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Jonathan Silverstein

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TAKING WETLANDS TO THE BANK: THE ROLE OF WETLAND MITIGATION BANKING IN A COMPREHENSIVE APPROACH TO WETLANDS PROTECTION

*Jonathan Silverstein**

I. INTRODUCTION

On August 24, 1993, President Clinton released his new wetlands protection plan.¹ Entitled, "Protecting America's Wetlands: A Fair, Flexible, and Effective Approach," the plan purports to offer an approach that will provide sufficient protection for America's dwindling wetlands while also being sensitive to the concerns of landowners.² As one means of accomplishing this goal, the plan endorses the increased use of mitigation banking.³ The plan defines mitigation banking as "wetland restoration, creation, or enhancement. . . ." performed in advance of permitted wetland losses.⁴

Environmentalists criticize the federal wetlands protection program as being ineffective⁵ while the regulated community complains

* Production Editor, 1994-1995, BOSTON COLLEGE ENVIRONMENTAL AFFAIRS LAW REVIEW.

¹ WHITE HOUSE OFF. ON ENVTL. POL'Y, PROTECTING AMERICA'S WETLANDS: A FAIR, FLEXIBLE, AND EFFECTIVE APPROACH (Aug. 24, 1993) [hereinafter PROTECTING AMERICA'S WETLANDS].

² *Id.* at 2.

³ *Id.* at 16-17.

⁴ *Id.* at 16. Elsewhere in the plan, however, mitigation banking is described as including not only restoration, creation, and enhancement, but also, "in certain defined circumstances, *preservation*" of existing wetlands. *Id.* at 9 (emphasis added). The issue as to whether a mitigation banking scheme should include preservation is the source of some disagreement. See *infra* text accompanying notes 260-265.

⁵ See, e.g., Keith Schneider, *Bush Announces Proposal for Wetlands*, N.Y. TIMES, Aug. 10, 1991, § 1, at 7; Dianne Dumanoski, *After a Brief Flurry of Hope, Wetlands Face New Threats*:

that it is unduly burdensome.⁶ Despite their differences, these two groups agree on one point: there are significant problems with the current federal wetlands protection scheme.⁷

Many observers feel that mitigation banking has the potential to significantly improve wetland regulation.⁸ Many environmentalists are skeptical, however, and fear even more rapid wetland losses if a banking program is adopted.⁹

This Comment examines the potential of employing mitigation banking to facilitate a comprehensive wetlands policy that is "fair, flexible, and effective." Section II provides a backdrop for the mitigation banking issue. It begins with a brief look at the history of wetlands management in the United States, including a description of the current regulatory framework governing wetlands protection and the major criticisms it has drawn. Section III frames the issue of mitigation banking, and then presents the arguments that have been advanced for and against mitigation banking. It then examines some existing banking efforts and proposals to illustrate the possible forms a mitigation banking program might take. Part IV analyzes the role government should take in regulating mitigation banking. Part V summarizes and concludes that in certain circumstances, and with certain restrictions, mitigation banking can be a valuable component of a national wetlands policy.

Pending Bill Would Dramatically Alter Protection Program, BOSTON GLOBE, Apr. 22, 1991, at 29.

⁶ See, e.g., Peter Neurath, *Wetlands' Issue: A Shoe About to Fall*, PUGET SOUND BUS. J., Aug. 6, 1990, § 1, at 1; Tim Searchinger, *The Murky Waters of Wetlands Regulation*, CHRIST. SCI. MONITOR, Aug. 26, 1991, at 19.

⁷ PROTECTING AMERICA'S WETLANDS, *supra* note 1, at 3. See, e.g., David H. Getches, *Forward*, 60 U. COLO. L. REV. 685, 687 (1989).

⁸ See, e.g., Carolyn Lochhead, *Clinton's Wetlands Proposal Remarkably Similar to Wilson's*, S.F. CHRON., Aug. 25, 1993, at A4 (quoting Bob Wayland, Director of the Office of Wetlands, Oceans and Watersheds for the United States Environmental Protection Agency (EPA)); DAVID SALVESEN, *Wetlands: Mitigating and Regulating Development Impacts* 4 (1990); Leonard Shabman et al., *Making Wetlands Mitigation Work: The Credit Market Alternative* 10 (May 1993) (on file with Dep't of Agric. and Applied Econ., Va. Tech. U.).

⁹ E.g., *Wetlands, Environmentalists Concerned About Reform Plan, Group Representative Says*, Daily Rep. for Exec. (BNA) No. 176, D-29, (Sept. 14, 1993); Lochhead, *supra* note 8.

II. THE HISTORY OF WETLAND REGULATION IN THE UNITED STATES

Wetlands perform many important ecological functions.¹⁰ For example, wetlands filter pollution,¹¹ provide habitat for numerous species of animal and plant life,¹² and provide natural flood control.¹³

The realization that wetlands are vitally important natural resources is relatively recent.¹⁴ Filling wetlands was not only allowed but encouraged, and much of urban America was once swamp.¹⁵ Many wetlands were also converted to farmland.¹⁶ Such conversions were seen as benefits to society, in that they created productive lands out of perceived wastelands.¹⁷ As a result, over fifty percent of the wetlands in the United States have been destroyed.¹⁸

¹⁰ PROTECTING AMERICA'S WETLANDS, *supra* note 1, at 2. See, e.g., ENVIRONMENTAL LAW INST., WETLAND MITIGATION BANKING 25 (1993); ELINOR HORWITZ, OUR NATION'S WETLANDS 19-21 (1978).

¹¹ PROTECTING AMERICA'S WETLANDS, *supra* note 1 at 2; ENVIRONMENTAL LAW INST., *supra* note 10, at 25; HORWITZ, *supra* note 10, at 22-28.

¹² *Hearings before the Subcomm. on Water Resources of the House Comm. on Public Works and Transportation Concerning Section 404 of the Clean Water Act*, 97th Cong., 1st Sess. (1982), reprinted in CONGRESSIONAL INFORMATION SERVICE 1319, 1337 (microfiche no. H641-15) (1983) (statement of Thomas G. Tomasello, representing the National Wildlife Federation [hereinafter Tomasello statement]); ENVIRONMENTAL LAW INST., *supra* note 10, at 25; JON KUSLER, OUR NATIONAL WETLAND HERITAGE 3 (1983); PROTECTING AMERICA'S WETLANDS, *supra* note 1, at 2.

¹³ Tomasello statement, *supra* note 12, at 1338; ENVIRONMENTAL LAW INST., *supra* note 10, at 25; PROTECTING AMERICA'S WETLANDS, *supra* note 1, at 2; Robert D. Sokolove & P. Robert Thompson, *Protecting Property Rights After the 1993 Flood: Using Wetland Banks to Manage the Midwest River Floodplain*, WASHINGTON LEGAL FOUND. LEGAL BACKGROUNDER 34 Nov. 5, 1993 (citing wetlands depletion as one reason for the devastating effects of flooding in the Midwest last year [hereinafter Sokolove & Thompson]).

¹⁴ See SALVESEN, *supra* note 8, at 1.

¹⁵ See *id.* Parts of Philadelphia, New York, and Boston, and all of Washington, D.C. represent some of the "triumphs" of early Americans in converting swamplands, which were perceived to be nuisances, into flourishing cities. *Id.* See also Charles H.W. Foster, Massachusetts Wetlands Restoration Through Wetlands Banking: The Rebuilding of a Commonwealth, 2-3 (July 1993) (on file with John F. Kennedy School of Gov't).

¹⁶ SALVESEN, *supra* note 8, at 1; Foster *supra* note 15, at 3-4; CONGRESSIONAL OFFICE OF TECHNOLOGY ASSESSMENT, WETLANDS: THEIR USE AND REGULATION 7 (1984) [hereinafter OTA REPORT], reprinted in CONGRESSIONAL INFORMATION SERVICE 7 (microfiche no. J952-15) (1984).

¹⁷ SALVESEN, *supra* note 8, at 1. See also Foster, *supra* note 15, at 3.

¹⁸ U.S. FISH AND WILDLIFE SERVICE STUDY, WETLANDS OF THE UNITED STATES: CURRENT STATUS AND TRENDS vii (1984); THOMAS E. DAHL, WETLANDS LOSSES IN THE UNITED STATES 1780'S TO 1980'S 1 (1990).

In the past two decades, wetlands protection has emerged as a central issue in the national environmental agenda.¹⁹ Today, wetlands regulation occurs primarily under section 404 of the Clean Water Act (CWA).²⁰ Section 404 regulates “discharges” of “dredged or fill material” into waters of the United States.²¹ The section 404 program is intended to achieve a goal of “no net loss of wetlands.”²²

According to the section 404(b)(1) Guidelines developed by the EPA and the Army Corps of Engineers (Corps)²³ and a 1990 Memorandum of Agreement (MOA)²⁴ between the Corps and the EPA, the two agencies primarily responsible for regulating wetlands under the CWA,²⁵ the Corps is to follow a sequencing scheme in issuing permits. Under this sequencing scheme, permit applicants must either avoid adverse impacts to wetlands or demonstrate that such impacts are unavoidable.²⁶ The next step in the sequence requires that applicants minimize unavoidable adverse impacts.²⁷ Finally, the applicant must perform compensatory mitigation to offset any adverse impacts that occur despite avoidance and minimization.²⁸ When compensatory mitigation is found necessary, there is a strong regulatory preference for mitigation that is “on-site” and “in-kind.”²⁹

¹⁹ Shabman et al., *supra* note 8, at 1.

²⁰ 33 U.S.C. § 1344 (1988). See ENVIRONMENTAL LAW INST., *supra* note 10, at 9; Denis C. Swords, *The Comprehensive Wetlands Conservation and Management Act of 1991: A Restructuring of Section 404 that Affords Inadequate Protection for Critical Wetlands*, 53 LA. L. REV. 163, 166 (1992); Getches, *supra* note 7, at 693.

²¹ 33 U.S.C. § 1344.

²² MEMORANDUM OF AGREEMENT BETWEEN THE ENVIRONMENTAL PROTECTION AGENCY AND THE DEPARTMENT OF THE ARMY CONCERNING THE DETERMINATION OF MITIGATION UNDER THE CLEAN WATER ACT SECTION 404(b)(1) GUIDELINES, 55 Fed. Reg. 9210 (1990) [hereinafter MOA].

²³ 40 C.F.R. § 230 et seq. (1993). These guidelines constitute the regulations which the Corps must apply in evaluating applications for permits to fill wetlands. *Id.* § 230.2(a).

²⁴ MOA, *supra* note 22.

²⁵ *Id.* The Corps is primarily responsible, under § 404, for the issuance of permits to fill or degrade wetlands. 33 U.S.C. § 1344(a) (1991). EPA, however, is given final review power over Corps decisions. 33 U.S.C. § 1344(c).

²⁶ 40 C.F.R. § 230.10(a). In order to show that an impact is unavoidable, the applicant must show that there are no “practicable alternatives” to the proposed project which would have a less adverse impact on wetlands. *Id.*

²⁷ *Id.* § 230.10(c).

²⁸ *Id.* § 230.10(d). Mitigation refers to actions taken to reduce the effects of a project on wetlands. Compensatory mitigation usually takes the form of restoration of previously degraded wetlands, enhancement of existing wetlands, creation of new wetlands, or preservation of existing wetlands. See generally MOA, *supra* note 22.

²⁹ MOA, *supra* note 22. On-site refers to a mitigation which is undertaken on the same parcel as and in close proximity to a development project which degrades wetlands. In-kind refers to mitigation which replaces the same wetland types and values which are lost due to development. See generally MOA, *supra* note 22.

The section 404 system has drawn criticism from environmentalists and the regulated community alike. Despite the goal of no net loss of wetlands, the nation continues to lose wetlands at an alarming rate.³⁰ This loss of wetlands may result from the emphasis placed on compensatory mitigation.³¹ Compensatory mitigation is ineffective from an ecological perspective, because the science of creating, enhancing, and restoring wetlands is imprecise and unproved.³² For example, a 1985 study of thirty-two wetland creation projects in Virginia revealed that only nine were considered to be completely successful.³³

Others blame the failure of mitigation efforts on institutional flaws rather than any technical infeasibility of successful mitigation.³⁴ One such flaw is the lack of oversight of mitigation efforts by the Corps.³⁵ Often, all that is required before a permit is issued is a mitigation plan approved by the Corps.³⁶ As a result, some mitigation plans are never actually carried out or even initiated.³⁷

Even mitigation projects that are initiated often fail because the regulatory agencies lack the resources to adequately monitor them to see if they are succeeding.³⁸ Even when sites are monitored, there is often no pre-designated party responsible for rectifying the failure.³⁹ Finally, even successful mitigation efforts are at risk of being degraded in the future because developers are not required to monitor and maintain the sites into the future.⁴⁰

Critics view the sequencing scheme as overly rigid and ineffective because it does not consider the ill effects of fragmentation, isolation, and degradation of the wetlands preserved or compensated for on-site.⁴¹ As a result, many mitigation efforts result in degraded and fragmented wetlands with only marginal ecological value.⁴² Many observers believe that wetland mitigation banking offers a solution to

³⁰ See, e.g., Oliver A. Houck, *Ending The War: A Strategy To Save America's Coastal Zone*, 47 MD. L. REV. 358 (1988).

³¹ See Swords, *supra* note 20, at 202.

³² See *id.* See generally SALVESEN, *supra* note 8, at 77-107.

³³ See SALVESEN, *supra* note 8, at 96.

³⁴ See Shabman et al., *supra* note 8, at 3.

³⁵ See *id.* at 2.

³⁶ *Id.* See also CATHLEEN SHORT, U.S. FISH AND WILDLIFE SERV., MITIGATION BANKING, BIOLOGICAL REP. 88(41), 4 (July 1988).

³⁷ Shabman et al., *supra* note 8, at 2 (referring to the process as "paper mitigation").

³⁸ See *id.* at 3; SHORT, *supra* note 36, at 4.

³⁹ Shabman et al., *supra* note 8, at 3.

⁴⁰ *Id.*

⁴¹ Shabman et al., *supra* note 8, at 3.

⁴² *Id.*

some of the problems surrounding government regulation of wetlands.⁴³

III. MITIGATION BANKING

Mitigation banking is not an entirely new concept.⁴⁴ Within the last decade, many entities have initiated mitigation banking programs.⁴⁵ Currently, the vast majority of mitigation banks are owned and operated by government entities.⁴⁶

In general, wetland mitigation banking refers to a system whereby a party creates, restores, enhances, or in some cases preserves wetlands to provide compensatory mitigation in advance of proposed discharges into wetlands.⁴⁷ In some cases, the sponsor of the mitigation bank identifies the development activities to be compensated for prior to establishing the bank.⁴⁸ In others, the bank sponsor performs the mitigation “speculatively to compensate for as yet unspecified development activities.”⁴⁹

The performed mitigation is translated into “credits” according to a pre-arranged valuation methodology.⁵⁰ These credits can then be “withdrawn” and used to offset wetlands losses caused by permitted activities for which compensatory mitigation is deemed appropriate by the regulating agency.⁵¹

A. *The Mitigation Banking Debate*

The introduction of mitigation banking as a tool for wetland management has touched off yet another debate over wetlands policy.⁵²

⁴³ See, e.g., William J. Haynes, II & Royal C. Gardner, *Dialogues: The Value of Wetlands as Wetlands: The Case for Mitigation Banking*, 23 ENVTL. L. REP. (Envtl. L. Inst.) 10261.

⁴⁴ CALIFORNIA DEP'T OF FISH AND GAME, DRAFT GUIDELINES FOR THE ESTABLISHMENT OF WETLAND MITIGATION BANKS 2 (July 1991) [hereinafter CALIFORNIA GUIDELINES].

⁴⁵ See SHORT, *supra* note 36, at iii; ENVIRONMENTAL LAW INST., *supra* note 10, at 1.

⁴⁶ ENVIRONMENTAL LAW INST., *supra* note 10, at 5.

⁴⁷ See EPA REGION IX, MITIGATION BANKING GUIDANCE 2 (Dec. 20, 1991) [hereinafter REGION IX GUIDELINES]; SHORT, *supra* note 36, at iii. Note that this is a very general definition. Mitigation banking can take many different forms. See *infra* text accompanying notes 124–159.

⁴⁸ ENVIRONMENTAL LAW INST., *supra* note 10, at 3 n.1.

⁴⁹ *Id.*

⁵⁰ See *id.* at 77.

⁵¹ See, e.g., *id.* at 32; CALIFORNIA GUIDELINES, *supra* note 44, at 2–3.

⁵² See, e.g., MASS. DEP'T OF ENVTL. AFF., WETLANDS RESTORATION AND MITIGATION BANK RESEARCH PROJECT PROPOSAL—EXECUTIVE SUMMARY AND BACKGROUND 6.

⁵³ Lochhead, *supra* note 8 (quoting Bob Wayland, Director of EPA's Office of Wetlands, Oceans and Watersheds). See, e.g., Haynes & Gardner, *supra* note 43, at 10262; Sokolove & Thompson,

Proponents feel that mitigation banking is a “creative and innovative way” to achieve the no net loss of wetlands goal, and possibly to produce a net *gain*, while easing the regulatory burden on private property owners.⁵³ Opponents contend that mitigation banking will result in even more loss of valuable and unique wetlands.⁵⁴

1. Arguments in Favor of Mitigation Banking

a. *Advance Mitigation*

Proponents of mitigation argue that mitigation banking offers numerous advantages over the current system.⁵⁵ One of the main advantages is that mitigation banking results in mitigation being performed in advance of, rather than subsequent to, wetland conversion projects.⁵⁶ Advance mitigation has two principal benefits. First, advance mitigation eliminates concerns that once a permit is granted, mitigation may never take place.⁵⁷ Under a typical mitigation banking system, mitigation has already been performed by the time a specific project is permitted.⁵⁸

The second benefit of advance mitigation is that it eliminates the “lag time” between wetlands adulteration and mitigation that does occur.⁵⁹ Currently, even mitigation efforts that are successfully completed usually take several years to become fully functional.⁶⁰ There is often a significant delay between the time an area is deprived of wetland functions and the reintroduction of those functions.⁶¹ Ad-

supra note 13, at 2; Ryan McCarthy, *Wetlands Ideas Stir Discontent*, SACRAMENTO BEE, Sept. 5, 1993, at N1.

⁵⁴ See, e.g., Lochhead, *supra* note 8; McCarthy, *supra* note 53.

⁵⁵ See, e.g., E.P.A. AND ARMY CORPS OF ENGINEERS, MEMORANDUM TO THE FIELD: ESTABLISHMENT AND USE OF WETLAND MITIGATION BANKS IN THE CLEAN WATER ACT SECTION 404 REGULATORY PROGRAM 1 (Aug. 23, 1993) [hereinafter MEMORANDUM TO THE FIELD]; Haynes & Gardner, *supra* note 43, at 10262; Shabman et al., *supra* note 8, at 10–11.

⁵⁶ See, e.g., ENVIRONMENTAL LAW INST., *supra* note 10, at 153; REGION IX GUIDELINES, *supra* note 47, at 1; FLORIDA DEP'T OF ENVTL. REG., ECONOMIC IMPACT STATEMENT FOR PROPOSED REVISIONS TO CHAPTER 17-342, F.A.C. DOCKET No. 93-25R, 8 (1993) [hereinafter FLORIDA ECONOMIC IMPACT STATEMENT]. Some proponents of mitigation banking contend, however, that some credits should be allowed to be withdrawn from mitigation banks before the bank sites are fully functional. See *infra*, text accompanying notes 270–271; see also, e.g., Shabman et al., *supra* note 8, at 26.

⁵⁷ See MEMORANDUM TO THE FIELD, *supra* note 55; ENVIRONMENTAL LAW INST., *supra* note 10, at 59; Shabman et al., *supra* note 8, at 3.

⁵⁸ E.g., SHORT, *supra* note 36, at 3.

⁵⁹ E.g., *id.*; MEMORANDUM TO THE FIELD, *supra* note 55; Haynes & Gardner, *supra* note 43, at 10262.

⁶⁰ SHORT, *supra* note 36, at 3.

⁶¹ See, e.g., *id.*

vance mitigation clearly creates the inverse of this situation—a short-term wetland *surplus*—because mitigation bank sites could be operational for some time before credits are withdrawn.⁶²

b. *Consolidated and Large-Scale Mitigation Projects*

Advocates also cite the possibility of consolidated, large-scale mitigation efforts as one of the primary advantages of mitigation banking over the current site-specific system.⁶³ Several benefits are associated with larger mitigation projects.

First, proponents argue that significant ecological benefits can result from the consolidation of many smaller, individual, project-specific mitigation efforts.⁶⁴ Larger, off-site wetland systems are often more ecologically valuable and successful than smaller wetlands.⁶⁵ On-site mitigation, in contrast, often results in small wetland patches that serve limited ecological functions.⁶⁶ Impacts from the development often compromise what little value still exists in the remaining natural wetlands as well as mitigation wetlands developed on-site.⁶⁷ Such is often the case when on-site mitigation projects are undertaken in the midst of housing developments and shopping centers.⁶⁸

Second, larger systems provide habitat for more types of plant and wildlife species.⁶⁹ A greater variety of habitat types and species makes it more likely that a mitigation effort will succeed in the long-term because this allows the site to accommodate changes in the ecosystem.⁷⁰ In addition, larger areas are able to support larger populations of individual species in addition to a larger variety of species.⁷¹ This helps to prevent inbreeding effects which may trouble small isolated populations.⁷²

⁶² See ENVIRONMENTAL LAW INST., *supra* note 10, at 59.

⁶³ *E.g., id.* at 32; Shabman et al., *supra* note 8, at 5; SHORT, *supra* note 36, at 3.

⁶⁴ *E.g.,* FLORIDA ECONOMIC IMPACT STATEMENT, *supra* note 56; Shabman et al., *supra* note 8, at 11; SHORT, *supra* note 36, at 2; MEMORANDUM TO THE FIELD, *supra* note 55.

⁶⁵ See, *e.g.,* ENVIRONMENTAL LAW INST., *supra* note 10, at 32; SALVESEN, *supra* note 8, at 5.

⁶⁶ ENVIRONMENTAL LAW INST., *supra* note 10, at 31.

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ *E.g., id.* at 32.

⁷⁰ *E.g., id.*

⁷¹ *E.g., id.*

⁷² *E.g., id.* Sometimes, however, small wetlands should replace similar small wetlands lost to development so as to provide habitat for locally displaced species. *Id.* Of course, the option of creating larger bank sites does not necessitate the exercise of that option. Smaller mitigation projects could be initiated where appropriate. *Id.*

A third advantage of large-scale mitigation is that it allows for economies of scale. Since the costs of mitigation are usually a function of the mitigation site's size,⁷³ large-scale mitigation is significantly more cost-efficient than small-scale, project-specific mitigation.⁷⁴ Further, the mitigation bank sponsor is able to afford consultants and technology that are not available to individual developers.⁷⁵ Larger mitigation projects are therefore likely to be cheaper and of a higher quality than mitigation projects undertaken on a smaller scale by individual developers to compensate for individual projects.⁷⁶

A fourth advantage of consolidating many small mitigation projects into fewer large sites is that consolidation enables enforcing agencies to more effectively monitor mitigation projects and enforce permit conditions while expending fewer resources.⁷⁷ When there are fewer sites to oversee, regulators may allocate time to revisit sites and determine if mitigation has been performed and is successful.⁷⁸

Finally, and perhaps most importantly, consolidation of mitigation efforts allows for compensatory mitigation which might not otherwise take place.⁷⁹ This benefit derives from a combination of the potential size of mitigation banking sites and the fact that mitigation, in a banking system, takes place prior to wetland impacts.⁸⁰ Much of the wetlands degradation that takes place results from the cumulative impact of uncompensated fills. Some fills are too small to mitigate on a site-specific basis because of the inefficiency and impracticality of small-scale mitigation.⁸¹

Mitigation banking allows for large mitigation sites to be completed in anticipation of numerous, small-scale fills.⁸² When such a small fill takes place, it is no longer valid for the developer to argue that mitigation is impractical, because the bank site is already functional. The developer can simply purchase the credits necessary to compensate for the loss.⁸³ Rather than having to concede that mitigation is

⁷³ FLORIDA ECONOMIC IMPACT STATEMENT, *supra* note 56, at 6. A study of the average costs of mitigation revealed that the average cost per acre for a five-acre project was \$25,864, while the average cost per acre of a 500-acre mitigation project was over \$2,000 less—\$23,713. *Id.*

⁷⁴ *See, e.g., id.*, at 6; SHORT, *supra* note 36, at 2-3.

⁷⁵ *See, e.g.,* SHORT, *supra* note 36, at 3; SALVESEN, *supra* note 8, at 5.

⁷⁶ *See* SHORT, *supra* note 36, at 3; SALVESEN, *supra* note 8, at 5.

⁷⁷ *See* SHORT, *supra* note 36, at 4.

⁷⁸ *See, e.g., id.*

⁷⁹ *See, e.g.,* SALVESEN, *supra* note 8, at 5.

⁸⁰ *See* Shabman et al., *supra* note 8, at 5.

⁸¹ *See* Shabman et al., *supra* note 8, at 4.

⁸² *See, e.g.,* ENVIRONMENTAL LAW INST., *supra* note 10, at 60.

⁸³ *See, e.g.,* Shabman et al., *supra* note 8, at 4.

impractical, regulatory agencies could require permit applicants to purchase an appropriate number of bank credits for many small fills, such as those authorized under nationwide 26.⁸⁴

c. Site Selection Benefits

Because mitigation bank sponsors choose bank sites independently of particular projects, they can make siting decisions based on relevant factors, such as availability, size, proximity to possible degrading influences, and regional wetland-function needs. Bank sponsors also have more leeway in terms of the time-frame in which they must choose the site.⁸⁵ Project-specific mitigation sites, on the other hand, often must be on-site.⁸⁶ Even when off-site mitigation is allowed, the siting process is held captive by the need to find a site immediately.⁸⁷ This can result in costly mitigation efforts that are often not located in the most suitable place.

d. Benefits to Landowners

Landowners, and those who represent them, are outspoken supporters of wetland mitigation banking.⁸⁸ The main reason for landowner support is probably the hope that a mitigation banking scheme would streamline the wetlands regulatory system.⁸⁹ First, landowners and agencies would not have to expend their time and resources on developing and approving many small-scale compensatory mitigation plans.⁹⁰ This could take place on a much larger scale for each bank.⁹¹

Second, developers would have a much better idea, at a point much earlier in time, of the likely cost of mitigation for a given development

⁸⁴ See *id.* at 13. In fact, the 1991 revisions to the nationwide permit rules encourage the use of mitigation banking to compensate for up to ten acres of wetland alterations. *Id.*

⁸⁵ See, e.g., ENVIRONMENTAL LAW INST., *supra* note 10, at 63.

⁸⁶ See, e.g., MOA, *supra* note 22.

⁸⁷ See SHORT, *supra* note 36, at 3.

⁸⁸ See, e.g., CHRIS MACDONALD, ROBINSON & COLE, 2 WETLANDS WATCH 3, 4 (Fall 1993); NATIONAL WETLANDS COALITION, ISSUE PAPER: MITIGATION BANKING SHOULD PLAY A CENTRAL ROLE IN THE SECTION 404 PROGRAM (Nov. 8, 1993); Haynes & Gardner, *supra* note 43, at 10261.

⁸⁹ See, e.g., MACDONALD, *supra* note 88, at 4; NATIONAL WETLANDS COALITION, *supra* note 88; Haynes & Gardner, *supra* note 43, at 10262.

⁹⁰ See, e.g., MACDONALD, *supra* note 88, at 4; NATIONAL WETLANDS COALITION, *supra* note 88; Haynes & Gardner, *supra* note 43, at 10262.

⁹¹ See, e.g., MACDONALD, *supra* note 88, at 4; NATIONAL WETLANDS COALITION, *supra* note 88; Haynes & Gardner, *supra* note 43, at 10262.

project.⁹² These costs would be significantly less than if developers had to perform the mitigation themselves.⁹³ Finally, the responsibility for long-term maintenance would shift from the hands of the developers, who are ill-equipped to act in that capacity, to the hands of the expert entities managing the banks.⁹⁴

e. *Mitigation Banking as a Takings Safety Valve*

Proponents postulate that mitigation banking offers the further benefit of preventing regulatory takings claims under the Fifth and Fourteenth Amendments of the U.S. Constitution.⁹⁵ The regulatory takings doctrine requires the government to pay just compensation when government actions deprive landowners of their property.⁹⁶ Wetland regulators often find themselves faced with this challenge when their regulations restrict property owners' development plans.⁹⁷

The United States Supreme Court held, in *Lucas v. South Carolina Coastal Council*, that when the effect of a government regulation is to deny a landowner all economically viable use of his property the government must pay the landowner just compensation.⁹⁸ The *Lucas* decision has received a great deal of attention, and many commentators have postulated that it could threaten rigorous environmental regulation.⁹⁹ Indeed, wetlands regulation may be particularly susceptible to takings challenges because seventy-five percent of America's wetlands are privately owned.¹⁰⁰

It should be noted, however, that the *Lucas* court itself stated that its holding would apply only in "relatively rare situations," and under "extraordinary circumstance[s]."¹⁰¹ An examination of post-*Lucas* takings cases reveals that these "extraordinary" situations, in which

⁹² See, e.g., MACDONALD, *supra* note 88, at 4; NATIONAL WETLANDS COALITION, *supra* note 88; Haynes & Gardner, *supra* note 43, at 10262.

⁹³ See *infra*, text accompanying notes 212-239.

⁹⁴ See Foster, *supra* note 15, at 43 (summarizing statements of Garret G. Hollands, Principal of IEP, Inc. of Northboro, Massachusetts); SALVESEN, *supra* note 8, at 5.

⁹⁵ U.S. CONST. amends. V, XIV. See Haynes & Gardner, *supra* note 43, at 10262.

⁹⁶ See generally John A. Humbach, *Evolving Thresholds of Nuisance and the Takings Clause*, 18 COLUM. J. ENVTL. L. 1 (1993).

⁹⁷ See, e.g., *Lucas v. South Carolina Coastal Council*, 112 S.Ct. 2886 (1992); *Loveladies Harbor, Inc. v. United States*, 21 Cl.Ct. 153 (1990), *aff'd*, ___ F.3d ___, 62 U.S.L.W. 2791 (Fed. Cir., June 15, 1994); *Deltona Co. v. U.S.*, 657 F.2d 1184 (Cl. Ct. 1981), *cert denied* 455 U.S. 1017 (1982).

⁹⁸ *Lucas* 112 S.Ct. at 2910.

⁹⁹ See, e.g., Cotton C. Harness III, *Lucas v. South Carolina Coastal Council: Its Historical Context and Shifting Constitutional Principles*, 10 PACE ENVTL. L. REV. 5 (1992).

¹⁰⁰ Haynes & Gardner, *supra* note 43, at 10262.

¹⁰¹ *Lucas*, 112 S.Ct. at 2894.

a regulation constitutes a taking, only arise when 1) the *entire* parcel has been deprived of value,¹⁰² and 2) the challenged regulation/restriction is imposed *subsequent* to the challenger's acquisition of his property interest in the restricted property.^{103 104} Nonetheless, wetland regulators do need to be cognizant of the possibility that their actions may sometimes constitute takings.¹⁰⁵

The argument that a mitigation banking system can shield regulators from liability under the takings doctrine stems from the assumption that land deemed undevelopable because of wetlands contained thereon remains valuable when such a system is in place.¹⁰⁶ In other words, the argument goes, the very fact that a landowner's land is a critical wetland confers upon it the value of mitigation credit that can be used to satisfy permitting requirements for other projects.¹⁰⁷ Thus, "degraded wetlands can be restored for credit, low and moderate value wetlands can be enhanced, and high-value wetlands can be preserved."¹⁰⁸ This theory is an extension of the decision in *Penn Central Transportation Co. v. New York City*.¹⁰⁹ In refusing to find a taking, the *Penn Central* court cited the fact that the plaintiff was allowed to transfer the development rights which it was not allowed to use above Penn Central Station to another property.¹¹⁰

2. The Case Against Mitigation Banking

Not everyone believes that the adoption of a mitigation banking system would be a change for the better. The most prevalent concern is that mitigation banking will result in less rigorous stewardship on the part of wetlands regulators.¹¹¹ Mitigation banking has been called

¹⁰² See, e.g., *Tabb Lakes, Inc. v. United States*, 26 Cl. Ct. 1334, *aff'd*, 10 F.3d 796 (1992). This post-Lucas case affirmed what has been termed the parcel-as-a-whole, or non-segmentation theory, which states that a landowner cannot divide a parcel of land into those sections which have been regulated and those which have not and then claim that the regulated portions have been stripped of any value. *Id.* at 1346. See also, e.g., *Bernardsville Quarry v. Bernardsville Borough*, 608 A.2d 1377, 1389 (N.J. 1992).

¹⁰³ See, e.g., *Presault v. United States*, 27 Fed.Cl. 69, 95 (1992). As did the court in *Tabb Lakes*, the *Preseault* court refused to find a taking. The court based its finding on the fact that the challenged regulation was promulgated prior to the plaintiffs' acquisition of their land. *Id.*

¹⁰⁴ See generally Michael Rubin & Jonathan Silverstein, *Lucas, One Year Later: Merely a Footnote to the Takings Doctrine*, NAT'L ENVTL. ENFORCEMENT J., SEPT. 1993, AT 3.

¹⁰⁵ See Haynes & Gardner, *supra* note 43, at 10262-63.

¹⁰⁶ See *id.*

¹⁰⁷ See *id.* at 10262.

¹⁰⁸ *Id.*

¹⁰⁹ 438 U.S. 104 (1978).

¹¹⁰ *Id.* at 137.

¹¹¹ See, e.g., SHORT, *supra* note 36, at 5.

a “cheap trick” to enable more original wetlands to be degraded in exchange for less valuable compensatory mitigation.¹¹²

The negative public perception of mitigation banking may stem from a belief that wetlands banks provide a justification for easing restrictions on the filling of wetlands.¹¹³ Some regulators have been hesitant to endorse mitigation banking because they might be perceived as being willing to “forego the proper steps in project planning and mitigation.”¹¹⁴

Opponents fear that developers will exert pressure on permitting agencies to allow the purchase of mitigation credits in place of requiring avoidance.¹¹⁵ This fear is understandable, considering the historical attitude of the primary permitting agency—the Corps—that development is more important than wetland protection.¹¹⁶

A related concern is that mitigation banking will result in a net loss of wetlands.¹¹⁷ If regulators grant mitigation credits for preservation and acquisition of existing wetlands, it is clear that a net loss will result when developers withdraw these credits to compensate for wetland fills elsewhere.¹¹⁸ Similarly, while enhancement may result in increased wetlands values, it will not result in more wetlands.¹¹⁹ Therefore, again, a net loss of wetlands occurs when wetlands enhancement is used as compensatory mitigation.¹²⁰ Even restoration and creation of wetlands may not result in replacement of wetlands functions of equal character and quality to those destroyed by development in existing natural wetlands.¹²¹

The fears that mitigation banking will result in a net loss of wetlands seem to focus on concerns about compensatory mitigation itself rather than on mitigation banking. These concerns arise under the present system as well.¹²² Mitigation banking, if instituted with the proper safeguards, could actually increase the ecological value of com-

¹¹² McCarthy, *supra* note 53 (quoting Otis Wollan of the Placer County, CA. Water Agency). See also, *e.g.*, Lochhead, *supra* note 8.

¹¹³ MASSACHUSETTS DEP'T OF ENVTL. AFF., *supra* note 52, at 7.

¹¹⁴ SHORT, *supra* note 36, at 5.

¹¹⁵ See, *e.g.*, SALVESEN, *supra* note 8, at 5.

¹¹⁶ SALVESEN, *supra* note 8, at 33. The Corps has actually “led the nation in developing wetlands habitat.” *Id.*

¹¹⁷ See SHORT, *supra* note 36, at 6; Haynes & Gardner, *supra* note 43, at 10263.

¹¹⁸ See, *e.g.*, Haynes & Gardner, *supra* note 43, at 10263.

¹¹⁹ See, *e.g.*, SHORT, *supra* note 36, at 6.

¹²⁰ See, *e.g.*, *id.*

¹²¹ See *supra*, text accompanying notes 31–33.

¹²² *Id.*

pensatory mitigation.¹²³ The issue of how best to operate a mitigation banking program is discussed in the next section.

B. *Types of Banks*

Wetland mitigation banking has many proponents. But not all of its supporters have the same perception with respect to how mitigation should be implemented.

Before a mitigation banking program is adopted, framers of the program must determine the institutional nature of the banks that will provide mitigation credits.¹²⁴ Mitigation banks can take three forms: single-client banks, publicly-sponsored, credit-for-sale banks, and privately-sponsored, credit-for-sale banks.¹²⁵ Of course, mitigation banking programs can allow for many types of banks.¹²⁶

1. Single-Client

Most existing banks are initiated and managed by a sponsor for the specific purpose of providing advance mitigation for wetlands degradation resulting from projects undertaken by the same entity—single-client banks.¹²⁷ The most common example of a program involving single-client agency banks is that in which a transportation agency performs large-scale mitigation to compensate for small linear fills necessitated by its road building projects.¹²⁸ The Intermodal Surface

¹²³ See *supra*, text accompanying notes 55–87.

¹²⁴ See ENVIRONMENTAL LAW INST., *supra* note 10, at 43–44, 121–23; Foster, *supra* note 15, at 8–9.

¹²⁵ See ENVIRONMENTAL LAW INST., *supra* note 10, at 120–23.

¹²⁶ See *id.* In Florida, for instance, banks could consist of large tracts of privately owned land, state-owned property leased by private entrepreneurs, county-owned and run banks established to offset municipal projects, or any number of possibilities. Telephone interview with David Tulman, Senior Attorney with the Florida Department of Environmental Protection (Jan. 26, 1994). [hereinafter Tulman interview].

According to one economic analysis of proposed mitigation banking procedures in Florida, the existence of public agency-sponsored banks which compete directly against other mitigation banks can result in substantial disadvantages to private bank owners who lack the financial resources of many public agencies. FLORIDA ECONOMIC IMPACT STATEMENT, *supra* note 56, at 12.

¹²⁷ Shabman et al., *supra* note 8, at 11 (“nearly 75 percent [of existing mitigation banks] were established by public agencies to compensate for the wetland impacts of public infrastructure projects”). *E.g.*, ENVIRONMENTAL LAW INST., *supra* note 10, at 43; Foster, *supra* note 15, at 9; Robert D. Sokolove & Pamela D. Huang, *Privatization of Wetland Mitigation Banking*, NAT. RESOURCE & ENV'T 36 (Summer 1992).

¹²⁸ See, e.g., Haynes & Gardner, *supra* note 43, at 10261. An example is the Company Swamp mitigation bank in Bertie County, North Carolina. The credits from this bank are produced by the North Carolina DOT and are used to offset for NC DOT wetland fills. See ENVIRONMENTAL LAW INST., *supra* note 10, at apps. A & B.

Transportation and Efficiency Act (ISTEA)¹²⁹ provides for the use of federal funds in facilitating the development of mitigation banks to compensate for wetlands losses caused by highway projects of state departments of transportation (DOTs).¹³⁰ Many mitigation banks have been established by state DOTs to compensate, in advance, for wetlands alterations caused by their projects.¹³¹

Single-client mitigation banks can also be sponsored by private entities.¹³² For instance, the Tenneco Laterre Mitigation Bank in Louisiana is a 7,014-acre bank sponsored by Tenneco Oil Company in order to compensate for future oil and gas exploration.¹³³

2. Publicly-Sponsored, Credit-For-Sale Banks

Some banks are developed by public or quasi-public entities in order to provide credits which they sell on a non-profit basis to developers.¹³⁴ These are usually called "mitigation-fee" or "fee-based" banks,¹³⁵ although they have also been referred to as "cooperative" banks.¹³⁶ These banks are developed by resource agencies or non-profit environmental groups, and the resultant credits are then sold for a fee.¹³⁷

The non-profit organization performs administrative and long-term management functions, but the funding comes from the credit purchasers.¹³⁸ The fee is based on the costs of the project, such as acquisition, planning, construction, management, and monitoring, in addition to a moderate profit.¹³⁹ The prime example of such a bank is the California State Coastal Conservancy which has sponsored two mitigation banks: Bracut Wetland Mitigation Bank and Huntington Beach Bank.¹⁴⁰

¹²⁹ Pub. L. No. 102-240, 105 Stat. 1914 (1991).

¹³⁰ 23 U.S.C.A. § 103(i)(13) (Supp. IV 1992). See Haynes & Gardner, *supra* note 43, at 10261.

¹³¹ See ENVIRONMENTAL LAW INST., *supra* note 10, at Apps. A & B (listing existing and proposed wetland mitigation banks including many single-client, state DOT-sponsored banks); SHORT, *supra* note 36, table 2 at 42 (listing several existing state DOT banks).

¹³² See ENVIRONMENTAL LAW INST., *supra* note 10, at Apps. A & B (listing existing and proposed wetland mitigation banks including many single-client, privately sponsored banks).

¹³³ SHORT, *supra* note 36, table 2 at 42.

¹³⁴ See ENVIRONMENTAL LAW INST., *supra* note 10, at 122; SHORT, *supra* note 36, at 17-18.

¹³⁵ Shabman et al., *supra* note 8, at 11; SHORT, *supra* note 36, at 17.

¹³⁶ Foster, *supra* note 15, at 9.

¹³⁷ See, e.g., SHORT, *supra* note 36, at 17.

¹³⁸ See ENVIRONMENTAL LAW INST., *supra* note 10, at 122.

¹³⁹ SHORT, *supra* note 36, at 17.

¹⁴⁰ See ENVIRONMENTAL LAW INST., *supra* note 10, at Apps. A & B.

This type of bank offers several advantages. First, the entities performing the mitigation are motivated to do so by a desire to protect and enhance wetland values, rather than out of a desire for profit or a desire to receive a permit to fill wetlands elsewhere.¹⁴¹ Therefore, oversight will not be as difficult because the bank operators and regulatory agencies will desire equally high-quality mitigation.¹⁴²

Another advantage is that, in publicly-sponsored, fee-based banks, time and resources can be saved through the consolidation of many functions such as credit-production, oversight, and long-term management of the bank site.¹⁴³ In some cases where the bank sponsor is a resource agency, the additional function of project permitting could be added, thereby consolidating basically every function, apart from that of the client, in one entity.¹⁴⁴

There are, however, perceived disadvantages with the fee-based system.¹⁴⁵ Primarily, there are concerns regarding the funding of the mitigation efforts.¹⁴⁶ First, it may be difficult to find non-profit sponsors willing and able to bear the significant costs of mitigation for the indefinite period of time until credits can be sold.¹⁴⁷ Second, although the fees charged per credit are intended to cover the costs of mitigation, it is often difficult to foresee all long-term maintenance costs.¹⁴⁸ The California Coastal Conservancy's Bracut Marsh Bank, for example, has only recovered thirty-eight percent of the bank's costs.¹⁴⁹

¹⁴¹ See SALVESEN, *supra* note 8, at 5. Some publicly sponsored mitigation banks have an entirely different objective. The proposed Tenth West Corridor bank in Utah, for example, is intended to create mitigation credits in order to attract businesses to the City of Logan by offering free or subsidized mitigation credits. ENVIRONMENTAL LAW INST., *supra* note 10, at 123.

¹⁴² See SALVESEN, *supra* note 8, at 5.

¹⁴³ ENVIRONMENTAL LAW INST., *supra* note 10, at 43.

¹⁴⁴ *Id.*

¹⁴⁵ See, e.g., *id.* at 122-23; Shabman et al., *supra* note 8, at 11-12; SHORT, *supra* note 36, at 17-18.

¹⁴⁶ See ENVIRONMENTAL LAW INST., *supra* note 10, at 122-23; Shabman et al., *supra* note 8, at 11-12; SHORT, *supra* note 36, at 17-18.

¹⁴⁷ See ENVIRONMENTAL LAW INST., *supra* note 10, at 122; Shabman et al., *supra* note 8, at 11; SHORT, *supra* note 36, at 18.

¹⁴⁸ ENVIRONMENTAL LAW INST., *supra* note 10, at 122-23; SHORT, *supra* note 36, at 17.

¹⁴⁹ ENVIRONMENTAL LAW INST., *supra* note 10, at 122. Moreover, it is estimated that, even if all of the bank's credits were sold at the prescribed rate, only 54 percent of the costs would have been recouped. *Id.*

3. Privately-Sponsored, Credit-For-Sale Banks

There has been a rising call among mitigation banking supporters to institute a market-based mitigation banking system.¹⁵⁰ Such market-based, or entrepreneurial,¹⁵¹ banks would be businesses, operating to make profits.¹⁵² Market-based approaches to environmental protection and regulation have received a great deal of attention in recent years.¹⁵³ The main attraction of such market-based approaches is that they allow for greater flexibility and efficiency than the strict regulatory approach.¹⁵⁴

Generally, market-based approaches to environmental regulation create a market for the right to conduct regulated activities.¹⁵⁵ Specifically, in the wetlands context, a marketable mitigation credit system would involve the creation of mitigation banks by private entrepreneurs who recognize the existence of a market for credits that could be produced by those banks.¹⁵⁶

Proponents envisage certain benefits to follow from this. One benefit is that market forces would theoretically ensure that wetlands mitigation credits would be provided at the least cost.¹⁵⁷ Also, it is argued that the quality of mitigation would improve because market participants would have incentive to ensure the highest possible product.¹⁵⁸ This incentive would derive from a desire on the part of credit suppliers not to incur the costs of mitigation failure.¹⁵⁹

IV. FACILITATING EFFECTIVE WETLAND MITIGATION BANKING

Market-based, wetland-mitigation banking has the potential to help regulators achieve the national goal of no-net-loss of wetlands more

¹⁵⁰ See, e.g., Shabman et al., *supra* note 8, at 1; Sokolove & Huang, *supra* note 127, at 68.

¹⁵¹ ENVIRONMENTAL LAW INST., *supra* note 10, at 44; Foster, *supra* note 15, at 8.

¹⁵² See Shabman et al., *supra* note 8, at 12.

¹⁵³ See generally, e.g., Robert W. Hahn & Robert N. Stavins, *Incentive-Based Environmental Regulation: A New Era from an Old Idea?*, 18 ECOLOGY L.Q. 1, 15-20 (1991); Robert W. Hahn & Gordon L. Hester, *Marketable Permits: Lessons for Theory and Practice*, 16 ECOLOGY L.Q. 361, 362 (1989); Franz Thomas Litz, *Comment, Harnessing Market Forces in Natural Resources Management: Lessons from the Surf Clam Fishery*, 21 B.C. ENVTL. AFF. L. REV. 335 (1994).

¹⁵⁴ See Shabman et al., *supra* note 8, at 12-13; Hahn & Hester, *supra* note 153, at 361-63.

¹⁵⁵ See Haynes & Gardner, *supra* note 43, at 10261. An example of an existing marketable permit system is emissions trading in the air pollution control context. *Id.* See generally Hahn & Hester, *supra* note 153 (analyzing four different environmental regulatory programs which include marketable permit schemes).

¹⁵⁶ See Shabman et al., *supra* note 8, at 12; Sokolove & Huang, *supra* note 125, at 68.

¹⁵⁷ Shabman et al., *supra* note 8, at 12.

¹⁵⁸ See *id.* at 31-32.

¹⁵⁹ See *id.*

fairly and effectively than the current regulatory scheme.¹⁶⁰ However, the success of mitigation banking depends on the development of regulatory policies which establish and further ecological and economic goals.

In developing regulatory policy with regard to mitigation and mitigation banking, policy makers must recognize two fundamental factors. First, regulators actually create the market for mitigation credits through the very exercise of their regulatory functions.¹⁶¹ If regulators did not require mitigation for wetland loss and degradation resulting from development projects, developers would not need to seek to purchase mitigation credits. Therefore, any regulatory policy which affects the amount or type of mitigation required in a given area necessarily affects the market for mitigation credits.

Second, regulators are the only parties involved in a credit market with an intrinsic interest in the long-term value and success of mitigation projects.¹⁶² Private mitigation bankers will desire to realize the highest profits. Presumably, they will achieve this goal through keeping the cost of producing each credit at a minimum and sacrificing the quality of the mitigation.¹⁶³ This cost-cutting approach is unlikely to coincide with the goal of achieving high-quality, successful mitigation. Likewise, purchasers of credits will be motivated by a desire to pay as little as possible for those credits, not a desire to ameliorate environmental harms.¹⁶⁴

Consideration of these factors together yields the conclusion that it is incumbent upon regulators to ensure through regulation the solvency and quality of mitigation. But regulators must also recognize that most regulatory activity will affect the market for mitigation credits and the feasibility of establishing mitigation banks. Evidence of the dual consequences—environmental and market—of regulatory activity is apparent in many contexts.¹⁶⁵

Five policy areas deserve particular attention. First, the use of advanced wetlands planning and classification can increase investment certainty for potential bank sponsors, while also providing valuable information regarding sites for and types of mitigation.¹⁶⁶ Second, wetlands classification should supplement, not replace, sequencing in

¹⁶⁰ See *supra*, text accompanying notes 55–87.

¹⁶¹ Shabman et al., *supra* note 8, at 20–21.

¹⁶² Shabman et al., *supra* note 8, at 21.

¹⁶³ See *id.* at 21.

¹⁶⁴ See *id.*

¹⁶⁵ See *id.* at 21–25.

¹⁶⁶ See *infra*, text accompanying notes 171–211.

regulating wetland mitigation and mitigation banking.¹⁶⁷ Third, the siting of mitigation banks should take place within the same watershed as anticipated wetland degradation.¹⁶⁸ Fourth, mitigation banking credits should only accrue where mitigation projects replace lost wetland values.¹⁶⁹ Finally, bank credits generally should be awarded only for mitigation which occurs in advance of development projects which will be mitigated through the use of those credits.¹⁷⁰

A. *Advanced Identification and Watershed Planning*

The current scheme of wetlands regulation has been criticized for being protracted and uncertain.¹⁷¹ Many experts agree that the key to improving wetlands protection in the United States is through the use of planning mechanisms, and that any mitigation banking system should be implemented in the context of a comprehensive wetlands plan.¹⁷²

The goal of implementing such an approach is to shift away from the project-by-project approach to wetlands protection and management.¹⁷³ The project-specific approach inhibits regulators from integrating conservation objectives into the regulation of development.¹⁷⁴

Central to advanced planning and watershed management are the identification, mapping, and preliminary assessment of wetland functions of all the wetlands within each watershed.¹⁷⁵ With this information available, regulators would be able to determine those types of wetlands and wetland functions that are in abundance within certain watersheds and those that are rare.¹⁷⁶

Such knowledge would allow for the classification of wetlands according to their relative values within the watershed.¹⁷⁷ The particular class in which a wetland would fall would hinge on the wetland's ecological value and on the difficulty of replacing the wetland func-

¹⁶⁷ See *infra*, text accompanying notes 212–239.

¹⁶⁸ See *infra*, text accompanying notes 240–254.

¹⁶⁹ See *infra*, text accompanying notes 255–268.

¹⁷⁰ See *infra*, text accompanying notes 269–282.

¹⁷¹ ENVIRONMENTAL LAW INST., *supra* note 10, at 125.

¹⁷² See Foster, *supra* note 15, at 41–42 (summarizing statements of Christy Foote-Smith, Director of the Massachusetts Division of Wetlands and Waterways (“Watershed-based wetland planning may be the most appropriate means” of managing wetlands protection efforts)).

¹⁷³ PROTECTING AMERICA’S WETLANDS, *supra* note 1, at 7.

¹⁷⁴ See *id.*

¹⁷⁵ See *id.* at 7–8.

¹⁷⁶ See Shabman et al., *supra* note 8, at 42.

¹⁷⁷ *Id.* at 17.

tions that would be lost if the wetland were to be destroyed or degraded.¹⁷⁸

In addition to providing regulators with knowledge of the types of wetlands and wetlands functions that exist in particular watershed areas, watershed planning and advanced identification serve to nurture the market for mitigation credits.¹⁷⁹ Establishing restoration priorities for various types of wetlands and wetland values within each watershed would create investment certainty for potential credit suppliers by indicating which types of wetlands would most likely be certified by regulators and purchased by developers.¹⁸⁰ Mitigation bankers would know where, what type, and how much mitigation to undertake within each planning area.

Moreover, the information derived from advanced planning could actually lower the costs of undertaking mitigation in addition to maximizing the demand for mitigation.¹⁸¹ For instance, information regarding the location of previously degraded wetlands would assist bank sponsors in the location of restoration sites.¹⁸² Likewise, sponsors would benefit from information regarding hydrology and the presence of colonizing species in siting both restoration and creation projects.¹⁸³

Advanced planning would not only aid the supply side of the mitigation credit market; it would also be of benefit to the demand side. Planning processes can help permit applicants by identifying abundant wetland types or degraded wetlands within the watershed.¹⁸⁴ This would provide applicants with information regarding which wetlands areas are more likely to be deemed appropriate for off-site mitigation.¹⁸⁵

Advance planning is useful in improving the ecological viability of mitigation efforts. Advance planning and classification are also vital to the establishment of a successful market for mitigation banking credits. Various planning and classification systems are currently available, and others have been proposed. To the extent that they further ecological and economic viability of mitigation and mitigation banking, these systems are desirable. Some of these planning systems, however, subordinate the primary goal of protecting wetland values to the

¹⁷⁸ See *id.* at 41–42.

¹⁷⁹ See *id.* at 22–23.

¹⁸⁰ See *id.*

¹⁸¹ *Id.* at 23.

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ See *id.*

¹⁸⁵ See *id.*

ancillary goal of increasing market certainty, and should not be incorporated into any wetland mitigation banking scheme.

1. Advanced Planning Under the Clean Water Act

While the current wetlands regulatory scheme is often criticized for focusing on specific projects instead of adopting a more comprehensive approach, there is, in fact, a provision in the CWA for advanced identification.¹⁸⁶ Advanced Identification (ADID) under the CWA involves the collection of information about wetlands within defined areas.¹⁸⁷ On the basis of this information, EPA and the Corps make a determination as to whether particular wetlands are suitable or unsuitable for development.¹⁸⁸

These determinations are proactive and can help reduce uncertainty for developers and bank operators by providing a method for evaluating the likelihood of permit issuance.¹⁸⁹ ADID can also assist regulators and planners by providing a framework for taking a more comprehensive approach to wetlands management.¹⁹⁰

While the ADID process has historically been used only to identify particularly vital wetlands that are inappropriate for fill, there is potential for ADID to play an important role in a more comprehensive watershed management approach.¹⁹¹ In addition to providing EPA and the Corps with a broader and more comprehensive management perspective, ADID implementation could be delegated to the states.¹⁹² This state involvement could be federally funded with conditions that states adopt comprehensive state wetlands strategies in accordance with EPA guidelines and that these plans be integrated with other management tools such as special area management plans¹⁹³ and state certification of Corps permitting decisions.¹⁹⁴

¹⁸⁶ 33 U.S.C. § 1344; 40 C.F.R. 230.80 (1993).

¹⁸⁷ ENVIRONMENTAL LAW INST., *supra* note 10, at 125; SALVESEN, *supra* note 8, at 38.

¹⁸⁸ ENVIRONMENTAL LAW INST., *supra* note 10, at 125; SALVESEN, *supra* note 8, at 38.

¹⁸⁹ ENVIRONMENTAL LAW INST., *supra* note 10, at 125; SALVESEN, *supra* note 8, at 38.

¹⁹⁰ SALVESEN, *supra* note 8, at 38. It must be stressed that a designation of a particular wetland as suitable for development does not amount to a guarantee that a permit to fill that wetland will be granted automatically, or that a permit is unattainable in a wetland designated as inappropriate for fill. Rather, ADID determinations are preliminary determinations intended only to provide guidance as to the appropriate use of particular wetlands. *See* ENVIRONMENTAL LAW INST., *supra* note 10, at 125; SALVESEN, *supra* note 8, at 38.

¹⁹¹ *See* Foote-Smith, *supra* note 181, at 4.

¹⁹² *See id.*

¹⁹³ *See id.*

¹⁹⁴ *Id.* Under section 401 of the CWA, states have the authority to issue, condition, waive or

The advantage of expanding the ADID program in conjunction with instituting mitigation banking is that it provides potential credit applicants with valuable information about developable wetlands and about likely sites for mitigation banks.¹⁹⁵ Of the 76 ADID programs that have been initiated, three have incorporated mitigation banking.¹⁹⁶ The Columbia South Shore Wetlands Management Plan, which involved a survey of 40,000 acres in Oregon, envisioned a general regional permit for mitigation carried out through a mitigation bank.¹⁹⁷ However, this ADID program has been suspended, and the general permit which the Corps had issued in February of 1992 has since been revoked.¹⁹⁸ The abandonment of the Columbia South Shore plan was due to a legal challenge by environmentalists.¹⁹⁹

2. Advanced Planning Under the Coastal Zone Management Act

Another possible tool for proactively designating wetlands as suitable or unsuitable for fill is the special area management plan (SAMP) provided for under the Coastal Zone Management Act (CZMA).²⁰⁰ These plans apply to discrete and usually relatively small geographic areas.²⁰¹ It is often the case that SAMPs are devised in connection with an ADID or a regional permit issued under section 404 of the CWA.²⁰²

SAMPs differ from ADIDs in three significant respects. First, they only apply to "coastal zones."²⁰³ This clearly limits their applicability to mitigation banking.²⁰⁴ Secondly, SAMPs are developed by the

deny water quality certification for federal permits and licenses. Unless a state grants or waives section 401 certification, the Corps cannot issue a section 404 permit. 33 U.S.C. § 1341 (1988).

¹⁹⁵ ENVIRONMENTAL LAW INST., *supra* note 10, at 126.

¹⁹⁶ *Id.* at 125.

¹⁹⁷ *Id.* at 125-26.

¹⁹⁸ *Id.* at 126.

¹⁹⁹ *Id.* (citing Northwest Env'tl. Defense Ctr. v. United States Army Corps of Eng'rs, 806 F. Supp. 891 (D. Or. 1992)).

²⁰⁰ 16 U.S.C. §§ 1451-64 (1988). CZMA defines a SAMP as: "a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone." 16 U.S.C. § 1453(17).

²⁰¹ ENVIRONMENTAL LAW INST., *supra* note 10, at 128.

²⁰² *Id.*

²⁰³ 16 U.S.C. § 1453(1) (Supp. V 1993). Coastal zones are defined as "coastal waters...and the adjacent shorelands," and wetlands. *Id.*

²⁰⁴ Although, it should be noted that the Corps has expanded its use of SAMP procedures to wetlands beyond coastal zones. ENVIRONMENTAL LAW INST., *supra* note 10, at 128.

states, rather than by federal agencies.²⁰⁵ This allows for better incorporation of state and local concerns.²⁰⁶ Finally, unlike ADIDs, SAMPs are legally binding, and states may base their coastal permit decisions on them.²⁰⁷

In addition, the Memorandum of Agreement between the Corps and EPA exempts development projects that are carried out according to SAMPs from the normal sequencing procedure mitigation for wetland losses.²⁰⁸ This exemption would apply to mitigation banks established in connection with SAMPs.²⁰⁹ The opportunity to avoid sequencing within the area covered by SAMPs will be attractive to developers.²¹⁰

The avoidance of sequencing would also promote the mitigation credit market. Wetland development within areas designated for development could be mitigated through the purchase of mitigation credits. Demand for mitigation credits would rise, thereby increasing investment certainty for bank producers. However, the potential for significant losses of wetland values exists where SAMPs are not truly comprehensive.²¹¹ Therefore, extra care must be taken to ensure that SAMP approval only takes place upon a showing that all relevant ecological considerations have been addressed.

B. *The Combined Role of Sequencing and Wetland Classification in Wetland Mitigation Banking*

While the primary purpose of regulating development in wetlands is to protect wetland resources, it also affects the demand for mitigation credits. Demand for mitigation banking credits is a function of pressure to develop wetlands and government-imposed compensa-

²⁰⁵ See ENVIRONMENTAL LAW INST., *supra* note 10, at 127-28.

²⁰⁶ *Id.* at 128.

²⁰⁷ *Id.* at 127. The study only found one SAMP that explicitly incorporated mitigation banking. This SAMP, developed for the Port of Pascagoula in Jackson County, Mississippi, was initiated to address pressures on the Mississippi Gulf Coast due to development, shipbuilding and oil refineries. The Pascagoula SAMP includes plans for the future development of the port area as well as plans for mitigation and disposal of dredge material, and it provides varying levels of protection according to the types and locations of wetlands. A bank was established through the acquisition and preservation of 3,500 acres of wetlands in the area. The credits from this bank are intended only to offset wetland losses resulting from eight pre-designated development projects. *Id.* at 128.

²⁰⁸ MOA, *supra* note 22.

²⁰⁹ ENVIRONMENTAL LAW INST., *supra* note 10, at 129.

²¹⁰ *Id.*

²¹¹ *Id.*

tory mitigation requirements.²¹² Without development pressure, no credit market will develop.²¹³ Likewise, no market will develop if regulators either always deny permits for wetland development or permit such development without requiring compensatory mitigation.²¹⁴

The sequencing approach currently employed in regulating wetland development²¹⁵ has significant effects on the credit market, as well as environmental implications.²¹⁶ Avoidance of unnecessary wetlands impacts is the purpose of requiring developers to seek to avoid and minimize impacts on wetlands before resorting to compensatory mitigation.²¹⁷

Critics denounce the sequencing procedure, arguing that it reduces the demand for permits and credits²¹⁸ and discourages entry into the credit-supply market.²¹⁹ These critics insist that regulatory reform would facilitate the creation of credit markets.²²⁰ By introducing an element of flexibility regarding avoidance and minimization, reformers argue, regulators could increase wetlands values while increasing demand for mitigation credits.²²¹

Others argue that inconsistency in the permitting process, rather than the sequencing procedure itself, poses the greatest threat to the viability of mitigation credit markets.²²² They argue that if sequencing were always required, a predictable level of demand for mitigation credits by permit applicants whose projects did satisfy sequencing requirements would remain.²²³ The elimination of sequencing, on the other hand, would result in higher demand for mitigation credits, but would not substantially increase predictability.²²⁴ The only way sequencing might actually affect the viability of mitigation banking would be if it denied virtually all wetland development.²²⁵ The inference to be made from this argument is that the predictability of

²¹² *Id.* at 117.

²¹³ *Id.*

²¹⁴ *Id.* See also Shabman et al., *supra* note 8, at 23.

²¹⁵ See *supra*, text accompanying notes 26–29.

²¹⁶ See Shabman et al., *supra* note 8, at 23.

²¹⁷ 45 Fed. Reg. 85338–85339 (Dec. 24, 1980).

²¹⁸ Shabman et al., *supra* note 8, at 23.

²¹⁹ Michael R. Deland, *No Net Loss of Wetlands: A Comprehensive Approach*, NAT. RESOURCE & ENV'T 3, 5 (Summer 1992).

²²⁰ Shabman et al., *supra* note 8, at 37; Deland, *supra* note 219, at 5.

²²¹ Shabman et al., *supra* note 8, at 38.

²²² ENVIRONMENTAL LAW INST., *supra* note 10, at 118.

²²³ *Id.*

²²⁴ *Id.*

²²⁵ *Id.*

demand, not its magnitude, is an essential prerequisite for credit market.²²⁶

The goal of increased predictability is not inconsistent with the goal of greater flexibility in the sequencing process. Advocates of a credit market system view wetlands classification as a solution to both problems.²²⁷ Such classification would supplement sequencing with a formulaic approach which would, based on the application of various classification criteria, assign each wetland to a particular category.²²⁸ In turn, various levels of regulatory oversight would apply to wetlands within each category.²²⁹ Presumably, stricter oversight would result in stricter application of sequencing and of on-site, in-kind mitigation preferences.²³⁰

The criteria used to classify wetlands should include ecological value,²³¹ difficulty of mitigating lost wetlands values,²³² and economic and social value of development.²³³

The first criterion, ecological value, is a function of the scarcity of and need for the particular wetlands type within the watershed and the potential for future degradation of a wetland even if development

²²⁶ In fact, most studies and government guidelines on mitigation retain sequencing, and allow the use of mitigation banking credits only when alternative sites and plans would not obviate the need for offsite compensatory mitigation. See, e.g., SHORT, *supra* note 36, at 8; MEMORANDUM TO THE FIELD, *supra* note 55, at 2.

Regulators' reluctance to depart from the traditional sequencing methodology may stem from the notion that certain development projects are more suitable for off-site compensatory mitigation, and thus mitigation banking, than others. See REGION IX GUIDELINES, *supra* note 47, at 3. According to one EPA region, projects appropriate for off-site mitigation and mitigation banking include:

1. Projects that require access or proximity to, or siting in, the aquatic environment (*i.e.*, "water dependent" projects).
2. Projects whose unavoidable impacts are very small, wetlands that are isolated or fragmented, or aquatic habitats that have minimal existing or potentially restorable functional values.
3. Linear projects (*e.g.*, highways, pipelines, transmission lines, canals) that tend to result in numerous minor, but cumulatively significant, impacts to multiple aquatic areas.
4. Projects involving minor or routine repair and maintenance of existing public structures where mitigation might otherwise not occur (*e.g.*, maintenance of bridges, cleaning of drainage ditches).

Id.

²²⁷ See Shabman et al., *supra* note 8, at 39-47; Deland, *supra* note 219, at 5.

²²⁸ Shabman et al., *supra* note 8, at 41; Deland, *supra* note 219, at 5.

²²⁹ See Shabman et al., *supra* note 8, at 41.

²³⁰ See Deland, *supra* note 219, at 5.

²³¹ Shabman et al., *supra* note 8, at 42; Deland, *supra* note 219, at 5.

²³² Shabman et al., *supra* note 8, at 42.

²³³ See Shabman et al., *supra* note 8, at 42; Deland, *supra* note 219, at 5.

of the wetland itself is denied.²³⁴ For example, a small patch of forested swamp bordering a highway on one side and a condominium project on another is unlikely to have great ecological value. This is particularly true if there are many other forested swamps within the same watershed, because it will most likely be degraded in the near future anyway. However, a large stretch of salt marsh which does not border any adulterative influences possesses significant ecological value, especially if it is the only such pristine stretch of salt marsh in the area.

The second classification criterion concerns the difficulty of replacing lost wetlands values through compensatory mitigation.²³⁵ Availability of appropriate mitigation sites within the same watershed and the scientific success rate of replicating or restoring particular types of wetlands are relevant considerations in applying this criterion.

The third category concerns the economic and social value of development.²³⁶ Clearly, regulators impose a greater burden on landowners where they prevent potentially lucrative development projects. However, high economic returns on development enable landowners to pay for more mitigation.²³⁷ Consequently, regulators could demand higher ratios of mitigation to degradation—mitigation ratios—from landowners earning high returns from development than from those receiving smaller returns.

If regulators weigh each of these factors carefully in classifying and regulating the development of wetlands, benefits may accrue jointly to the watershed and the credit market. Such a classification system could continue to stress avoidance as being, presumably, the most appropriate option.²³⁸ But it could also facilitate the introduction of other considerations into the permitting process, such as the opportunity costs incurred by, and actual relative environmental benefits derived from, the prevention of wetlands development.²³⁹

C. *Siting of Wetland Mitigation Banking Efforts*

Bank sponsors must receive agency approval of the location and physical characteristics of proposed banks.²⁴⁰ Siting of banks is a criti-

²³⁴ See Shabman et al., *supra* note 8, at 42.

²³⁵ *Id.*

²³⁶ See *id.* at 45.

²³⁷ *Id.* at 45.

²³⁸ See *id.* at 45.

²³⁹ See *id.* at 45.

²⁴⁰ See, e.g., CALIFORNIA GUIDELINES, *supra* note 44, at 5–11.

cal component of a mitigation banking program.²⁴¹ Generally, mitigation banks should be located within the same watershed as, or at least in close proximity to, the projects they are intended to mitigate.²⁴² By requiring that banks be located near areas of expected future wetlands development, regulators can help to ensure that wetlands values are not stripped from one watershed and replaced in another.²⁴³

Mitigation banks should also be located in areas where the potential for impacts by present and future land uses is minimized.²⁴⁴ To protect mitigation bank sites further from future degradation by adjacent land uses, many studies and guidelines recommend that regulators require buffer zones for each bank.²⁴⁵ No mitigation credits would accrue from these buffer zones.²⁴⁶ Therefore, the more acreage of buffer that regulators require, the higher the price of credits will be.²⁴⁷

Of course, it is also important that the site chosen for a mitigation bank possesses the appropriate physical characteristics to facilitate compensation for anticipated losses of wetlands values.²⁴⁸ Therefore, the bank should encompass desirable habitat types for species adversely impacted by development projects.²⁴⁹

In addition, bank sites must have adequate water sources to support the appropriate type of wetland ecosystem.²⁵⁰ This is extremely important because, without a sufficient and reliable water supply, the chances of a bank being an ecological success are low.²⁵¹ Mitigation

²⁴¹ ENVIRONMENTAL LAW INST., *supra* note 10, at 63. One major study of mitigation banking views early attention to bank siting considerations as being "the most important factor affecting the potential usefulness of mitigation banks as an effective instrument of wetland protection." *Id.* at 75.

²⁴² ENVIRONMENTAL LAW INST., *supra* note 10, at 75; CALIFORNIA GUIDELINES, *supra* note 44, at 5; SHORT, *supra* note 36, at 13.

²⁴³ See REGION IX GUIDELINES, *supra* note 47, at 4; CALIFORNIA GUIDELINES, *supra* note 44, at 5; SHORT, *supra* note 36, at 13.

²⁴⁴ CALIFORNIA GUIDELINES, *supra* note 44, at 5.

²⁴⁵ *E.g.*, ENVIRONMENTAL LAW INST., *supra* note 10, at 72; CALIFORNIA GUIDELINES, *supra* note 44, at 6.

²⁴⁶ CALIFORNIA GUIDELINES, *supra* note 44, at 6.

²⁴⁷ See ENVIRONMENTAL LAW INST., *supra* note 10, at 72.

²⁴⁸ See SHORT, *supra* note 36, at 26.

²⁴⁹ *Id.*

²⁵⁰ ENVIRONMENTAL LAW INST., *supra* note 10, at 72; CALIFORNIA GUIDELINES, *supra* note 44, at 9.

²⁵¹ ENVIRONMENTAL LAW INST., *supra* note 10, at 72. Mitigation banking efforts have actually been suspended due to long-term drought conditions. One such bank is the 150-acre Mud Lake Wildlife Management Area mitigation bank established by the Idaho Transportation Department in Jefferson County, Idaho. *Id.* at 72, apps. A & B.

plans should also ensure that the use of such a water source does not adversely impact other wildlife resources and habitats.²⁵²

Regulators must consider these ecological factors in determining whether certain sites are appropriate for mitigation bank development. However, more restrictive requirements will result in a premium on suitable mitigation bank sites and will reduce the supply of credits available to the market.²⁵³ Moreover, as with any aspect of government involvement, lack of government specificity and consistency with regard to siting criteria can exacerbate market uncertainty.²⁵⁴ Bank regulators also should consider these facts in promulgating siting standards and in making bank permitting decisions.

D. Allowable Mitigation

Related to the issue of bank siting is the type of mitigation which will provide banking credits. Banking credits should only be awarded for mitigation efforts which effectively replace lost wetland values.

Restoration is generally considered the most appropriate form of mitigation.²⁵⁵ Restoration is favored over creation of new wetlands because it is generally considered to be more successful than creation.²⁵⁶ This results from the fact that preexisting hydrological and wildlife conditions are available to facilitate restoration of wetland values.²⁵⁷

Restoration is also preferred to enhancement because it only enhances particular wetlands functions, rather than replacing entire wetlands.²⁵⁸ Moreover, such enhancement often jeopardizes other unenhanced wetland traits.²⁵⁹

Lastly, "preservation is the most controversial type of mitigation."²⁶⁰ The primary argument against allowing preservation of existing wetlands to compensate for the destruction of other wetlands is that, unlike with restoration or creation, a net loss of wetlands results.²⁶¹

²⁵² CALIFORNIA GUIDELINES, *supra* note 44, at 9.

²⁵³ See ENVIRONMENTAL LAW INST., *supra* note 10, at 74-75.

²⁵⁴ See *id.* at 75.

²⁵⁵ *Id.* at 55.

²⁵⁶ SALVESEN, *supra* note 8, at 81, 96; ENVIRONMENTAL LAW INST., *supra* note 10, at 53-55.

²⁵⁷ ENVIRONMENTAL LAW INST., *supra* note 10, at 54.

²⁵⁸ See ENVIRONMENTAL LAW INST., *supra* note 10, at 54.

²⁵⁹ SALVESEN, *supra* note 8, at 89.

²⁶⁰ ENVIRONMENTAL LAW INST., *supra* note 10, at 54.

²⁶¹ Haynes & Gardner, *supra* note 43, at 10263; ENVIRONMENTAL LAW INST., *supra* note 10, at 54; REGION IX GUIDELINES, *supra* note 53, at 4; SHORT, *supra* note 36, at 6.

Others argue, however, that the use of preservation in a mitigation banking system has its advantages. First, it can result in the protection of high-value, difficult-to-replace wetlands that would otherwise be degraded or destroyed in the near future.²⁶² If preservation is allowed only in conjunction with monitoring and maintenance requirements, wetlands losses that may have occurred otherwise may be avoided.²⁶³ The other advantage offered in favor of preservation is the avoidance of regulatory takings by agencies that prohibit landowners from filling wetlands on their land.²⁶⁴ Despite these perceived advantages, very few existing mitigation banks are “preservation” banks.²⁶⁵

Some guidelines and proposals suggest the use of variable mitigation ratios to compensate for the use of less preferred mitigation types.²⁶⁶ EPA Region IV, for instance, has issued draft guidance which establishes mitigation ratios of 2:1 for restoration, 3:1 for creation, 4:1 for enhancement, and 10:1 for preservation.²⁶⁷

Regulators should adopt a policy which will result in the most effective replacement of wetland values which are lost due to development. A different “sequencing” scheme which reflects preferences of compensatory mitigation types may achieve this goal. Restoration of previously degraded wetlands should be presumed to be the only appropriate form of mitigation. The burden should be on bank sponsors who wish to create credits through the initiation of any other type of mitigation to show why restoration is not possible or will not produce the most ecologically beneficial results.

Variable credit ratios, such as those advanced by EPA Region IV,²⁶⁸ should be used to supplement this mitigation type preference system. For example, a bank sponsor can establish that wetlands creation is the best mitigation option in a particular area because no appropriate restoration sites are available. In such a case, regulators should require a higher mitigation credit ratio. Regulators may choose to allow for some flexibility in requiring higher mitigation ratios in appropriate circumstances. Again, however, the burden of showing why higher ratios are not necessary to ensure full replacement of wetland functions should be on the bank sponsor.

²⁶² ENVIRONMENTAL LAW INST., *supra* note 10, at 55; SHORT, *supra* note 36, at 6.

²⁶³ See ENVIRONMENTAL LAW INST., *supra* note 10, at 55.

²⁶⁴ Haynes & Gardner, *supra* note 49, at 10262–63. See *supra* text accompanying notes 95–110.

²⁶⁵ See, e.g., ENVIRONMENTAL LAW INST., *supra* note 10, at 55.

²⁶⁶ See *id.*

²⁶⁷ *Id.*

²⁶⁸ See *supra* text accompanying note 267.

Establishing a preference system for different types of mitigation and requiring higher mitigation credit ratios for lower-preference mitigation types in most circumstances will result in more effective replacement of lost wetlands values. Providing for some flexibility in the types of mitigation allowable and the level at which mitigation ratios are set will provide bank sponsors with more options for creating mitigation credits. In addition to nurturing the credit market, this flexibility will encourage research and development of more effective mitigation technology. If credit producers know that more effective mitigation will result in lower credit ratios, they will be more likely to invest in seeking to improve mitigation technology. Therefore, both the quality and efficiency of mitigation will improve.

E. *Advance Mitigation*

One of the most extolled advantages of wetlands mitigation banking is the fact that mitigation occurs prior to the degradation for which it is compensating.²⁶⁹ Some proposals, however, advocate relaxation of the requirement that mitigation be completed before credits can be sold.²⁷⁰ Proponents of such relaxation argue that the requirement of a sizable up-front capital outlay, without the prospect of any return on investment for several years after mitigation costs are incurred, will deter potential credit producers from entering the market.²⁷¹

Another perceived problem is the disparity that exists between the advance mitigation requirement of mitigation banking and the rather lax temporal requirements associated with on-site, project-specific mitigation efforts.²⁷² Critics of strict advance mitigation requirements maintain that permit applicants will not be able to pursue the option of purchasing mitigation banking credits because this disparity will drive up the price of credits and that banks will be competitively disadvantaged.²⁷³

The argument that this disparity in regulatory control puts mitigation banking at a disadvantage does not necessarily indicate a need for relaxing advance mitigation requirements for mitigation banks. The problem could be solved just as well by "leveling the playing

²⁶⁹ *E.g.*, ENVIRONMENTAL LAW INST., *supra* note 10, at 153; REGION IX GUIDELINES, *supra* note 47, at 1. *See supra*, text accompanying notes 55–62.

²⁷⁰ *See* Shabman et al., *supra* note 8, at 26.

²⁷¹ FLORIDA ECONOMIC IMPACT STATEMENT, *supra* note 56, at 13; Shabman et al., *supra* note 8, at 26; ENVIRONMENTAL LAW INST., *supra* note 10, at 59–60.

²⁷² ENVIRONMENTAL LAW INST., *supra* note 10, at 59.

²⁷³ *Id.* at 59.

field” by requiring advance mitigation for on-site mitigation projects as well as for mitigation banking efforts.²⁷⁴ This is desirable from an ecological point of view as well, since it will reduce the probability of mitigation failure for on-site projects.

Advocates of relaxing the advance mitigation requirements offer two general alternative policies to guard against mitigation failure—the main function which prior mitigation is intended to perform. One means of resolving the difficulties associated with requiring fully functional wetland mitigation to be in place before allowing the sale of any credits is to require higher mitigation ratios for credits distributed prior to full functional maturity of a mitigation bank.²⁷⁵ This is similar to the notion of adjusting mitigation ratios according to the type of mitigation performed by a credit producer.²⁷⁶ Variable mitigation ratios are also an allowable means of providing for credit withdrawal prior to full functional maturity under the EPA/Corps guidance.²⁷⁷

Another way of protecting against net wetland losses due to mitigation failure is to allow incremental distribution of credits according to the level of wetland functions that have been established.²⁷⁸ EPA and Corps guidelines provide for such incremental distribution in some cases.²⁷⁹ However, a credit supplier seeking to distribute credits in advance of fully functional mitigation must “demonstrate that the mitigation has been or will be successful in offsetting project-related impacts.”²⁸⁰ Requirements regarding financial guarantees, maintenance and monitoring, and assurances for any necessary future remediation can supplement a system which allows for incremental distribution.²⁸¹ Moreover, design, construction, establishment of necessary hydrology, and other initial steps necessary for the estab-

²⁷⁴ *Id.* at 60.

²⁷⁵ *Id.*; Shabman et al., *supra* note 8, at 33.

²⁷⁶ *See supra*, text accompanying notes 266–267.

²⁷⁷ MEMORANDUM TO THE FIELD, *supra* note 55, at 3–4.

²⁷⁸ *See ENVIRONMENTAL LAW INST.*, *supra* note 10, at 60.

²⁷⁹ *See, e.g.*, REGION IX GUIDELINES, *supra* note 47, at 5; MEMORANDUM TO THE FIELD, *supra* note 55, at 2.

²⁸⁰ REGION IX GUIDELINES, *supra* note 47, at 5.

²⁸¹ ENVIRONMENTAL LAW INST., *supra* note 10, at 60. The types of financial guarantees regulators can require of credit producers include surety bonds, trust funds, escrow accounts, sinking funds, insurance, self-bonds, and corporate guarantees. *Id.* at 105.

In Florida, for example, credit producers must post bonds and follow mitigation schedules. If a credit producer falls behind in its mitigation responsibilities, the state Department of Environmental Protection can take over the mitigation effort and cash the bond to finance the mitigation. Tulman Interview, *supra* note 126.

ishment of a mitigation bank at least should be completed before credit sales are allowed.²⁸²

By allowing credits to accrue, in certain circumstances, before mitigation projects reach full functional maturity, regulators can relieve some of the risks of investing in mitigation banking projects. Variable mitigation ratios and incremental credit distribution both offer viable means of allowing earlier credit accrual while still protecting against mitigation failure. These options, however, should not be automatically available to potential bank sponsors. Many types of investments require large capital outlays without the prospect of immediate return. Bank sponsors should have to make a showing that requiring advance mitigation would make their specific projects infeasible in order to be eligible for pre-maturity credits.

V. CONCLUSION

Wetland mitigation banking has the potential to facilitate the realization of the national goal of no-net-loss of wetlands, and perhaps a net gain of wetlands in the future. However, mitigation banking is not a panacea for the regulatory ills that are allowing America's wetlands to be destroyed at such an alarming rate. Banking cannot succeed in a vacuum, but must be undertaken in conjunction with other regulatory and policy reforms which will allow for a viable credit market while ensuring the ecological integrity of mitigation projects.

Watershed planning must replace the project-specific approach now prevalent in the wetland development permitting process. Sequencing should be presumed to govern, but regulators should use wetland classification to provide sufficient flexibility to ensure that mitigation banking is a viable mitigation option where appropriate. In addition, mitigation banking projects should be sited in areas where they are needed and where there are sufficient environmental resources to support them. It is also important for regulators to restrict mitigation which will produce credits to those types of mitigation which will ensure full replacement of lost wetland values. Restoration should be presumed to be the most appropriate form of mitigation. Again, however, there should be sufficient flexibility to allow for other types of mitigation where bank sponsors can demonstrate that they will maximize environmental benefit. Finally, while regulators should generally protect against mitigation failure by requiring advance mitigation, variable credit ratios and incremental credit distribution can serve

²⁸² ENVIRONMENTAL LAW INST., *supra* note 10, at 60.

the same purpose where strict advance mitigation requirements would otherwise prevent the initiation of mitigation banking. Finally, bank credits generally should be awarded only for mitigation which occurs in advance of development projects which will be mitigated through the use of those credits.