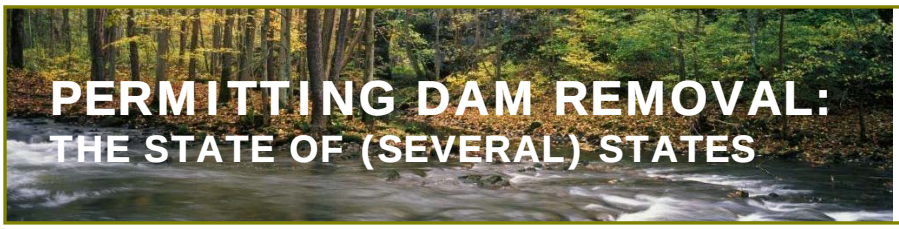

PERMITTING DAM REMOVAL:
THE STATE OF (SEVERAL) STATES

American Rivers
Thriving By Nature

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Dam owners and communities are increasingly considering the option of removing dams that are unsafe, obsolete or simply causing more harm than good. But as more dam removal projects are proposed, many states are finding that the application of existing permitting processes can be unreasonably complicated, time consuming, and expensive for both the applicant and regulatory authorities. Indeed, dam failures have occurred during the prolonged process of permitting their controlled removal.

Despite the removal of at least 200 dams in the past six years, many states consider dam removal to be a new concept. And, due to its multidisciplinary nature, permitting decisions often fall under the jurisdiction of several entities. This can result in a number of factors that further complicate the permitting process: how to address conflicting goals, procedures and requirements among relevant authorities; the application of technical or regulatory standards that may be inappropriate for dam removal and associated restoration activities; and, the perennial challenge of effective inter- and intra-agency coordination.

Several states are now seeking advice from counterparts that have proactively addressed the regulatory challenges associated with dam removal projects. Many such challenges and recommendations were acknowledged in "Dam Removal: A New Option for a New Century."[1] This report was collaboratively developed by twenty-six experts from across the nation who participated in a two-year long dialogue on dam removal that was convened by The Aspen Institute.

States that have experienced notable success in the regulatory and planning aspects of dam removal projects tend to have several commonalities. These characteristics are as follows:

Active and dedicated commitment to achieve dam safety

The removal of a dam eliminates a public safety hazard and the liability of dam ownership. Therefore, removal is an option that must be recognized and considered whenever a dam is at a decision point, such as the administration and enforcement of state dam safety standards, post-disaster response periods, and during watershed planning in general. For example, Pennsylvania Governor Edward G. Rendell and the Pennsylvania Department of Environmental Protection (PADEP) are considered national leaders in promoting dam safety.

[1] Aspen Institute. 2002. Dam Removal: A New Option for a New Century. The Aspen Institute, Program on Energy, the Environment, and the Economy. 68pp. Available at: http://www.aspeninstitute.org.

In 2004, the Association of State Dam Safety Officials recognized Governor Rendell with their National Award of Merit. In recent years, Pennsylvania has instituted, and follows through on, a variety of administrative and enforcement actions necessary to achieve dam safety. The state's dedication to achieving dam safety includes consideration of dam removal on a regular basis (i.e., no dam is the safest dam). As a result, Pennsylvania has removed more than 70 dams since just 2000. This is in clear contrast to the many states that do not even acknowledge dam removal as an option during enforcement or administrative actions, and therefore have removed few, if any, dams within the same period. As Pennsylvania has shown, states that provide dam owners with information about the range of options to achieve safe dam conditions enable dam owners to make fully informed decisions, and in some cases, that decision is to remove the dam.

Agency assistance in planning and funding

Given the relative newness of dam removal as an option, dam owners, consultants and the general public benefit greatly from any assistance that can be provided by regulatory agencies. Such assistance may be as basic as an agency fact sheet or web site with links to appropriate resources.

Comprehensive assistance is provided by agencies in Wisconsin[2], New Hampshire[3], Massachusetts[4] and Pennsylvania. These states have established programs that provide technical, regulatory and financial assistance to interested parties. Certainly, states that provide a dedicated grant or low-interest loan program for the purpose of achieving dam safety have experienced success in removing dams. However, it can be argued that agency assistance in seeking grant funding is equally important. In fact, this type of assistance has leveraged significant funding in states that have few dedicated state funds.

Pennsylvania again provides an excellent example. The Pennsylvania Fish and Boat Commission provides technical and financial assistance statewide under their Consultation and Grant Program for Fish Passage and Habitat Restoration. Interested landowners with dams or other blockages are eligible to request assistance for their dam removal project. The PADEP has also dedicated funding specifically for dam removal projects through a major bond initiative, disbursed via the "Growing Greener" competitive grant program. American Rivers, a national river conservation organization, was awarded $767,000 over three years (2003-2006) for allocation to projects throughout the state. This award has enabled American Rivers to assist in funding 53 dam removal or fish passage projects statewide. This highly successful program has leveraged over $3.4 million in matching funds from other state agencies, federal agencies, private foundations and additional funding sources. The PADEP is currently considering a $1.4 million proposal from American Rivers to continue and expand this successful program for another three years.

Predictable regulatory process

Applicants who propose to remove dams in states with minimal experience with dam removal often discover that the relevant regulatory agencies have difficulty in providing clear and consistent guidance on which to base the study and design of a permitable project. States must be better prepared to advise potential applicants of the regulatory requirements, necessary studies, consultations and approvals, and policies that may apply to a dam removal

[2] See http://dnr.wi.gov/org/water/wm/dsfm/dams/removal.html
[3] See http://www.des.state.nh.us/dam/damremoval/index.html
[4] See http://www.mass.gov/dfwele/river/

project. It is crucial for applicants to be aware of such requirements during the planning and design phase of projects. This enables the applicant and their consultant to plan and budget the project accordingly. For example, to address this need, the New Hampshire Department of Environmental Services has published "Guidelines to the Regulatory Process for Dam Removal Projects in New Hampshire."[5] This guidebook provides a comprehensive road map for potential applicants, their consultants, the general public and relevant regulatory entities.

Guidance documents on key issues

For any type of project, it is far more efficient and effective for agencies to develop guidance documents for technical or procedural issues that are commonly problematic in project design and planning, than to evaluate the appropriateness of the proposed approach on a project-by-project basis. Each dam removal project is unique, and agencies may easily become mired in the nuances of project specifics. Decisions based entirely on project specifics may not serve as appropriate guidance or precedent for similar issues on future projects. Therefore, because certain issues are likely to be common to many dam removal proposals (e.g., sediment management, historic preservation concerns, effects to wetlands), agencies are advised to develop policy guidance that will enable consistent decisions on projects of a similar type. For example, the New Hampshire Department of Environmental Services has published an "Evaluation of Sediment Quality Guidance Document"[6] and an accompanying document "Evaluation of Sediment Quality for Dam Removal."[7]

Single application package for permits and approvals

Properly removing a dam is generally considered to be an activity that requires a multidisciplinary approach to planning, design and implementation. Therefore, changing one portion of the project has the potential to affect other aspects of the project. In many states, multiple agencies and/or multiple divisions of the same agency have regulatory authority over different aspects of a dam removal proposal. Some states require applicants to submit separate applications and supplemental materials for each individual permit or approval. This approach can be confusing to the applicant, excessively expensive (e.g., preparation of plans at different scales), generally inefficient, and increases the likelihood of inconsistencies among the applications for the same project. The multiple application approach also has the potential to cause changes-by-jurisdiction that are ultimately not reflected or evaluated in an integrated fashion. This piecemeal approach to regulatory review can be especially problematic for multidisciplinary (and multi-jurisdictional) projects such as dam removal.

In contrast, states that have successfully implemented multiple dam removal projects often feature a joint permit application package (e.g., Wisconsin, Pennsylvania, New Hampshire). This approach typically features a single agency point-of-contact who is responsible for disseminating the application and materials to relevant authorities for review under their jurisdiction. This process is also more likely to provide coordinated inter-agency and intra-agency reviews and evaluations, rather than a piecemeal review-by-jurisdiction that may not adequately evaluate the project in full context.

[5] See http://www.des.state.nh.us/dam/damRemoval/Guidelines.pdf
[6] See http://www.des.state.nh.us/PDF/WD-04-9_Evaluation_of_Sediment.pdf
[7] Contact NH River Restoration Coordinator for a copy, (603) 271-3406.

Forum to address programmatic challenges

A final commonality among states with successful dam removal experiences is the establishment of an inter-agency and/or intra-agency forum to discuss and address programmatic challenges. Such a forum may include discussion of specific project proposals, but the overarching goal should be to provide the relevant authorities with an opportunity to voice concerns about issues on a programmatic level. The multidisciplinary and multi-jurisdictional nature of dam removal often presents a challenge to regulators. However, states that embrace this challenge as an opportunity to discuss programmatic issues have reaped benefits, often extending beyond the issue of dam removal specifically.

New Hampshire and Vermont have dam removal task forces that meet on a regular basis. These groups include representatives from a variety of state and federal agencies, as well as conservation organizations, local interests and academia. The forums provided by these meetings provide important (and all too rare) opportunities to discuss concerns such as conflicting authorities, interpretation and clarification of administrative rules, as well as issues to be addressed through collaborative activities.

OVERVIEW OF PERMITTING REQUIREMENTS FOR SELECTED STATES: Connecticut, New Hampshire, New Jersey, New York and Pennsylvania

The remainder of this paper provides a summary of permitting requirements for dam removal projects, beginning with a brief summary of federal permitting requirements, followed by a more detailed review of permitting requirements for selected states.

Readers who plan to undertake a dam removal project are strongly advised to confirm federal and state permitting requirements with the applicable regulatory agencies. Rules and regulations can change and some regulatory decisions may be determined on a case-by-case basis. This paper is not intended to be a definitive resource on permitting requirements for dam removal projects.

Federal Requirements

Federal Permits

Clean Water Act (CWA), Section 404 Permit. Most dam removals will require a CWA Section 404 permit issued by the U.S. Army Corps of Engineers (USACE) for activities involving the discharge of dredged or fill materials into waters of the United States, 33 U.S.C. 1344. Section 404(e) of the CWA allows for the issuance of general permits on a statewide basis, which operate in conjunction with applicable State regulatory programs. Several states have developed such "State Programmatic General Permits" (SPGP) which are commonly used for dam removal projects that meet the eligibility requirements of the particular SPGP.

Rivers and Harbors Act, Section 10 Permit. In conjunction with the Section 404 permit, the USACE will also issue a Section 10 permit for federal activities affecting navigable waterways, 33 U.S.C. 403. The permit will be issued if there is no adverse impact on interstate navigation.

FERC License Surrender or Non-Power License Approval. If the dam to be removed is a hydropower dam regulated by the Federal Energy Regulatory Commission (FERC), the dam owner will have to apply for surrender of the FERC license or issuance of a non-power license,

16 U.S.C. 799, 808(f). FERC can impose conditions on how the dam should be removed as part of this approval.

National Environmental Policy Act Review. Actions by federal agencies (e.g., permits, funding, technical assistance) may require compliance with the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq. NEPA requires that an Environmental Assessment (EA) be prepared to determine whether a proposed dam removal would have a significant effect on the quality of the environment. Depending on whether the project's impacts are considered significant, either a Finding of No Significant Impact (FONSI) would be issued or an Environmental Impact Statement (EIS) would be prepared.

Federal Consultations

As part of issuing federal permits and/or providing federal financial support or technical assistance, federal agencies may be required to conduct the consultations to meet the requirements of other federal laws, including but not limited to:

Endangered Species Act, 16 U.S.C. 1531-1543, requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS) if federally threatened or endangered species could be affected by the proposed action.

Magnuson-Stevens Fishery Conservation and Management Act requires federal agencies to consider whether a proposed action may adversely affect Essential Fish Habitat (EFH), as identified in federal Fishery Management Plans, 16 U.S.C. 1855(b)(2). Federal agencies must consult with the NMFS regarding any action that may adversely affect EFH. NMFS must provide conservation recommendations to federal agencies regarding any action that would adversely affect EFH.

National Historic Preservation Act, 16 U.S.C. 470(f) and 36 C.F.R. 800, requires federal agencies to take into account the effects of their actions on historic properties. As part of the process, federal agencies must afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed action. The federal agency typically consults with the applicable State or Tribal Historic Preservation Officer and other consulting parties as part of the process.

State Certifications

In order for the USACE to issue a Section 404 permit, or for FERC to issue a license surrender or non-power license, the state must grant the following to certify that the proposed actions are consistent with the state's implementation of federal law.

CWA Section 401 Water Quality Certification. The state must grant or waive a water quality certification pursuant to Section 401 of the CWA, 33 U.S.C. 1341. This certificate states that the proposed activity will not result in a violation of state water quality standards.

Coastal Zone Management Act Certification. If the project would take place in the coastal zone, or have the potential to affect the coastal zone, the state must issue a certificate pursuant to the Coastal Zone Management Act, 16 U.S.C. 1451 et seq. This certification state that the proposed activity is consistent with the state's approved coastal zone management program.

Connecticut

Dam-related activities in Connecticut are regulated by the Inland Water Resources Division of the Bureau of Water Management, which is a part of the Connecticut Department of Environmental Protection (CTDEP). The state has jurisdiction over "all dams . . . without

exception and without further definition or enumeration herein, which, by breaking away or otherwise, might endanger life or property." Connecticut has created a system that, at least on the state level, is somewhat integrated, tying dam permit issuance to several other requisite permits.

An applicant must first apply for a Dam Safety Permit,[8] which applies to all dams in Connecticut (excluding federally owned and operated dams). After submitting an application, the applicant must then provide public notice of intent to apply for the permit. CTDEP reviews the permit for safety, wetlands and fisheries considerations and will integrate any necessary permit conditions to address issues raised by the other agencies, including the disposal of contaminated sediments. Once CTDEP finds the permit acceptable, they will publish and distribute a Notice of Tentative Determination to approve the application to the public, the Inland Fisheries Division, wetland agencies and the planning, zoning and conservation commission of each town affected by the project.

The advantage to the applicant using this permit is that once the Dam Safety permit is approved, the applicant does not need to obtain a separate municipal Inland Wetland and Watercourse Permit[9] (necessary for work affecting wetlands), a Stream Channel Encroachment Line (SCEL) Permit[10] (a CTDEP permit necessary for any activity that temporarily or permanently alters the character of the floodplain or watercourse wherein SCEL lines are established), or a CTDEP Water Diversion Permit[11] (necessary for any alteration of the instantaneous flow of water).

Coastal permits are administered by CTDEP's Office of Long Island Sound Programs (OSLIP) and are necessary only if the project affects any tidal wetlands, coastal or navigable waters.[12] If so, the applicant must apply to OSLIP who will review the permit for wetland impacts such as erosion and sedimentation, current patterns and marine fisheries.[13]

Connecticut maintains a Natural Diversity Data Base and CTDEP permit approval requires a review to determine a project's potential impact on federal and state protected species and habitat. Initial review can be made by the applicant by following directions on the Natural Diversity Data Base website.[14] Further review by state wildlife and fisheries biologists is necessary only if a potential conflict is apparent.

New Hampshire

Dams in New Hampshire are regulated by the Department of Environmental Services (NHDES) Dam Bureau, which is located within the Water Division. NHDES has jurisdiction over dams that pose any artificial barrier, including appurtenant works, which "impound or divert water and which has a height of 4 feet or more, or a storage capacity of 2 acre-feet or more, or is located at the outlet of a great pond."

In 2001, the NHDES established a Dam Removal and River Restoration Program, and hired a program coordinator. This program has the goal of enabling an effective and efficient approach to dam removal. The program coordinator provides assistance to dam owners, communities, consultants and others throughout the dam removal decision-making, planning

[8] For details of Dam Safety Permit requirements, see 22a Connecticut General Statutes Ch. 446j, 401-411.
[9] See 22a Connecticut General Statutes, Ch 440, 36-45.
[10] See 22a Connecticut General Statutes, Ch 446i, 342-349
[11] See 22a Connecticut General Statutes, Ch 446i, 365-379.
[12] See 44 Connecticut General Statutes, Ch 44, 98
[13] See Rules of Connecticut State Agencies – RCSA 22a-30-10.
[14] See http://www.dep.state.ct.us/cgnhs/nddb/requests.htm

and implementation process. Individuals interested in removing a dam in New Hampshire should first contact the River Restoration Coordinator to discuss the proposed project.[15]

The need to establish this dedicated program and position evolved from the New Hampshire River Restoration Task Force, which was formed in January 2000. The Task Force formed to explore opportunities to selectively remove dams for the purpose of restoring rivers and eliminating public safety hazards. The Task Force is an initiative with diverse representation, including multiple state and federal agencies, conservation organizations, academia, and others. The River Restoration Coordinator convenes this group on a regular basis to discuss proposed and planned dam removal projects, as well as programmatic issues (e.g., improving inter-agency coordination, identifying funding opportunities, etc.).

The only state permit that is currently required for dam removal projects is from the NHDES Wetlands Bureau, which has jurisdiction of virtually all surface waters of the state. The Dam Bureau does not grant a permit for dam removals, but they do review and comment on each application, and an approval is required for the project. The Dam Bureau recently revised their Administrative Rules to reflect this aspect of their oversight; a new part addressing dam removal approvals was added to the rules.[16]

Applicants must file a Standard Dredge and Fill Application and an Attachment for Dam Removal Projects. The attachment was developed to elicit responses from applicants on the somewhat unique issues that may apply to a dam removal project. The application package must include documentation of consultation with the State Historic Preservation Office, the state offices that oversee protected species, and the U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory for an assessment of potential effects to the riverine ice regime. Each of these agencies must decide whether it has an interest in the project, and if it responds in the affirmative, then the applicant must comply with the applicable regulations. Other bureaus and agencies may also review the application materials as necessary (*e.g.,* NHDES Watershed Management Bureau, NH Fish and Game Department).

The combination of a dedicated program within the NHDES, an increased understanding of dam removal among the regulatory agencies, and a "one-stop" permit application and regulatory process has resulted in a rapid increase of dam removal projects in New Hampshire in recent years. Since 2000, seven dams have been removed in the State of New Hampshire.

New Jersey

There are several state permitting requirements for dam removal in New Jersey including a dam safety construction permit, either a freshwater wetlands permit or a waterfront development permit, a water lowering permit, and a soil conservation district plan certification.

The N.J. Department of Environmental Protection (NJDEP) administers dam safety construction permits. All dams which raise the water level of a stream five feet or more (or eight feet or more in the Pinelands region[17]) fall under the auspices of the Safe Dam Act[18] and the associated dam safety standards,[19] which requires a permit to build, modify or remove such dams, unless the dams are otherwise exempt.

[15] See http://www.des.state.nh.us/dam/damremoval
[16] See NHDES Administrative Rules, Chapter Env-Wr 600
[17] For details on permitting requirements in the Pinelands region, see http://www.state.nj.us/pinelands/appli/.
[18] N.J.S.A. 58:4-1 et seq. and N.J.S.A. 13:1D-1 et seq.
[19] N.J.A.C. 7:20-1.1 et seq.

All non-exempt dams require a dam safety construction permit to breach or remove a dam. The permit application must include:[20]

- Design report including disposal of any spoil material.
- Plans for the control of sediment and upstream lake bed.
- Computations for the method and timing of lake dewatering.
- Demonstration that the breach will not adversely affect downstream flooding during the 10, 50 and 100-year storms.
- Proposed work schedule and methods.
- Description of the potential effects of the dam removal upon the environment and upon life and property downstream of the dam.
- Evidence that all adjoining property owners have received notification of the proposed removal and proof of publication of notice of the application in the local newspaper. Local landowners, residents and the local government all have the right to oppose the removal of a dam by filing a petition which then triggers a public hearing regarding dam removal. Following the hearing the NJDEP Commissioner will decide whether to allow the removal to proceed, and if not how to allocate the costs of dam maintenance among those opposing the removal.[21]

The NJDEP also administers Freshwater Wetland Permits – these are a series of general permits that authorize activities in wetlands. Dam removal is authorized under General Permit 18 (Dam Repair),[22] as long as temporary disturbance and adverse impacts are minimized using best management practices.[23] Dam removal is also potentially authorized under General Permit 16 (Habitat Creation and Enhancement) if the project's goal is to improve or create fish and wildlife habitat.[24]

For all inland waters, the freshwater wetland permit replaces the need for an Army Corps of Engineers permit; however in streams 1000 feet within the tideline, a CWA 404 permit from the Army Corps is still required.

For projects on tidal waterbodies, a Waterfront Development Permit is needed instead of a Freshwater Wetlands Permit. NJDEP administers the Waterfront Development Permits under the Waterfront Development Law, which regulates all development in and around tidal waterways.[25] Applications require project and environmental information as well as a public notice to property owners within 200 feet of the project.[26]

In the NJ pinelands area, dam removal requires a permit from the Pinelands Commission[27] instead of a freshwater wetlands permit. However, the Pinelands Commissions uses the same standards and criteria as the freshwater wetlands permit. Because the Pinelands are a specially protected region, all types of development require a public development permit from the Pinelands Commission.[28] Pinelands Commission staff review

[20] N.J.A.C. 7:20-1.7(h).
[21] N.J.S.A. 58:4-9,10.
[22] N.J.A.C. 7:7A-5:18.
[23] For Freshwater Wetlands General Permit applications, see http://www.state.nj.us/dep/landuse/forms/chkgpn25.pdf
[24] N.J.A.C. 7:7A-5.16.
[25] N.J.S.A. 12:5-3.
[26] N.J.A.C. 7:7A-7. See also: http://www.state.nj.us/dep/landuse/coast.html.
[27] N.J.S.A. 13:18 A-4.
[28] Pinelands Development Permits can be found at http://www.state.nj.us/pinelands/appli/.

applications to ensure that proposed projects do not adversely affect the natural and cultural resources of the Pinelands region.

A water lowering permit[29] is required from the NJDEP Division of Fish and Wildlife as part of the dam removal process and guidelines exist to plan the most appropriate method of drawing down an impoundment.[30] Applications are short and must be submitted at least one month before the dam removal.[31]

A soil erosion and control plan certification is required for all projects that disturb over 5000 square feet.[32] A certification application must be made to the appropriate Soil Conservation District.[33]

As part of the dam safety and freshwater wetlands permit process, the State Office for Historic Preservation is provided the opportunity to review the project to identify if there are any impacts to historic resources.

NJ has a low interest loan program for the restoration of dams. "Restoration" can include the demolition of a dam as well as rehabilitation and reconstruction.[34] Although priority for funding is given to high hazard dams,[35] recreation and conservation also receive priority points, and thus dam removal is eligible for funding.[36]

New York

New York has a Division of Environmental Permits within the Department of Environmental Conservation (NYSDEC) that coordinates and administers many of the state's environmental permits.[37] Applicants considering a dam removal project are advised to schedule a pre-application meeting with the NYSDEC Regional Permit Administrator to facilitate the permit application process.

Several state permits may be required to remove a dam in New York. However, all permits are part of the state's coordinated permit management system. This coordinated system is authorized under the Uniform Procedures Act[38] whereby one application – the Joint Application for Permit -- is submitted to address the several relevant permit requirements. This application package is then dispersed by the Division of Environmental Permits to all necessary reviewing agencies, such as the Dam Safety Office and Bureau of Fisheries.[39]

The Protection of Waters regulatory program[40] (also referred to as Article 15 program[41]) is designed to preserve and protect New York's streams, rivers and lakes. There are two primary permits under this program that will apply to most dam removal projects: (1) a dam safety permit, and (2) a permit for disturbance of bed and banks (if the dam is on a protected

[29] N.J.S.A. 23:5-29.
[30] See guidelines at: http://www.state.nj.us/dep/fgw/pdf/wtrlowerapp.pdf.
[31] Ibid.
[32] N.J.S.A. 4:24-39 et seq.
[33] A list of Soil Conservation Districts can be found at http://www.state.nj.us/agriculture/rural/natrsrc.htm#state
[34] N.J.A.C. 7:24A-1.7.
[35] N.J.A.C. 7:24A-5.1.
[36] More information on the loan program can be found at http://www.state.nj.us/dep/nhr/engineering/damsafety/engineer.htm.
[37] See: http://www.dec.state.ny.us/website/dcs/index.html
[38] Article 70 of the NYS Environmental Conservation Law, Implementing Regulations – 6 NYCRR Part 621.
[39] http://www.dec.state.ny.us/website/dcs/upa/index.html
[40] For information about the Protection of Waters program and permits see: http://www.dec.state.ny.us/website/dcs/streamprotection/index.html
[41] Article 15 of the NYS Environmental Conservation Law, Implementing Regulations - 6 NYCRR 608.

waterbody, which includes waters with use classifications of drinking, swimming, and trout waters).[42]

A dam safety permit is required for the modification of any dam, defined as any artificial barrier having a height equal to or greater than 15 feet or a maximum impoundment capacity equal to or greater than three million gallons. Exceptions to this include: (1) structures having a height equal to or less than six feet regardless of the structure's impoundment capacity, or (2) structures with an impoundment capacity not to exceed one million gallons regardless of the structure's height.[43]

The application for dam modification, in addition to the joint application form, requires submittal of Supplement D-1,[44] and requires that a professional engineer design and supervise the work. The application will be reviewed by the Dam Safety Section of NYSDEC's Bureau of Flood Protection. For all dam removals, the review will examine the method and sequence of the proposed work and the stability of the site after removal. For a partial removal, the review will also examine the safety and adequacy of the residual dam structure in comparison with applicable dam safety criteria.

NYSDEC must determine that the permit is in the public interest and that it meets the following standards for issuance:[45]

- The proposal is reasonable and necessary.
- The proposal will not endanger the health, safety or welfare of the people of the State of New York.
- The proposal will not cause unreasonable, uncontrolled or unnecessary damage to the natural resources of the state including soil, forests, water, fish, shellfish, crustaceans, and the aquatic- and land-related environment.

NYSDEC also reviews each application for a Protection of Waters Permit to determine whether the proposal is consistent with the standards for permit issuance, which requires consideration of the following:

- The effect of a proposal on natural resources such as fish and wildlife habitat, water quality, hydrology, and watercourse and waterbody integrity.
- Adequacy of project design and construction techniques.
- Operational and maintenance characteristics.
- Safe commercial and recreational use of water resources.
- The water dependent nature of a use.
- The safeguarding of life and property.
- Natural resource management objectives and values.
- Importance of the area for spawning or nesting.

New York has a state law, the State Environmental Quality Review Act (SEQR), which parallels the National Environmental Policy Act, and requires an environmental assessment form (EAF) or environmental impact statement (EIS) for certain local and state government actions, such as permit issuance and project approval.[46] Materials submitted pursuant to

[42] Contact the regional branch of the NYSDEC Division of Environmental Permits to determine if the waterbody of interest is classified as a protected water.
[43] NYS Environmental Conservation Law 15-0503.
[44] Permit applications can be found at: http://www.dec.state.ny.us/website/dcs/streamprotection/protwatdwnd.html
[45] 6 NYCRR 608.8.
[46] 6 NYCRR Part 617.

SEQR are included in the Joint Application for Permit. In reviewing the EAF or EIS, the agency will balance the social, economic and environmental impacts of the proposed project.

New York also has a state law, the State Historic Preservation Act (SHPA), which parallels the National Historic Preservation Act and requires review of any project that involves a state action (including permitting and funding).[47] Compliance with State and National Historic Preservation Acts is commonly handled as part of SEQR review process, when appropriate.

If the dam removal is within the boundaries of the Adirondack Park, additional permits may be needed and applicants should consult with the Adirondack Park Agency (APA).[48] A wetland permit is required for almost any project in a wetland within the park, and APA will evaluate the permit based the relative values of the wetland compared to any other environmental, economic or social benefits that may result from the proposed project.[49] Permits are not issued for wetland activity unless project benefits outweigh wetland benefits or unless certain protection criteria are met, such as minimal degradation.[50]

The National Flood Insurance Program (NFIP) contains construction requirements within mapped Special Flood Hazard Areas.[51] Because a dam removal nearly always causes a change in water surface elevation, it is an activity considered to be "floodplain development," which must be permitted by the town, city or village where the project resides. If the project results in an alteration or relocation of a watercourse, the applicant must notify adjacent communities, the State NFIP Coordinating Office, and the Federal Emergency Management Agency prior to any alteration or relocation. The applicant must assure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained.[52]

Encroachment into a regulatory floodway, as shown on the Flood Insurance Rate Map for the community, is prohibited unless it has been demonstrated through hydrologic and hydraulic analysis performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge (the 100-year flood or one percent annual chance flood). If a rise does result, the applicant must make appropriate application to the Federal Emergency Management Agency to formally revise the flood map.[53]

Finally, NYSDEC has established an informal Barrier Mitigation Subcommittee, within the Hydraulic and Habitat Modification (HHM) Workgroup, formed through the state's non-point source pollution program. This subcommittee is in the process of developing statewide criteria for assessing and prioritizing dams for removal, and identifying aspects of the regulatory process that would benefit from clarification or guidance specifically with respect to barrier mitigation projects (i.e., dam removal, fish passage, culvert retrofits, etc.).

Pennsylvania

To facilitate the removal of obsolete dams in the Commonwealth of Pennsylvania, the Pennsylvania Department of Environmental Protection (PADEP), Division of Dam Safety, has

[47] http://nysparks.state.ny.us/shpo/environ/index.htm
[48] See http://www.apa.state.ny.us/
[49] 9 NYCRR 578
[50] Ibid., and see http://www.apa.state.ny.us/documents/index.html
[51] Flood Insurance Rate Maps exist for local communities and can be found in the local community, at DEC regional or central offices, and at county planning offices.
[52] 44 CFR 60.3(6) and 44 CFR 60.3(7)
[53] 44 CFR 60.3(d)(3) and 44 CFR 60.3(d)(4)

instituted an expedited permitting process referred to as a "restoration waiver."[54] This process was initiated to make it easier and more affordable for dam owners to divest themselves of obsolete dams that can pose significant liabilities and safety hazards, as well as environmental damage. However, in order to qualify for the dam removal waiver, the removal of the dam must restore the river to its natural free-flowing condition. The steps are as follows:[55]

1. A pre-application meeting is held at the proposed dam removal site with the dam owner and representatives from PADEP, Pennsylvania Fish and Boat Commission (PFBC), County Conservation District, Army Corps of Engineers, and other relevant entities.
2. The dam owner must then submit to the PADEP a plan of the proposed removal, including a plan view and cross-sections necessary to complete the project. The plan should also include dimensions, channel lining specifications, and the proposed location of the spoil area.
3. PADEP will then:
   - Review the plan.
   - Conduct an environmental assessment. (Note: A dam permit may be required if significant environmental impacts will result from the removal.)
   - Provide general notification of the proposed project through the Pennsylvania Bulletin for a 30-day comment period.
   - Coordinate with the Pennsylvania Historical and Museum Commission regarding historic and cultural issues.
   - Coordinate the review of the proposed dam removal with the Pennsylvania Fish & Boat Commission and the Army Corps of Engineers.
   - May coordinate with PA Department of Conservation and Natural Resources, PA Game Commission, PFBC, and/or U.S. Fish and Wildlife Service if there are potential conflicts with State or Federal threatened or endangered species.
4. After the proposed dam removal is approved by PADEP, the following must be completed prior to dam removal:
   - The County Conservation District must approve an Erosion & Sedimentation Control Plan.
   - The Pennsylvania Fish & Boat Commission must be notified prior to removal.
   - A drawdown permit (if required) must be obtained from the Pennsylvania Fish and Boat Commission.
   - The PADEP must be notified 10 days before the project begins.
   - The local municipality must be notified at least 30 days before the project begins.
5. Upon project completion, the owner must notify PADEP that that the project is complete, and PADEP will conduct a final inspection of the dam removal site.

The Pennsylvania Fish and Boat Commission (PFBC) has authority to require fish passage structures on dams,[56] and dam removal is considered to be one option to facilitate fish passage. Under this authority, PFBC Division of Habitat Management provides technical and financial assistance statewide under their Consultation and Grant Program for Fish Passage and Habitat Restoration. Interested landowners with dams or other blockages are eligible to request assistance for their dam removal project. Landowners working in

[54] In general, see 25 Pa. Code 105.12(a)(11) and (a)(16) for more details.
[55] See www.dep.state.pa.us/dep/deputate/watermgt/WE/FactSheets/Dam/fs2120.htm
[56] 30 Pa. C.S. 3501(A).

conjunction with the PFBC and PADEP to remove or breach their dams typically qualify under the restoration waiver provision.[57]

The PADEP has also allocated a considerable amount of funding specifically for dam removal projects through their competitive Growing Greener grant program. American Rivers, a national river conservation organization, was awarded $767,000 over three years (2003-2006) to allocate to projects throughout the state. Through this award, American Rivers has assisted in funding 53 dam removal or fish passage projects statewide. This highly successful program -- *Free-Flowing Pennsylvania* -- has leveraged over $3.4 million in matching funds from other state agencies, federal agencies, private foundations and additional funders. The average cost for a dam removal project in Pennsylvania over the past three years has been $75,000. This highly economical result is largely due to the extensive first-hand experience of the applicable regulatory personnel (both state and federal-level), the demonstrated knowledge of the consultants and contractors, and the predictable and streamlined permitting process. A $1.4 million proposal from American Rivers to continue and expand this successful program is currently under consideration by the PADEP.

Acknowledgments

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[57] 25 Pa. Code 105.12 (a)(16).