

Legal Perspectives on Dam Removal

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For more than 100 years, America has led the world in dam building—blocking and harnessing rivers for hydropower, irrigation, flood control, water storage, and other purposes. Now, some 75,000 large dams span our nation's waterways and thousands of smaller dams plug our rivers and streams (NRC 1992, AR/FE/TU 1999, USACE 2001a). Although many dams provide important benefits, some no longer serve any significant purpose, or they have negative impacts that are greater than their benefits. In these cases, dam removal is becoming an increasingly attractive option for achieving conservation goals such as river and fisheries restoration, public safety goals such as elimination of unsafe dams, and other community-revitalization goals through increased recreation and green space.

In the past few decades, the United States has also been a world leader in protecting rivers and wildlife from threats such as point source pollution and unsound riverside development. To accomplish this, the United States has developed a series of laws—the Clean Water Act (CWA) and the Endangered Species Act (ESA), for example—designed to stop further damage to our rivers and to the fish and wildlife that depend on them. Today, our increasing interest in dam removal and our strong environmental protection laws are increasingly interacting, with some unexpected results.

Many legal issues are associated with removal of a dam. Decisions about whether or not to remove a dam are often made in the context of regulatory proceedings. In addition, once a decision has been made to remove a dam, federal, state, and local permits are required for the physical removal of the dam from the river. But because many of the laws that are triggered by a dam removal decision focus on environmental *protection*, they are not easily adapted to the environmental *restoration* activities associated with dam removal, and some laws actually discourage environmental restoration efforts.

This article outlines the legal issues associated with both decisions about whether or not to remove a dam and decisions about how to remove a dam. It then examines how imple-

THIS ARTICLE OUTLINES THE LEGAL ISSUES ASSOCIATED WITH DAM REMOVAL AND EXAMINES HOW ENVIRONMENTAL RESTORATION ACTIVITIES SUCH AS DAM REMOVAL FIT INTO THE EXISTING US LEGAL SYSTEM

mentation of environmental restoration activities such as dam removal fits into our existing legal system and how environmental laws may need to evolve to address the increasing interest in environmental restoration.

Legal issues associated with deciding whether to remove a dam

The decision of whether or not to remove a dam is not a centralized decision that is made by one entity. Depending on who owns the dam, what services the dam provides, and the type and significance of the dam's negative impacts, a decision on dam removal can be made by a federal agency, a state agency, or a private dam owner. Although sometimes dam removal is a voluntary undertaking, many dam removal decisions are the result of legal proceedings—either as a formal outcome of the proceedings or through a negotiated settlement associated with the proceedings.

Dam safety proceedings. The most common legal proceedings resulting in dam removal are safety-related inspections of dams at the state level. Most states have dam safety

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laws that require periodic state inspections of every dam over a certain size. For example, New Hampshire has jurisdiction over any structure that is more than 1.2 meters (m) tall or has a storage capacity of 2467 m³ or more (NHDES 2001). If a dam has safety problems, the state official usually can issue a notice to the dam owner requiring the owner to address those problems (e.g., State of Massachusetts 2002). Usually the state cannot order the dam to be removed, but it can instead order that the safety problem be eliminated. This provides the dam owner with a choice of either repairing the dam or removing it. Removal of smaller dams often costs less than repairs. In Wisconsin, for example, an examination of small dam removals showed that removal typically costs three to five times less than estimated safety repair costs (Born et al. 1998).

Hydropower dam regulation. Another regulatory arena that has resulted in dam removals is the regulation of hydropower dams by the Federal Energy Regulatory Commission (FERC) pursuant to the Federal Power Act (US Code, title 16, sec. 791 et seq.) (all US Code citations are available online at <http://uscode.house.gov>). Eleven FERC-regulated dams have been removed since 1963 (Emery 2001), with more than 25 currently under consideration.

There are three regulatory avenues for FERC involvement in a dam removal: (1) dam relicensing, (2) dam safety inspections, and (3) the surrender of a dam's operating license.

Hydropower dam relicensing. The first regulatory avenue is through hydropower dam relicensing. All hydropower dams not owned by the federal government must obtain an operating license from FERC, unless the dam has been issued an exemption or is on a nonnavigable river (US Code, title 16, sec. 797[e]). When these 30- to 50-year licenses expire, the dam owner must reapply to FERC to obtain a new license (US Code, title 16, sec. 808). As part of this licensing process, FERC must determine whether issuing a new license is in the public interest, providing equal consideration to power development and nonpower uses of the river (e.g., fish and wildlife habitat, recreation, aesthetics) (US Code, title 16, sec. 797[e]). In 1994, FERC issued a policy statement concluding that it had the authority as part of a relicensing proceeding to deny a relicensing application and to order a dam to be removed if it determines such an action is in the public interest (Project Decommissioning at Relicensing: Policy Statement, 60 Federal Register 339, Code of Federal Regulations [CFR], title 18, sec. 2.24; all CFR citations are available online at www.access.gpo.gov/nara). FERC expressly exercised this dam removal authority once, in their 1997 order requiring removal of the Edwards Dam on the Kennebec River in Maine (Edwards Mfg. Co., 81 FERC 61,225 [1997]). In addition, FERC has used this authority to study the option of dam removal in several cases, such as on the Clyde River in Vermont, where FERC recommended in a 1996 final environmental impact statement that a breached dam be removed as part of a five-dam relicensing (FERC 1996a)(the dam was subsequently

removed pursuant to a settlement agreement), and on the Presumpscot River in Maine, where FERC is currently considering the option of removing three dams as part of a five-dam relicensing (FERC 2001).

FERC relicensing proceedings have also led to dam removal through settlement agreements. Two dams have been removed through relicensing agreements (Emery 2001), with several additional settlements involving dam removal currently undergoing review at FERC. Some of these settlements have included removal of the dam that was the focus of the relicensing. For example, on the White Salmon River in Washington, FERC considered the alternative of removing the Condit Dam and instead ordered installation of fish passage devices (FERC 1996b). However, the dam owner determined that fish passage devices would be more expensive than dam removal, and thus entered into a settlement with intervening parties to remove the dam (PacifiCorp 1999). In addition, several relicensing settlements have included removal of smaller dams in a multidam hydroelectric project or nonhydro dams on tributary streams as mitigation for the ongoing operations of the primary hydropower dams. For example, on the Menominee River in Wisconsin, Wisconsin Electric entered into a comprehensive settlement for the relicensing of eight projects on the Menominee, Michigamme, and Paint Rivers. The parties agreed to support the relicensing (with certain operating conditions) in exchange for Wisconsin Electric removing three tributary dams (Order Issuing Non-Power License to Wisconsin Electric and Approving Decommissioning Plan, 96 FERC 61,009 [2001]).

FERC dam safety authority. The second regulatory avenue for FERC involvement in a dam removal is through dam safety inspections. FERC has the authority to inspect and ensure maintenance of dam safety at all dams under their jurisdiction (CFR, title 18, part 12). These inspections generally occur every 5 years (CFR, title 18, sec. 12.38). As in state dam safety situations, if FERC identifies safety problems at a dam, it will order the dam owner to alleviate the problem. The dam owner may choose to remove the dam rather than make repairs. For example, a FERC safety inspection of Mussers Dam on Middle Creek in Pennsylvania identified significant safety problems, and the dam owner decided it was cheaper to remove the dam than repair it (Order Accepting Surrender of License, Mussers Dam, 64 FERC 62,097 [1993]). At least four FERC-regulated dams have been removed where the cost of safety repairs was a factor in the removal decision (Emery 2001).

Issuance of license surrender order or nonpower license. The third regulatory avenue for FERC involvement in a dam removal is through the surrender of a dam's operating license. Whenever a FERC-licensed dam is slated for removal, FERC must approve the removal through a license surrender order or the issuance of a nonpower license (US Code, title 16, secs. 799, 808[f]). The question of when it is appropriate to use the license surrender versus the nonpower license approach is still evolving at FERC (e.g., APS 2001, PacifiCorp 2001, FERC 2002).

As part of issuing a license surrender or nonpower license, FERC can impose conditions on how the dam is removed. The requirement to obtain a FERC surrender order or nonpower license applies to removals related to dam relicensing and dam safety, as well as to voluntary removals unrelated to safety or relicensing. For example, the licensee of the Grist Mill Dam on the Souadabscook River in Maine received approval from FERC to surrender its license and complete a voluntary dam removal to restore habitat for migratory fish (Order on Surrender of Exemption, Grist Mill Dam. 84 FERC 61,196 [1998]). And FERC issued a nonpower license to Wisconsin Electric for the removal of the Sturgeon Dam in the Upper Menominee River Basin (Order Issuing Non-Power License to Wisconsin Electric and Approving Decommissioning Plan, 96 FERC 61,009 [2001]).

In addition, whenever a dam owner plans to cease generation of hydropower, the owner must obtain a license surrender or nonpower license from FERC. As part of this proceeding, FERC has the authority to order that the dam be removed, even if this is not the intention of the dam owner. In practice, however, when the dam owner does not wish to remove the dam, FERC has to date issued the license surrender or nonpower license without any associated obligation to remove the structure or demonstrate a plan for periodic dam safety maintenance (e.g., Order Accepting Surrender of Exemption, Walker Mill Hydroelectric Project, 91 FERC 62,208 [2000]).

The Endangered Species Act. The third main legal mandate that has resulted in dam removals is the Endangered Species Act (US Code, title 16, secs. 1531–1543). The ESA has never been used to compel dam removal, although it has been used to consider dam removal in a few cases and has in many cases been the impetus for voluntary removals.

Three sections of the ESA have bearing on dam removal decisions: (1) the prevention of jeopardy provisions in section 7, (2) the prohibition of taking a listed species in section 9, and (3) the recovery planning and implementation provisions in section 4(f).

Section 7 jeopardy consultations. Section 7 prohibits federal actions that jeopardize the continued existence of listed species or that destroy or adversely modify critical habitat (US Code, title 16, sec. 1536[a][2]). Critical habitat can include not only habitat currently occupied by the species but also habitat not currently occupied but “essential for the conservation of the species” (US Code, title 16, sec. 1532[5][A][ii]).

If an activity might result in jeopardy, the federal actor must consult with the US Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS). *Jeopardy* means threatening either survival or recovery of the species (see *Sierra Club v. Fish and Wildlife Service*, 245 F.3d 434 [5th Cir. 2001]). As a result of the consultation, NMFS or USFWS will issue a biological opinion determining whether jeopardy will result from the proposed action and recommending “reasonable and prudent alternatives” that can be taken to avoid jeopardy (US Code, title 16, sec. 1536[b][3]). ESA reg-

ulations mandate that reasonable and prudent alternatives be implementable in a manner consistent with the original project purposes and be within the legal authority of the federal actor (CFR, title 50, sec. 402.02). If no reasonable and prudent alternative exists, NMFS or USFWS must issue a jeopardy opinion with no reasonable and prudent alternative. At this point, an application for exemption from the provisions of the ESA could be made to the Endangered Species Committee (or “God Squad”) (US Code, title 16, sec. 1536[g]). In determining whether exemption is warranted, the God Squad may consider “alternative courses of action” that are not limited to original project purposes (US Code, title 16, secs. 1532[1], 1536[h]). The God Squad provision has been treated as a legal and political last resort, being used in only a very small number of cases (Weston 1993).

If a dam is threatening the continued survival or recovery of a species, and if the dam is not central to the purpose of the project and removal is within the authority of the federal actor, the ESA may authorize USFWS or NMFS to issue a jeopardy opinion that recommends removal of the dam. NMFS has recommended in a section 7 biological opinion the notching of a half-constructed dam (the Elk Creek Dam in Oregon) as the only alternative that would avoid jeopardy (NMFS 2001) and has in at least one other biological opinion (regarding the Eel River’s Potter Valley Project in California) recommended studying dam removal for salmon protection (NMFS 2000a). However, the Eel River dam removal study recommendation was not made as part of the biological opinion’s reasonable and prudent alternatives, but instead as part of the less enforceable recommended conservation measures. In addition, NMFS has considered—and temporarily rejected—dam breaching as an option for salmon protection and restoration in its 2000 biological opinion regarding four federal dams on the Lower Snake River in Washington (NMFS 2000b).

The use of section 7 to mandate removal has been problematic in several ways, however:

- First, section 7 applies only to actions taken (or licensed) by the federal government. Thus if there is no federal actor, this section will not apply.
- Second, section 7 is triggered only by a proposed action, and it can be a challenge to characterize the continued existence of a dam as a proposed action. In the case of the Snake River dams, the federal government’s annual operating plan for the dams has been sufficient to trigger section 7 consultation (e.g., *Idaho Department of Fish and Game, et al. v. National Marine Fisheries Service*, 56 F.3d 1071 [9th Cir. 1995]). However, in other situations, it is not settled whether section 7 consultation must be initiated for ongoing federal activities. For example, FERC has ruled that section 7 consultation obligations are not triggered by provisions in FERC licenses that allow FERC to reopen the license if necessary to protect fish and wildlife (Order Dismissing Conservation Groups’ Request for Rehearing re Puget Sound Energy, Inc., under P-2150. 95 FERC 61,319

[2001]), but this conclusion is currently on appeal in federal court (*Washington Trout, Washington Environmental Council and American Rivers v. Federal Energy Regulatory Commission*, case no. 01-71307 [US Court of Appeals, 9th Cir., filed 30 July 2001]).

- Third, another obstacle became apparent with the 2000 biological opinion for the Snake River dams: It can be hard to demonstrate not only that a dam jeopardizes the continued existence of an entire species, but also that dam removal is necessary to avoid jeopardy.
- Fourth, reasonable and prudent alternatives must be consistent with the original project purposes. Because dam removal usually eliminates the uses of the dam, it may be difficult for NMFS or USFWS to recommend dam removal unless the dam is not central to the project's purposes.
- Fifth, although the ESA enables designation of critical habitat that is currently unoccupied (such as fish habitat above a dam where the dam has no fish passage), section 7 may only prevent destruction or adverse modification of the habitat; it is currently unsettled whether it could also require or promote restoration of critical habitat. Thus where important spawning or rearing habitat for a listed species is flooded by a dam's reservoir, it is unclear whether section 7 could be used to mandate dam removal to restore that habitat.

Section 9's prohibition on taking listed species. Section 9 of the ESA forbids all persons from taking a listed species (US Code, title 16, sec. 1538). The act defines *take* as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (US Code, title 16, sec. 1532[19]). Harm to the listed species' habitat may also constitute a take (*Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*, 515 US 687 [1995]). To clarify the differences between section 9 and section 7 obligations, section 9 was designed to prevent an individual from fishing for and killing an endangered fish, though it also can apply to broader situations, such as the killing of fish in a dam's turbines. In contrast, section 7 was designed to address threats to the whole species, such as eliminating all fish passage on a river through construction of a dam.

As an exception to the section 9 prohibition on taking a species, the ESA allows USFWS or NMFS to permit "incidental" take when the proposed activity is not likely to jeopardize continued existence of the species and when the taking of species is not the purpose of the action. These incidental take permits may be issued only for federal actors in conjunction with a biological opinion issued pursuant to section 7 (called "incidental take statements") and for nonfederal actors in conjunction with a habitat conservation plan developed pursuant to section 10(a) (US Code, title 16, secs. 1536[b][4], 1536[o][2], 1539[a][2][A]).

Section 9 applies to all actors, and it applies when (for example) only one fish is affected, not just (as with section 7) when the action might jeopardize the existence of the whole

species. Section 9 could authorize USFWS or NMFS to declare continued operations of a dam an impermissible taking where the dam's operations injure or kill listed fish. To enforce this finding, USFWS and NMFS could only issue fines, but a citizen suit to enforce a takings finding could result in an injunction (US Code, title 16, sec. 1540; *Marbled Murrelet et al. v. Pacific Lumber Co.*, 83 F.3d 1060 [9th Cir. 1996]). Where listed fish are currently using fish passage devices at a dam with a resulting mortality rate, the case that the dam is causing a take is relatively straightforward. However, if a dam is currently a complete block to fish passage (with no fish kills below the dam), making a case that the dam causes a take may be more challenging. NMFS has initiated take proceedings seeking dam removal only once—at the Savage Rapids Dam on Oregon's Rogue River, where ineffective fish passage is harming threatened coho salmon (*National Marine Fisheries Service v. Grants Pass Irrigation District*, no. 98-3034-HO [D.Or. filed 22 April 1998]). As part of a comprehensive settlement of both the Savage Rapids take proceedings and an associated state court water rights adjudication, NMFS issued a 1-year incidental take permit justified by the planned removal of the dam (NOAA 2001).

ESA's recovery planning and implementation obligations. The ESA also requires USFWS and NMFS to develop and implement recovery plans for "the conservation and survival" of threatened and endangered species unless the agency finds that "such a plan will not promote the conservation of the species" (US Code, title 16, sec. 1533[f]). It also requires all federal agencies to carry out programs aimed at recovery and requires USFWS and NMFS to use all programs they administer to further conserve the species (US Code, title 16, sec. 1536[a][1]). These provisions can be interpreted to provide authority to NMFS and USFWS to develop and implement species recovery plans that include dam removal and to require other agencies to follow those plans. However, this has not happened to date. In practice, the recovery planning and program administration obligations in the act have generally not been enforceable (Cheever 1996), and because of funding and political constraints, recovery plans are not always developed. (Of the 1244 listed species in the United States as of 31 July 2001, recovery plans have been developed for only 975 species [USFWS 2001]).

ESA as a factor in other dam removal decisions. Despite the fact that no dams have been ordered to be removed under ESA authority, the presence of listed species at a dam (particularly fish) has been a significant factor in many decisions to remove dams. This includes voluntary dam removals, such as on Clear Creek in California, where the Saeltzer Dam was removed in 2000 to restore habitat for threatened and endangered salmon and trout species (Hepler 2001), as well as formal proceedings to determine whether a dam should be removed, such as the CalFed Bay-Delta Program's consideration of removing Englebright Dam on the Yuba River in California to restore chinook salmon and steelhead (FOTR 1999). In fact, all seven dam removals in the Pacific Northwest and

California in 1999, 2000, and 2001 were conducted to restore endangered fishes (American Rivers 2002).

Obtaining permits to remove a dam

Removing a dam from a river requires permits from state, federal, and local authorities. These permits are generally required to ensure that the removal is done safely and minimizes short- and long-term impacts to the river and riparian area. Although most states have the same basic categories of permits required for a dam removal, there is substantial variation from state to state in the level of review required and the standards that must be met to permit a dam removal. In some states, dam removal permitting is relatively easy, and in other states, it is difficult. Below is a summary of the types of federal, state, and local permits that may be required for removal.

Federal permits or requirements.

Clean Water Act section 404 permit. Most dam removals require a CWA section 404 permit, issued by the US Army Corps of Engineers (Corps) for dredging of a navigable waterway (US Code, title 33, sec. 1344). A guideline pursuant to this statutory requirement establishes a policy of no net loss to wetlands (EPA and Department of the Army 1990). To obtain Corps approval, the project (a) should not cause or contribute to significant degradation of the waters or result in a net loss of wetlands, (b) should be designed to have minimal adverse impact, (c) should not have any practicable alternatives, and (d) should be in the public interest. In some cases, dam removal will result in a net loss of wetlands. To obtain a permit in these situations, the Corps will have to find that the benefits of dam removal outweigh the loss of wetlands, or that the loss of wetlands are mitigated by creation of wetlands elsewhere. In October 2001, the Corps issued a regulatory guidance letter that permits mitigation of wetlands impacts with nonwetland habitats (USACE 2001b). Other federal agencies are currently commenting on this letter, and it remains to be seen whether the letter effectively abandons the policy of no net loss of wetlands.

Rivers and Harbors Act permit. In conjunction with a CWA section 404 permit, the Corps will issue a Rivers and Harbors Act section 10 permit (US Code, title 33, sec. 403). The Rivers and Harbors Act is administered by the Corps for federal activities affecting a navigable waterway. The Corps will issue the permit if there is no adverse impact on interstate navigation.

FERC license surrender or nonpower license approval. If the dam to be removed is a FERC-regulated hydropower dam, the dam owner will have to apply for surrender of the FERC license or issuance of a nonpower license, as discussed in the section "Hydropower dam regulation," above.

National Environmental Policy Act (NEPA) review. A permitting or licensing action by the Corps or FERC may require the preparation of an environmental impact statement or environmental assessment pursuant to NEPA (US Code, title 42, sec. 4321 et seq.). A NEPA environmental document

may already have been prepared as part of the process of deciding whether to remove the dam. If this is the case, it may not be necessary to prepare a new NEPA document, or only a supplemental document may be required.

Federal consultations. As part of issuing their permits, the Corps or FERC may need to conduct the following consultations:

- **ESA section 7 consultation.** If threatened or endangered species are present at or near the dam, the Corps or FERC may need to consult with USFWS or NMFS regarding the impact of the removal on these species, as discussed above in the section "The Endangered Species Act."
- **Magnuson-Stevens Act consultation.** The Corps and FERC may also need to consult with NMFS pursuant to the Magnuson-Stevens Act regarding the impact of the removal on any fishery management plan developed by a regional fishery management council (US Code, title 16, sec. 1855[b][2]). This consultation is done to ensure that the removal will not adversely affect any essential fish habitat established in the fishery management plan.
- **National Historic Preservation Act consultation.** Corps or FERC activities may also trigger an obligation to assess the impact of the proposed action on historic properties pursuant to section 106 of the National Historic Preservation Act (US Code, title 16, sec. 470[f]). In assessing this impact, FERC or the Corps must consult with the state historic preservation officer. Affected historic properties may range from newly exposed archaeological sites to the dam itself. The presence of a dam on the National Register of Historic Places (or eligibility for listing on the register) does not automatically preclude removal. In many situations, proper documentation of the dam before removal may be sufficient to preserve the historic values of the dam (CFR, title 36, sec. 800.1 et seq.).

State certifications. The Corps and FERC decisions also trigger several federal statutes that require the state to issue a certification that the actions are consistent with the state's implementation of federal law.

- **Water-quality certification.** For the Corps to issue a CWA section 404 permit or for FERC to issue a license surrender order or nonpower license, the state must issue a water-quality certification pursuant to CWA section 401 (US Code, title 33, sec. 1341). This certification states that the proposed activity will not result in the violation of state water-quality standards. The state may issue conditions for how the dam should be removed as part of its certification.
- **Coastal Zone Management Act certification.** If the dam is located in a coastal zone, in order for the Corps or FERC to permit the dam removal, the state must issue a certification pursuant to the Coastal Zone Management Act (US Code, title 16, sec. 1451 et seq.). This certification states that the proposed activity is consistent with the state's approved coastal zone management program.

Again, the state may issue conditions for how the dam should be removed as part of its certification.

State permits.

Waterways development permits. Some states have laws that regulate the development of their waterways for hydropower, navigation, and other purposes. These laws are generally adopted to address construction of a new dam or alteration of an existing dam but may also apply to dam removal.

Dam safety permits. Most states have regulations that require a permit for any activity that will affect the safety of a dam. Removal of a dam may require such a permit.

State environmental policy act review. Many states have an environmental impact review statute similar to the federal NEPA statute. The removal of a dam may trigger the state requirement to prepare an environmental impact document. Usually the federal and state requirements can be met by preparing the same environmental impact document.

Historic preservation review. Most states require that before any state permit is issued, historic and archaeological issues must be investigated and approved by the state historic preservation officer. This review can usually be done in conjunction with the federal historic preservation review, described earlier.

Resetting the floodplain. Most states will require a review of any activity that might change the 100-year floodplain. The applicant may be required to determine the new elevation for the 100-year floodplain once the dam is gone. The Federal Emergency Management Agency would then use the analysis to create new maps.

State certifications. State certification requirements pursuant to federal laws are discussed above, under "Federal permits or requirements."

Municipal permits. The act of demolishing the structure of the dam may require a demolition permit from the local municipality, and the construction of a temporary cofferdam or the restoration of the riverbank may require a building permit from the local municipality.

Legal impediments to ecological restoration

Environmental laws protect against deviations from the status quo. Environmental laws in the United States focus primarily on environmental protection. Recently, however, there has been an evolution of interest in environmental science and activism from protection to restoration. In many areas, the legal system has not kept up with this evolution. Many environmental laws have protection and restoration goals. For example, the stated goal of the Clean Water Act is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters" (US Code, title 33, sec. 1251), and the goal of the ESA also focuses on recovery of listed species (US Code, title 16, secs. 1531[b], 1532[3]). But

environmental laws effective at environmental protection (such as the CWA and ESA) are essentially effective only at maintaining the status quo. For example, the Clean Water Act's most effective provisions are focused on preventing pollution from entering rivers and other waterways, and implementation of the Endangered Species Act is focused primarily on preventing further degradation of an endangered species (Cheever 1996 discusses how ESA implementation focuses on the act's prohibitions and not on its purpose). Unlike environmental protection efforts, environmental restoration projects such as dam removal result in a deviation from the status quo (albeit positive). As a result, where laws focus on preventing deviations from the status quo to meet their protection goals, they can actually discourage restoration activities.

Dam removal is a good example of this problem. Although dams are being removed to accomplish ecological restoration goals, these removals are often being accomplished in spite of environmental laws designed to protect those resources. Instead, the decision to remove a dam may be accomplished through laws designed to allow a balancing of interests and negative deviations from the status quo, such as hydropower dam relicensing pursuant to the Federal Power Act and state dam safety laws.

Dam removal is not the only situation where this dichotomy exists. For example, the effort to reoperate the Glen Canyon Dam on the Colorado River to restore the health of the river through the Grand Canyon has met several regulatory obstacles designed to stop environmental degradation (Schmidt et al. 1998, Miller 2000). The everglades restoration effort has also encountered challenges from environmental protection laws (Rizzardi 2000).

Example: The Edwards Dam on the Kennebec River. The removal of the Edwards Dam on the Kennebec River in Maine provides a good example of this dichotomy. Built in 1837, Edwards Dam blocked the migration route for seven target species of anadromous fish—Atlantic salmon (*Salmo salar*), striped bass (*Morone saxatilis*), American shad (*Alosa sapidissima*), alewife (*Alosa pseudoharengus*), rainbow smelt (*Osmerus mordax mordax*), Atlantic sturgeon (*Acipenser oxyrinchus*), and endangered shortnose sturgeon (*Acipenser brevirostrum*). The dam also flooded unique head-of-tide habitat important for the life cycles of many of the migratory fish. The dam's license to generate power expired in 1993, and the dam owners sought a new 30-year license from FERC. In response, four environmental groups and state and federal resource agencies intervened in the licensing to seek dam removal.

After a long regulatory battle, in 1997 FERC denied the dam owner's application for license renewal and, for the first time ever, ordered the dam to be removed against the wishes of its owner (Edwards Mfg. Co., 81 FERC 61,225 [1997]). Pursuant to a subsequent settlement agreement, the dam was removed in 1999. Today, the former impoundment has been restored to a healthy river ecosystem that supports a diverse array

of fish and wildlife, including the seven target anadromous fish species (NRCM 2001).

Although there were compelling environmental reasons to remove Edwards Dam, environmental laws provided little if any leverage to remove the dam—they actually created some challenges for designing and permitting the removal. The Edwards removal involved two decision points where environmental laws came into play: the decision whether to order dam removal and the permitting of the removal itself.

The dam removal decision. The most significant environmental law involved in the dam removal decision was the Endangered Species Act. The shortnose sturgeon—a federally listed endangered species—was present below the dam and historically migrated upstream above Edwards to spawn in the impoundment area. The relicensing proceeding required FERC to consult with USFWS and NMFS pursuant to ESA section 7. But the ESA provided no legal tools to promote dam removal. No critical habitat had been designated for the sturgeon, and no recovery plan had ever been developed. The Edwards Dam itself did not jeopardize continued existence of the shortnose sturgeon; it was simply inhibiting the species' recovery. However, section 7 simply creates an obligation not to destroy existing habitat. It has not been used to require restoration of historic habitat. In addition, even if USFWS and NMFS had developed a recovery plan under section 4(f) that called for removal of Edwards Dam to restore historic habitat, it still would have been difficult to mandate removal pursuant to the plan. FERC was the decisionmaker in the Edwards case, and FERC has no recovery obligation under section 4(f) of the ESA. Instead, an argument would have to be mounted that FERC's ESA section 7(a)(1) obligation to carry out programs aimed at recovery mandates that FERC follow the USFWS and NMFS recovery plan and order dam removal. Whether section 7(a)(1) is enforceable in this manner is unsettled, though a majority of courts have rejected these claims (Cheever 1996).

In addition, pursuant to CWA section 401, the state of Maine was charged with certifying whether the licensing would violate state water-quality standards. Removal of the dam would probably improve water quality, and the state's denial of certification would have prevented FERC from issuing a new license. Section 401 certification conditions regarding dam relicensing traditionally require actions that prevent further degradation of numeric water-quality standards (such as increased downstream flows to prevent dissolved oxygen violations), though states have increasingly been imposing non-status quo actions, such as building fishways to meet descriptive water-quality standards or designated uses (such as restoring native fish populations to river stretches designated as habitat for native fish). Although the state supported removal of the dam, it felt that it had no avenue through its Clean Water Act authority to mandate removal to improve numeric water-quality conditions above the dam, though it did recommend fish passage to ensure native fish access to historic spawning grounds (State of Maine 1996). In the end, the Edwards Dam removal resulted in significant

improvement to the Kennebec's water quality—the former impoundment area changed from failing to meet Maine's minimum water-quality standard before dam removal to attainment of Class B standards within 2 months after removal (NRCM 2001).

Finally, as part of the FERC relicensing process, the USFWS and NMFS have authority to recommend conditions on a proposed license pursuant to the Federal Power Act and the Fish and Wildlife Coordination Act (US Code, title 16, sec. 661 et seq.). Although NMFS and USFWS may submit any recommended license conditions for FERC's consideration, the two agencies are granted authority to impose mandatory conditions for construction of fishways—FERC must include the USFWS and NMFS conditions in the license (US Code, title 16, sec. 811). Although the purpose of NMFS's and USFWS's involvement in FERC relicensing includes "wildlife conservation and rehabilitation" (US Code, title 16, sec. 661), they are limited to mandating fishways to enable passage at the dam—they cannot mandate dam removal even if that is the only way to achieve fish passage. In the Edwards Dam case, USFWS and NMFS had concluded that fishways would not be effective at passing the target fish species, and that dam removal was the only way the target fish species could be restored. Nevertheless, the only action they could mandate to provide fish passage at the dam was construction of fishways. Thus the agencies *recommended* dam removal, but *ordered* construction of fishways (e.g., NMFS 1996).

In the end, no environmental law provided sufficient authority to remove Edwards Dam. Instead, a nonenvironmental law—the Federal Power Act—was used to obtain an order to remove the dam. FERC's relicensing decision pursuant to the Federal Power Act was based on the economic conclusion that construction of fish passage devices would cost 1.7 times more than dam removal and on the biological conclusion that even if a fish passage device were constructed, it could be used by only three of the seven target fish species (Edwards Mfg. Co., 81 FERC 61,225 [1997]). (American Rivers [2001] provides further information about the FERC relicensing process that led to dam removal.)

Obtaining permits for removal. In addition to obtaining an order from FERC to remove Edwards Dam, project proponents also were required to obtain permits to carry out the removal, as described in the section "Obtaining permits to remove a dam," above.

Obtaining a CWA section 404 permit for the removal triggered a second obligation pursuant to ESA section 7 to consult with NMFS and USFWS about impacts to the shortnose sturgeon. Immediately below the dam was a large scour hole created by water flowing over the dam. The sturgeon used this hole for spawning because they were no longer able to move upstream to their historic spawning holes above the dam. Upon removal of the dam, it was expected (and it came to pass) that this hole would be filled in by debris and coarse sediments transported downstream. Although this spawning hole would be lost, access to the sturgeon's historic spawning areas would be reopened through dam removal. If the spawn-

ing hole below the dam had been formally designated as critical habitat for the shortnose sturgeon, dam removal may have been hard to accomplish because of the complete destruction of this critical habitat. However, critical habitat had never been designated for the shortnose sturgeon on the Kennebec. Thus although there was concern about the loss of the spawning hole, a formal conflict with ESA on this issue did not exist.

ESA section 9 also created challenges for the Edwards Dam removal. If removal of Edwards Dam harmed or killed any of the shortnose sturgeon residing in the river, it would have been in violation of section 9's prohibition against taking of an endangered species. The timing and method of the removal was substantially changed to avoid violation of this provision.

Conclusions

As the Edwards Dam removal illustrates, existing laws that are effective at ensuring environmental protection will probably not be effective at promoting environmental restoration activities such as dam removal. The resulting question is how to allow positive deviations from the environmental status quo while not weakening laws and creating loopholes that will allow more negative deviations from the status quo. Basic exemption from environmental protection laws for restoration projects is not advisable, because environmental restoration projects do have impacts that need to be reviewed and minimized.

A better approach may be to provide regulatory direction or guidance that allows a decisionmaker to provide some accommodation for projects with restoration as their primary purpose. For example, a state or federal agency could establish a policy that enables flexibility in the interpretation of permitting requirements when a proposed project's primary purpose is environmental restoration. An agency could also direct permitting officials to consider the long-term benefits of a restoration project as mitigating factors in determining whether the short-term impacts of the project are acceptable. The challenge is to develop this in a fashion that avoids the appearance (or reality) of unfair treatment or relies so heavily on professional judgment that it renders the regulations unpredictable or unenforceable. And if restoration activities are given special accommodation, it will be especially important that the project proponents demonstrate that the restoration goals were actually met.

In addition to enabling existing laws to accommodate restoration in a more effective manner, these laws should be able to meet their goals of actively promoting environmental restoration. The experience to date indicates that this has been either legally or politically difficult. It remains to be seen whether the increasing attention to restoration in the scientific and activist communities will help move implementation of environmental laws toward their restoration goals or instead demonstrate the need for new legislation dedicated to environmental restoration.

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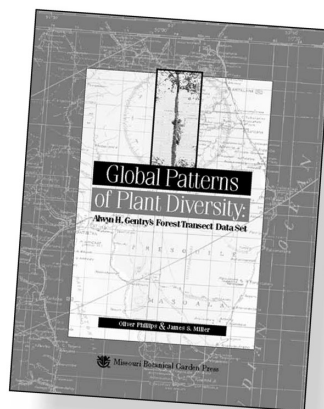
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