and its interest in the property continues."[410] Even where federal land is flooded, the argument can be made that use of the Federal Power Act or the Reclamation Act "to displace state riparian ownership laws would deprive the states of a fundamental attribute of state sovereignty—title and control over submerged lands."[411] In practice, federal courts will probably subject state claims to both federal and state law.[412]

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403. Roy H. Andes, *Divvying Atlantis: Who Owns the Land Beneath Navigable Manmade Reservoirs?*, 15 UCLA J. ENVTL. L. & POL'Y 83, 84 (1996) (arguing that ownership rests with the state both on legal and public policy grounds).

404. *E.g.*, Oregon ex. rel. State Land Bd. v. Corvallis Sand & Gravel, 429 U.S. 363, 370 (1977) ("The equal-footing doctrine did not, therefore, provide a basis for federal law to supersede the State's application of its own law in deciding title to the Bonelli land, and state law should have been applied unless there were present some other principle of federal law requiring state law to be displaced.").

405. Andes, *supra* note 403, at 91.

406. *Corvallis Sand & Gravel*, 429 U.S. at 375–76.

407. California ex rel. State Lands Comm'n v. United States, 457 U.S. 273, 283 (1982).

408. Andes, *supra* note 403, at 92.

409. *Id.*

410. *Id.* (internal quotation marks omitted).

411. *Id.*

412. *Id.* at 93.

Both recent and historic state cases show that title to private lands flooded by the construction of a federal dam transfers to the state. The California Supreme Court has held that the state's waterline statutes constitute an affirmative "conveyance," granting all land above the low-water mark to adjoining landowners.[413] By necessity, this conveys to the state "a 'claim' to all flooded lands below the low-water mark."[414] Finding otherwise would inhibit the state's public trust responsibilities.[415] Perhaps most significantly, these rights were defined using the current water levels artificially raised by dams.[416]

In another case, the California Supreme Court based its decision on the physical difficulty of reconstructing the original water levels, noting the "monumental evidentiary problem" that would be created.[417] Principles of prescription and adverse possession also supported a transfer of title to the state.[418] Furthermore, the artificial conditions created by the dam had become natural, placing "title to the lands covered by the waters of the lake [in] the same trust as that of lands covered by the waters of natural navigable lakes."[419]

The theory that a dam builder dedicates his submerged waters to the state was adopted as early as 1899 in *Village of Pewaukee v. Savoy*:

> When the owner of the land raised the lake level so as to cover it, such land immediately became subject to use by the public as a part of the natural lake bed, not by permission of the owner of the paper title, but by the same right that the public used any other part of the lake . . . . [This] brings into play the principle of estopped in paid, which precludes him from revoking what is legally considered a dedication of his land affected by his acts, to the public use.[420]

Thus, when a navigable river is artificially expanded, title to the submerged lands—state or private—passes to the state. But the question still remains: Does title to these submerged lands remain with the state after they reemerge?

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413. State v. Sup. Ct. of Lake Cnty. (*Lyon*), 625 P.2d 239, 242 (Cal. 1981).

414. Andes, *supra* note 403, at 96.

415. *Id.*

416. *Lyon*, 625 P.2d at 252 n.20 ("We conclude . . . the determination of the boundary . . . must be assessed in accordance with the shoreline of the lake as it exists presently.").

417. State v. Sup. Ct. of Placer Cnty. (*Fogerty*), 625 P.2d 256, 261 (Cal. 1981).

418. *Id.*

419. *Id.*

420. Village of Pewaukee v. Savoy, 79 N.W. 436, 438 (Wis. 1899).

C. After Dam Removal: Title to Reemerged Lands

The Supreme Court of Maine held title to the exposed lands does not transfer to the previously riparian owner: "When the waters of these Ponds were drained, it exposed the bed of the Ponds below low-water mark, but that did not transfer title to the exposed bed to the littoral proprietor."[421] In Florida, the common law doctrine of reliction, defined as "an increase of the land by a gradual and imperceptible withdrawal of any body of water," vests title to the new land with the riparian owner.[422] The doctrine was held inapplicable, however, in a state lake-lowering project that exposed shore land because, among other reasons, the water did not recede "by imperceptible degrees."[423] Florida courts also recognize the common law rule of avulsion. Avulsion is "the sudden or perceptible loss of *or addition to* land by the action of the water or a sudden change in the bed of a lake or the course of a stream."[424] If an avulsive event has occurred, "the boundary between public and private land remains the [mean high water line] as it existed before the avulsive event led to sudden and perceptible . . . additions to the shoreline."[425] Thus, title to newly exposed lands following dam removal does not transfer away from the state to the previously riparian owner.

D. A Taking Analysis of "Artificial" Riparian Rights

If the state's continued interest in the reemerged land survives dam removal, some previously riparian owners may claim a loss of riparian rights where their property no longer touches the water. *Stop the Beach Renourishment* cautioned that Florida law does not recognize an independent riparian right of contact with the water, and loss of that contact with the water is not a compensable taking so long as the riparian right of access to the water is preserved.[426] Assuming, *arguendo*, that the affected riparian is in a state that recognizes an independent riparian right of contact with the water as a protected property interest, which taking analysis applies? If the parcel as a whole rule[427] is applied, the elimination of one stick from the bundle of property rights, in this case the "stick" that represents riparian rights, is not a taking when the parcel

421. Ray v. E.I. DuPont de Nemours & Co., 120 A. 47, 49 (Me. 1923).

422. Bd. of Trs. of the Internal Improvement Trust Fund v. Sand Key Assocs., Ltd., 512 So. 2d 934, 936 (Fla. 1987).

423. Martin v. Busch, 112 So. 274, 287 (Fla. 1927).

424. *Sand Key*, 512 So.2d at 936 (emphasis added).

425. Walton Cnty. v. Stop the Beach Renourishment, Inc., 998 So. 2d 1102, 1114 (Fla. 2008), *cert. granted*, 129 S.Ct. 2792 (2009).

426. *Id.* at 1118.

427. *See supra* notes 231–34 and accompanying text.

is considered as a whole.[428] While the "fronting of a lot upon a navigable stream or bay often constitutes its chief value and desirability,"[429] the property retains the ability to be developed in an economically viable way after it loses contact with the water.[430] Moreover, the issue is moot if courts refuse to recognize an "artificial" riparian interest in the first place.

E. Flooding and Property Damage Occurring Above the High Water Mark

The flooding of downstream lands following dam removal presents another potential source of liability. The federal navigation servitude's protection from Fifth Amendment taking claims is limited to lands below the high water mark.[431] When a dam is constructed to improve navigability, the government must pay for the land it floods. In the seminal case of *Pumpelly v. Green Bay Co.*, the Supreme Court held that the plaintiff was owed compensation for the 640 acres of his land that were flooded: "Where real estate is actually invaded by superinduced additions of water, earth, sand, or other material, or by having any artificial structure placed on it, so as to effectually destroy or impair its usefulness, it is a taking within the meaning of the Constitution."[432] Thus when the government, through its creation of artificial structures, floods land where no such condition previously existed, a physical taking will be recognized by courts.

Where, however, intermittent flooding naturally occurred prior to the installation of an artificial structure, courts are less likely to find a physical taking.[433] For example, in *Leeth v. United States*, the Court of Federal Claims rejected a taking claim where the property had been

428. Tahoe-Sierra Pres. Council, Inc., v. Tahoe Reg'l Planning Agency, 535 U.S. 302, 327 (2002) (quoting Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 130 (1978)) (explaining the parcel as a whole rule for *Penn Central's* regulatory taking analysis).

429. Thiesen v. Gulf, Fla. & Ala. Ry. Co., 78 So. 491, 507 (Fla. 1918).

430. *See* John E. Fee, *Unearthing the Denominator in Regulatory Taking Claims*, 61 U. CHI. L. REV. 1535, 1557–62 (1994) (explaining that the takings inquiry should be whether the acreage whose inclusion is in question, presumably the nonriparian portions, could be independently developed in an economically viable way).

431. United States v. Kan. City Life Ins. Co., 339 U.S. 799, 804–05 (1950) (holding the United States liable for the destruction of the agricultural value of the land above the ordinary high water mark of the river).

432. Pumpelly v. Green Bay Co., 80 U.S. 166, 181 (1871); *see also* United States v. Lynah, 188 U.S. 445, 470 (1903) ("[W]here the government by the construction of a dam or other public works so floods lands belonging to an individual as to substantially destroy their value there is a taking within the scope of the Fifth Amendment.").

433. Sharon S. Tisher, *Everglades Restoration: a Constitutional Takings Analysis*, 10 J. LAND USE & ENVTL. L. 1, 13 (1994).

particularly susceptible to flooding prior to construction of the dam.[434] The court adopted this reasoning again in *Laughlin v. United States* holding no taking occurred when a marsh was created by a flood control project because the land was subject to the risk of periodic overflows by floodwater.[435] Can this be applied to situations where land floods downstream after the government removes a dam for purposes of navigation?

Courts should treat the downstream flooding that results from dam removal as a noncompensable injury rather than a per se physical taking. Dams provide flood control. Any riparian land that floods after a dam is removed was inherently vulnerable to flooding before the dam was constructed. *Leeth* and *Laughlin* counsel against the validity of any such taking claim.

Recently, landowners along the original—now dewatered—riverbed of the San Joaquin River filed a taking claim against the United States in response to the San Joaquin River Restoration Settlement's plan to restore water flows for endangered salmon.[436] The plaintiffs allege that the restoration will result in a taking of both their land and water rights.[437] Approximately sixty to one hundred miles of the old riverbed of the San Joaquin River have lain continuously dry, except during rare flood events, since the Friant Dam and its related irrigation channels were completed nearly sixty years ago.[438] In order to reintroduce salmon to the river, channel improvements will be made to the old riverbed and water will be procured from current users for release from the Friant Dam so that a continuous flow of water can be achieved down the river's length at a level sufficient to support salmon.[439] The riverbed currently has a zero-flow capacity; it has been flattened and farmed by plaintiffs.[440] The Bureau of Reclamation may therefore excavate portions of plaintiff's soil to a depth of between four to nine feet, and remove a width of 300 to 1,000 feet, for a length of twenty to thirty miles.[441] Head gate and slough control structures may be erected on and with access through the plaintiff's property.[442] An additional claim—similar to that in

434. Leeth v. United States, 22 Cl. Ct. 467 (1991).

435. *See* Laughlin v. United States, 22 Cl. Ct. 85, 102 (1990) (refusing to hold the Bureau of Reclamation liable for flooding as a result of "whatever climactic conditions nature chooses to deliver.").

436. Complaint, Wolfsen Land & Cattle Co., v. United States, No. 10-580 L (Fed. Cl. Aug. 26, 2010).

437. *Id.* at 15.

438. *Id.* at 9.

439. *Id.* at 13.

440. *Id.* at 17.

441. *Id.* at 18.

442. *Id.*

Kansas City[443]—asserts that restoration of the river will result in seepage and raising of underground water and salt levels so as to destroy the land's agricultural and cattle grazing potential.[444] The plaintiff speculates that "non-farmable 'forested/wooded plains' " will be created for up to one mile on either side of the river, thereby destroying "thousands of acres" of farmland.[445] The final complaint concerns a public easement, required by California law, which must be placed on the land to provide ingress and egress for public fishing and recreation activities on the river.[446] This case could have answered many of the important questions raised by this article, but on December 9, 2010, the parties to the case have agreed to pursue resolution of the case through alternative dispute resolution.[447]

VI. SEDIMENT: AN ADDITIONAL SOURCE OF LIABILITY FOLLOWING DAM REMOVAL

One final source of liability exists for dam owners following dam removal. All dams "create reservoirs behind the impoundment that will eventually fill with sediment."[448] There is currently no best management practice for sediment.[449] Some dam owners manage the accumulated sediment by dredging and removing it before dam removal. If dredging is not performed, the impoundment is either drained through the gates of the dam or, with a nongated dam, notching is performed to breach segments of the dam.[450]

Erosion, flooding, and the release of potentially toxic sediment may occur as a result. "[S]ediment may contain contaminants ranging from agricultural pesticides to industrial waste and heavy metals."[451] The river

443. United States v. Kan. City Life Ins. Co., 339 U.S. 799 (1950). In *Kansas City*, the plaintiff demanded compensation for the agricultural value of a portion of his land that was now unsuitable for farming after construction of a dam raised the water table so that the land would not drain adequately. *Id.* at 801–04.

444. *See* Complaint, Wolfsen Land & Cattle Co., *supra* note 436, at 19.

445. *Id.* at 20.

446. *Id.* at 22–23.

447. As of May 24, 2011, the parties are in the dispute resolution process. *See* Denial of Motion to Intervene, Wolfsen Land & Cattle Co. v. United States, No. 10-580 L (Fed. Cl. May 24, 2011), *available at* http://www.uscfc.uscourts.gov/sites/default/files/HEWITT.WOLFSEN052411.pdf.

448. Catherine C. Engberg, *The Dam Owner's Guide to Retirement Planning: Assessing Owner Liability for Downstream Sediment Flow from Obsolete Dams*, 21 STAN. ENVTL. L.J. 179, 179 (2002) (citing MARC REISNER, CADILLAC DESERT 472 (Penguin Books 1993) (1986)).

449. Stephanie Lindloff, DAM REMOVAL A CITIZEN'S GUIDE TO RESTORING RIVERS 91 (2000), *available at* http://www.wisconsinrivers.org/documents/dams/Dam%20Removal%20-%20A%20Citizens%20Guide%20to%20Saving%20Rivers.pdf.

450. Engberg, *supra* note 448.

451. *Id.* at 180.

itself will physically change as the sediment deposits in downstream channels, making them shallower and wider.[452] "As a result, [downstream] riparian land becomes more susceptible to increased erosion and property damage," including flooding.[453] These effects are greatest when a dam is removed without first dredging the impounded sediment.

The tort law of trespass may hold dam owners liable for the release of this sediment. A trespass action is conceptually appropriate because it requires showing only that the dam's accumulated sediment was a physical entry onto land.[454] Unfortunately, this has the effect of creating a disincentive for the voluntary removal of dams for fear of liability to downstream landowners. Traditional tort and property law principles afford a dam owner relatively few defenses.[455] To remedy this and create incentives for the removal of obsolete dams, courts can recognize the defenses of modern comparative negligence and public policy for the benefit of public safety and environmental restoration.[456]

Additionally, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),[457] empowers the EPA to order responsible parties to remove toxins from sediment before dam removal. In 1973, Niagara Mohawk Power Corporation petitioned FERC to remove the Fort Edward Dam on the Hudson River because repair of the dam structure would be economically infeasible.[458] The Commission granted the petition but required Niagara Mohawk to remove the sediment behind the impoundment.[459] Despite the efforts of the Commission to minimize the adverse effects, nearly 200 miles of the Hudson River were contaminated and the area was declared a Superfund site.[460] General Electric had discharged approximately 1.1 million pounds of PCBs into the Hudson River from two upstream plants.[461] As this example illustrates, liability for toxic sediments ultimately rests with their creator, which may or may not be the dam owner. This eliminates one major potential source of liability for voluntary dam removal where the dam owner played no role in the creation of the toxic sediment behind the impoundment.

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452. *Id.* at 185.
453. *Id.*
454. *Id.*
455. *Id.* at 222.
456. *Id.*
457. 42 U.S.C. §§ 9601–9675 (2010).
458. Niagara Mohawk Power Corp., 49 F.P.C. 1352, 1353 (1973).
459. *Id.* at 1357.
460. Pyle, *supra* note 109, at 110–11.
461. *Id.* at 110.

VII. CONCLUSION

As the preceding analysis shows, viable legal tools exist for removing obsolete dams whose existence no longer benefits the public. The ESA may be less effective than its drafters intended, but it remains a compelling reason for voluntary dam removal and has been successful in changing the way dams operate for the benefit of threatened species. Meanwhile, federal and state dam safety proceedings are also spurring voluntary dam removals, and likely offer the easiest route toward dam removal. Removal of unsafe dams benefits both people and the environment, and, as the majority of America's dams are nearing the end of their structural lifespan, removal is often more practical than repair. Finally, the government itself has now recognized the value of a free-flowing river over electric power generation and private profit. The FERC's Edwards Dam decommission order marked a historic shift in the way the federal government looks at dams.

These legal options can be exercised without fear of Fifth Amendment taking liability. When FERC denies renewal of a hydropower license, licensees are not entitled to compensation. A license is a privilege, not a right, and a project owner enjoys no guarantee of license renewal as a property interest. For ESA-mandated dam removal, the doctrine of public ownership of wildlife and *Lucas* background principles of state nuisance law defeat most taking claims. Reducing water rights for the benefit of a listed species remains a tumultuous topic, but current Fifth Amendment taking law favors no taking. Compensation claims by parties other than dam owners affected by dam removal should similarly fail. Upstream of removal, courts should treat the water body as an artificial one to which no riparian rights attach. If a court instead treats the reservoir as a natural water body to which riparian rights would normally attach, the core riparian right of access to the water can be easily preserved through the use of an easement. Downstream of removal, taking claims from flooding should not be recognized as the landowner's parcel was susceptible to flooding before the construction of the dam, and would be flooded in the water's natural, unobstructed state. Finally, while sediment liability is a concern for many dam owners, CERCLA will rest liability for toxic sediment with its creator, and courts should consider comparative negligence and the benefit inured to the public by dam removal when hearing tort actions for trespass.

Dam removal is a site-specific process and is not always appropriate for legal, political, and even ecological reasons. However, where the public interest favors it, dam removal can be accomplished using strategies that defeat or minimize taking claims and other bases for liability. Dangerous and dated dams must not obstruct the restoration of

America's treasured waters and doom our nation's most celebrated fishes.