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Wetland Mitigation Banking: Status and Prospects

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Summary

Wetland protection is controversial because the federal government regulates activities on private lands and because the natural values at some of these regulated sites are being debated. This controversy pits property owners and development interests against environmentalists and others who seek to protect the remaining wetlands. Mitigation banking, which allows a person to degrade a wetland at one site if a wetland at another site is improved, has been identified as a potential answer to this shrill and seemingly intractable debate.

Mitigation banking is relatively new, and federal mitigation banking policies continue to evolve. It was first endorsed by the Bush Administration. The Clinton Administration subsequently endorsed the concept in 1993, and the Corps and EPA issued detailed direction to field staff concurrently. Five federal agencies published final guidance in the *Federal Register* in November 1995 providing a framework to support a functioning banking system. In addition, many states have initiated or are considering banking programs.

Banking can occur only after three steps are taken in the federal process for protecting wetlands. First, wetland development must be avoided if possible; second, when this it is unavoidable, impacts must be minimized; and third, impacts that can not be minimized to an acceptable level must be mitigated. Mitigation banking is an option only when mitigation on-site is not possible. Bank sponsors create wetland "credits" at a bank site that can be acquired by those who fall within the purview of these two programs and are required to offset wetland losses, or "debits," at other sites.

Congressional interest is building because mitigation banking appears to be a promising approach for offsetting wetland degradation and implementing an overall policy goal of "no net loss." While the recent growth in the number of mitigation banks suggests expanded interest and support for this approach, several years or more may elapse before success (or failure) at individual sites can be determined.

This time lapse is one reason why mitigation banking is controversial. Supporters claim that mitigation banking, when compared with mitigation on-site, provides better-organized planning, an improved regulatory climate, greater commitment to long-term wetland protection, and more consolidation of habitat. Opponents are concerned that banking is a loophole and endorses additional wetland destruction, that some types of wetlands are difficult to create or restore as thriving ecosystems, and that wetland losses are sometimes allowed before the bank is fully functional. More generally, supporters view policy flexibility as critical to success, especially for commercial banks, while critics worry that flexibility will lead to unacceptable losses of wetland functions and values. Congress is hearing about these benefits and concerns as it considers how mitigation banking might be incorporated into future wetland protection laws and programs.

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Introduction

Mitigation has received widespread attention because it has been incorporated into federal wetland protection policy as an approach for offsetting the negative impacts of wetland losses. The President's Council on Environmental Quality defines mitigation as actions taken to avoid, minimize, reduce, rectify, or compensate for the adverse repercussions of development.[2] Federal agencies may require mitigation so that an applicant will receive a permit only after agreeing to substitute replacement wetlands to offset an unavoidable loss of a wetland and its functions. Recognized wetland functions include:

- groundwater recharge and discharge;
- pollution control, including nutrient and waste retention;
- water supply;
- flood water storage and conveyance;
- barriers to erosion;
- sediment trapping and control;
- fish and wildlife habitats; and
- recreation and aesthetic values.

Banking is one method of implementing mitigation policies that has received considerable attention and interest recently. It can be used to compensate for the loss of valuable functions of wetlands that contribute to a healthy environment. A mitigation bank is usually a relatively large site where wetland habitat is created or restored. This habitat will replace altered or degraded wetlands from several nearby sites. Banking can consolidate activities to offset wetland losses that may otherwise have been mitigated piecemeal at smaller sites, that are not coordinated, and may provide less overall benefit. The interest in mitigation banking is high, as measured by the numerous recent publications (a sampling of which are cited in the bibliography) and by congressional interest.

This report describes the concept of banking, its principal elements and various forms. It examines the potential of mitigation banking as a means to protect wetlands, given their wide variation in forms, functions, and value to society. Additionally, it outlines current criteria for a federally approved mitigation bank,

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[1] Jennifer Delong, an undergraduate student from Cornell University, researched and prepared a draft of this report under the supervision of Jeffrey Zinn, Senior Analyst in Natural Resources Policy.

[2] 40 CFR 1508.20

summarizes the reported advantages and disadvantages of banking, and reviews policy issues of interest to Congress.

Mitigation Banking Defined

Mitigation banking has many definitions, but most center on the restoration, creation, enhancement, or, in exceptional circumstances, the preservation of wetlands which will compensate for unavoidable wetland losses at another site.[3] Banking is designed to coordinate mitigation at one location for habitat losses allowed under federal programs at other sites. Mitigation banking is used primarily when on-site mitigation can not be achieved or is not as environmentally beneficial. Mitigation banking involves a process in which a client may be required to obtain wetland units with similar functions and values at a nearby site to satisfy federal permit or program requirements.

Bank operations vary widely, but all follow the same general principles. These principles use the terminology of financial institutions: transactions are described in terms of credits and debits to wetland resources. A bank sponsor creates credits as it restores, enhances, or creates wetlands at the bank site. These credits are either debited (money is not involved) or purchased by clients (a financial transaction) who are being required to compensate for wetland losses. When clients obtain these credits, they are withdrawn from the bank and become unavailable for future transactions. Clients are usually required to make these withdrawals prior to or concurrently with their proposed activity that will result in wetland losses. Banks may be allowed to transfer some credits, usually to fund their operations, before the site is fully established.

A hypothetical example of a bank may help to explain this process. Consider that a banking entity has been established. The bank sponsor purchases 500 acres of land on which it plans to restore a wetland. The land costs $1,000 per acre. The sponsor then spends $2,000 per acre to restore and maintain the wetland, for a total investment of $1.5 million.

At a later time, and as part of a section 404 permit approval at a nearby site, a client whose project will alter 10 acres of wetlands (that are almost identical to the ones at the bank site) is required, for permit approval, to purchase mitigation "credits" to offset these impacts. The bank sponsor sets a price of $8,000 per credit, and each credit is one acre. The client is required to purchase 10 credits. This payment will partially compensate the banker for restoring wetlands at the bank site. After several clients have purchased credits, the costs of setting up the bank may be repaid. The bank sponsor may become the long-term manager of the site after credits are sold and the bank site is a fully functioning wetland, or it may sell the property

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[3] This definition is basically the one used by federal agencies. Some states use different definitions; for example, while the federal definition allows preservation as an option for banking, some states do not.

to another owner, such as a conservation group, who assumes long-term responsibility for maintaining the site.[4]

The example described above is a private commercial bank, one of four types of banks that the U.S. Army Corps of Engineers (Corps) identified in a recent multi-volume review of many aspects of banking. It distinguishes these types based on the relationship between the sponsor and client(s) and on the financial goals of the sponsor. [5]

- **Single use banks** have a sponsor who is also the principal client. A common example is banks established by state departments of transportation or highways to be used to compensate for losses associated with road construction activities.
- **Joint project banks** are cooperative ventures by two or more sponsors, at least one of which is a public entity. Sponsors anticipate that pooling resources will reduce development and operating costs. Joint project banks, like single use banks, generally serve a limited and defined clientele.
- **Public commercial banks**, often sponsored by public entities, are used to compensate for wetland losses in a defined service area where multiple needs are anticipated. These banks are typically in or near urban areas, and often are established to support implementation of a regional or area plan of development.
- **Private commercial (entrepreneurial) banks** are sponsored by private entities who acquire the bank site and price credits so as to realize the desired return on their investment.

Federal Mitigation: Evolution of Policy

Two federal programs might require wetland mitigation. Section 404 of the Clean Water Act (CWA), enacted in 1972, requires federal approval for most activities involving the disposal of dredge or fill material into wetlands. Landowners must obtain permits from the Corps before they can carry out such activities. The Corps can impose certain conditions, including mitigation, as part of the permit approval. Permit approval is a shared responsibility of the Corps and the Environmental Protection Agency (EPA). Other agencies may have important advisory roles, including the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS).

The swampbuster program, enacted in the 1985 Food Security Act, may also require mitigation for activities affecting agricultural wetlands. Under this program, farmers may be denied most federal farm program benefits for altering a wetland to

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[4] The long-term responsibility of a bank is similar to the "perpetual care" obligation of a cemetery.

[5] Some ventures operate on a fee-based system, so that clients pay a fee, perhaps into a trust, that subsequently funds improvements at a "bank-like" site. Private entities who have expressed an interest in becoming bank sponsors see the ability to receive funds before the bank site is fully established as critical to their involvement.

plant crops. The Natural Resources Conservation Service (NRCS) monitors agricultural wetlands for compliance with swampbuster. In some instances, NRCS may allow mitigation as part of a farmer's effort to comply with swampbuster. Swampbuster and § 404 do not affect identical sites on agricultural lands, so in some instances, an applicant who is not affected under § 404 may fall under swampbuster and *vice versa*.

Federal mitigation policy for wetlands has grown out of regulations that the Corps uses to evaluate the environmental impacts of proposed discharges, called the § 404 (b)(1) guidelines. These regulations, first promulgated in 1975, provided a structure for mitigation. From the beginning, off-site mitigation was permitted to avoid on-site impacts of development, such as siltation. In general, however, off-site mitigation was limited because public agencies sometimes objected and business interests apparently viewed the risks of upfront costs and uncertainty as too high for the projected return.

Mitigation policies were clarified by a Memorandum of Agreement (MOA), signed on February 6, 1990, between EPA and the Corps. This MOA specifies that these two agencies are primarily responsible for assuring that actions affecting wetlands comply with federal regulations. The MOA mandates that compensatory mitigation should be used only when; (1) impacts cannot be avoided, and (2) unavoidable impacts cannot be minimized.

Controversies do arise over defining the least environmentally damaging alternative for a particular project. Some wetland protection advocates contend that avoidance is the only acceptable policy because wetland degradation should not be allowed. (Avoidance means an applicant has selected an option that causes no unacceptable environmental damage to wetland resources. Mitigation is not necessary if the applicant is determined to have successfully avoided affecting wetlands.) Others claim that avoidance may be the best policy for protecting wetlands with high habitat and hydrological values, but that greater flexibility, including mitigation, is appropriate, especially for sites of less value.[6]

Impact minimization is required when altering wetlands cannot be avoided. Projects are generally required to be modified to minimize impacts of wetland degradation. Minimization might include redesigning or scaling back aspects of a proposal, or limiting proposed modifications to a portion of the project site. Wetland protection advocates generally support on-site minimization of wetland damages over mitigation because it preserves some important wetland characteristics that might otherwise be lost. Minimization requirements may be opposed by those applicants who would prefer to use more of the site and to implement a mitigation program.

If unacceptable impacts would still result, mitigation may be required. Mitigation on the site is generally preferred over mitigation at another location. It may include the restoration of existing wetlands or creation of new wetlands. If on-site mitigation is not possible, then off-site mitigation is the final option. Banking

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[6] It is important to remember that, even without development and with protection, a wetland could be substantially degraded by activities on surrounding sites.

can provide an acceptable off-site mitigation option if it is properly designed. However, the 1990 MOA does not provide detailed guidelines on banking. It does state that each bank has to be approved by the EPA and the Corps, and that more detailed guidance would be forthcoming. Mitigation banking does not become an option until the Corps and the EPA have determined that the applicant has fully complied with the policies of avoidance and minimization.

Evaluations concluding that on-site mitigation has performed poorly have helped garner support for banking. Several reviews of early mitigation efforts found extensive failure. For example, Kevin Erwin conducted a study for the South Florida Water Management District in which only 40% of permitted projects requiring wetland mitigation had been completed.[7] Only four of the completed projects were deemed successful. Among the deficiencies cited were poor site selection, improper or insufficient monitoring and evaluation, lack of wetland persistence, poor hydrological design, sparse vegetative cover, inadequate management, and insufficient wildlife utilization. Other deficiencies identified by different evaluators include delays in construction and lack of maintenance. Many view mitigation banking as having the potential to overcome these problems.

A poor record should not be a surprise as, with few exceptions, applicants seek least-cost solutions that meet minimum acceptable standards and avoid legal actions or further costs. They have no incentive to exceed these standards, even when added commitments are necessary for an ecological success. The relatively high cost of conducting mitigation on some sites has also dampened applicant enthusiasm. Average mitigation costs per acre tend to increase as the size of the site decreases. In this environment, applicants have little incentive to create and maintain high quality sites.

Mitigation Banking Today

The Clinton Administration endorsed mitigation banking in its wide-ranging Wetland Plan, issued on August 24, 1993. As part of this effort, the Corps and EPA issued a regulatory guidance letter endorsing mitigation banking as a part of the § 404 program. The Administration promulgated detailed guidance, issuing draft regulations in the *Federal Register* on March 6, 1995 and final regulations on November 28, 1995 (effective on December 28, 1995). The guidance is signed by the five principal agencies involved in federal wetland programs—in addition to the Corps and EPA, the other agencies are the FWS, NMFS, and NRCS. These agencies are all members of a Interagency Wetlands Work Group. The regulations detail the process by which banks could be set up, used, and monitored to comply with requirements of the § 404 and swampbuster programs, emphasizing the roles that the federal agencies will play. This guidance includes a list of related statutes, regulations, and policies. The final guidance discusses several policy issues, including:

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[7]Erwin, K. *An Evaluation of Wetland Mitigation Within the South Florida Water Management District, Volume 1*. South Florida Water Management District, July 1991, p. 3.

- planning considerations, including goal setting, site selection, technical feasibility, role of preservation, inclusion of upland areas, and banking in a watershed context;
- the process for establishing banks, including contents of the prospectus and the banking instrument, the roles of agencies, bank sponsors, public input, and dispute resolution procedures;
- criteria for using mitigation banking, including project applicability, relationships between banking and mitigation (including deciding between on-site mitigation or banking), using the same or different wetlands and the extent of the bank service area, timing of withdrawals, and credit and debit procedures; and
- long-term management and monitoring, including the operational life of the bank, the role of remedial actions, and commitments to long-term management, monitoring, and financing.

Mitigation banking is intended to help resolve contentious situations where growth and development pressures conflict with wetland protection efforts. This view is gaining support, as measured by the growing number of operating banks and the larger number that are being discussed or proposed. Most of the early operating banks are used by departments of transportation or highways to mitigate wetland impacts from highway construction, and are primarily managed by states. Privately owned for-profit banks are less numerous, and all have opened recently; the Corps approved the first commercial bank in December 1992. The federal Interagency Wetlands Work Group is now working to bring greater continuity to the many and disparate efforts by developing a model banking instrument which can be used by each bank to document its objectives and operation. Continuity may become more important as banking policies and operations continue to evolve in various forms in most states.

The 1990 Water Resources Development Act (P.L. 101-640) authorized wetlands demonstration studies, and the Office of Management and Budget used that authority to direct the Corps to make a detailed study of mitigation banking. The Corps' Institute for Water Resources has produced 9 volumes; the initial 6 were released in early 1994. A final report is anticipated soon. This study has inventoried banking experiences and studies of banks, and discussed almost all aspects of banking.

The study determined that about 10% of all the land on which mitigation banks were located was federally owned.[8] The remainder were on other public or privately owned lands. Sponsors of banks on federal lands did not have to be federal entities. The three examples of federally owned mitigation banks, taken from the study and introduced in the following paragraphs provide a sense of the diversity of possible arrangements.[9]

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[8]Brumbaugh, R., and Reppert, R. *National Wetland Mitigation Banking Study: First Phase Report*. IWR Report 94-WMB-4. Alexandria, VA, February, 1994..

[9] Environmental Law Institute and IWR. *National Wetland Mitigation Banking Study: Resource Document*. IWR Report 94-WMB-2. January 1994, Alexandria, Virginia.

- The Montana Department of Transportation (MDOT) Wetland Mitigation Bank Program is sponsored by the Montana Interagency Wetlands Group. The FWS manages the implementation of this program. A majority of lands used for the bank are in public ownership. MDOT funds this bank, which has been in operation since 1989 and has accounted for a deficit of 68 acres lost to impacts of highway projects.
- The Pier J Anaheim Bay Mitigation Bank is operated by the Port of Long Beach (CA.). It is located in the Seal Beach National Wildlife Refuge, within the perimeter of the Seal Beach Naval Weapons Station. The bank is used to mitigate wetland degradation due to port development. It has been in operation since 1990, and all but 14 of the 153.12 credits created have been used. The bank was constructed by the Port of Long Beach and initially managed by the Port and the Navy. But after this contract expired in 1991, the FWS and the Navy assumed the maintenance responsibilities.
- The Naval Amphibious Base Eelgrass Mitigation Bank in San Diego, Ca, started in 1986, was the first bank to be federally owned and operated. It has been used to mitigate for damage to eelgrass habitat from the operations of the Naval Amphibious Base in San Diego Bay. Of the 10 acres at this site, 4.2 acres compensated for one mitigation project and 5.8 acres were established for future Navy projects. The Navy is responsible for the operation of the bank, but the NMFS managed the restoration of the wetland and was reimbursed by the Navy.

Since these banks were established, some new approaches have emerged, and many new banks have been started. More recent examples were described by banking proponents at a March 14, 1996 hearing convened by the Senate Committee on Environment and Public Works to learn more about the status and potential of banking. For example, Charles Ruma, representing the National Association of Home Builders, described the establishment of a foundation by the association chapter in Ohio that developed two banks. The first, established in 1993 at a 34-acre site, has sold all its credits at $7,500 per acre, while the second, a 292-acre site to be dedicated in May 1996, had already sold over 100 acres at $12,000 per acre. Mr. Ruma noted that the Ohio Department of Transportation has been the largest customer, and also seemed pleased to be able to report that one applicant, using the bank, had been able to obtain a § 404 permit from the Corps in just 21 days.[10]

This hearing and other discussions of banking show that participation in banking by both sponsors and clients is expanding rapidly, especially for commercial banks. For example. the Corps survey of commercial banks conducted during the summer of 1995 identified 77 banks, but only 24 were in operation and the remainder were either proposed or in planning. In Florida, where this activity is concentrated, the survey identified 12 operating or planning banks. But only several months later, the State of Florida's Department of Environmental Protection listed 32 commercial

[10] Testimony submitted by Charles Ruma, on behalf of the National Association of Home Builders, to the Senate Committee on Environment and Public Works, March 14, 1996.

banks; 7 with permits to operate, 16 with permits pending and 9 in a pre-application stage.[11]

Four market sectors, in addition to commercial developers, that seem to provide the most attractive or most numerous opportunities for sponsors include airport authorities, state departments of transportation, oil and gas transmission line companies, and electric utilities. One witness at the March 1996 hearing estimated that about a half dozen entities were sponsoring mitigation banks as entrepreneurial opportunities in late 1995.[12] A Corps representative, conducting an informal survey of banks in 1997, found that about 20 of the 108 operating banks he identified had been approved under the federal guidelines.[13]

Federal Agency Wetland Responsibilities

Five federal agencies primarily responsible for banking policy cooperate under the MOA and collaborated in developing the federal guidance that was issued in 1995. The overall wetland activities of these agencies, as well as the current status of efforts by states are summarized below, followed by a discussion of the criteria the federal agencies are to consider.

Corps of Engineers. The Corps is the federal agency with the lead roll in implementing the principal federal program that provides regulatory protection for wetlands, § 404 of the Clean Water Act (CWA; P.L. 92-500, as amended). Its intent is to protect waters of the United States, including adjacent wetland areas, from environmental damages due to discharges of dredged or fill material. Established in 1972, § 404 requires landowners or developers to obtain permits from the Corps to carry out activities involving disposal of dredge or fill materials into these waters.

The Corps has long had regulatory jurisdiction over dredging and filling, starting with the Harbors and Rivers Act of 1899 (ch. 425, 30 Stat. 1151, as amended). The Corps and EPA share some responsibilities for the section 404 program, although the Corps administers the day-to-day program, including permit decisions. Other federal agencies, including FWS, NMFS, and NRCS, also have roles in this process. In the 1970s, legal decisions in several cases led the Corps to revise this program and to incorporate broad jurisdictional definitions for both regulated waters and adjacent wetlands.

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[11] U.S. Army Corps of Engineers. *Commercial Wetland Mitigation Credit Ventures: 1995 National Survey.* IWR Report 96-WMB-9. August 1996, Alexandria, VA. P. 5-7.

[12] Testimony submitted by Robert Sokolove, President of U.S. Wetland Services Inc., to the Senate Committee on Environment and Public Works, March 14, 1996.

[13] Personal communication with Robert Brumbaugh, Corps Institute for Water Resources, September 1997. Counts of bank numbers require careful review to determine whether each site is considered as a bank or whether all units operated by one entity are combined and considered as a single bank. For example, in this count, he considered a Minnesota Department of Transportation activity as a single bank even though it involves more than 60 sites. Others might count each site as a bank.

In reviewing permit applications, the Corps evaluates a broad range of factors, including cumulative impacts of the proposal and its intended use on the public interest. This process is intended to consider various competing and conflicting views and values. The decision whether to authorize a permit, and the conditions under which the proposed activity will be allowed, are determined by a general balancing process that reflects concern for both protection and utilization of important resources. As part of this process, the Corps considers the extent to which mitigation shall be required when damage to wetlands cannot be avoided or minimized. Further, the Corps approves and monitors mitigation projects, including any banking activity.

Environmental Protection Agency. EPA has significant responsibilities under the § 404 program. First, the substantive water protection criteria that permit applicants must meet are established in guidelines developed by EPA in conjunction with the Corps. Second, EPA has the authority to veto the Corps' permit decisions under § 404(c), if it determines that the discharge of fill material would have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational uses. EPA's veto authority has been highly controversial: although rarely used (about a dozen times in 20 years), some believe that it has served as a deterrent many other times. Authority to enforce § 404 is shared by EPA and the Corps.

Fish and Wildlife Service. The FWS, in the Department of the Interior, cooperates with the Corps and the EPA in permit reviews for the § 404 program. Under the Fish and Wildlife Coordination Act (ch. 55, 48 Stat. 401), the Corps is required to consult the FWS before issuing permits. The FWS provides recommendations on how wetland losses can be avoided, minimized, or mitigated. However, unlike the EPA, the FWS has no authority to override a Corps decision. The FWS published a formal mitigation policy more than a decade ago which ranks habitat by its scarcity value, and establishes mitigation planning goals.[14]

National Marine Fisheries Service. The NMFS, a part of the National Oceanic and Atmospheric Administration in the Department of Commerce, is actively involved in providing guidance on mitigating wetlands losses in coastal areas. This agency contributed to the development of the *Federal Register* guidelines. Its role is similar to that of the FWS.

Natural Resources Conservation Service. NRCS, in the Department of Agriculture, administers the swampbuster program, enacted in the 1985 Food Security Act (P.L. 99-198). Swampbuster specifies that farmers who drain wetlands to plant crops could lose access to numerous federal farm program benefits until they restore those wetlands. Swampbuster is not a regulatory or permit program, as each farmer decides whether he will risk losing these benefits by altering a wetland. NRCS assists farmers in identifying and delineating wetlands, and determines if they are violating swampbuster. (NRCS is also responsible, based on a MOA with the Corps, for delineating wetlands in agricultural areas for the § 404 program. Also, § 404 includes a provision that explicitly excludes "normal farming activities" from

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[14]U.S. Dept. Of the Interior, Fish and Wildlife Service. "U.S. Fish and Wildlife Service Mitigation Policy: Notice of Final Policy." *Federal Register* 456(15):7644-7663.

permit requirements, while swampbuster excludes certain kinds of wetlands, such as those created as a byproduct of leaking pipes around irrigation apparatus.)

Swampbuster allows mitigation in some instances, and the federal guidance states that mitigation banks may be used to satisfy requirements of swampbuster.[15] To date, no banks have been set up specifically to support the swampbuster program. Amendments in the 1996 farm law (P.L. 104-127) authorized a pilot mitigation banking effort, increasing the likelihood that banks will emerge in agricultural areas in the future. This pilot program is being administered through a large agricultural land retirement program, the Conservation Reserve Program (CRP).[16]

State Involvement

The concept of mitigation banking was applied at few sites and in relative obscurity for about two decades, until interest suddenly blossomed in the 1990s. Some states operate programs, but most are currently translating the concept from an abstract idea into a functioning program. Some states prohibit banks under current laws. Other states limit mitigation banking to use by state departments of transportation or highways for impacts to wetlands caused by highway construction. A few states have been more aggressive in developing mitigation banks, and some were pursuing banking initiatives before the federal guidance was issued, including California, Illinois, Wyoming, and Minnesota. Two innovative states, New Jersey and South Carolina, have created wetland councils to oversee the development of banks and have numerous projects underway. Many other states which are attempting to develop banks are working to resolve the same kinds of questions about the guidelines and operation for mitigation banks that the federal government had to resolve for its guidelines.

Federal Mitigation Banking Guidance

Federal mitigation banking guidance requires programs to be consistent with agency policies before bank development and maintenance plans are approved. Under the 1995 guidelines, banking may be acceptable if specific criteria, summarized below, are followed. This guidance is intended to be administered with flexibility to accommodate variations in banking. This flexibility may become more important if planning on a watershed basis continues to be emphasized. The watershed approach places wetlands in a larger geographic context, and should contribute to more effective decisions about the location and use of banking sites.

At each federally-approved bank site, activities of all agencies are coordinated through an interagency mitigation bank review team. The team oversees planning

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[15] Currently, mitigation banking is allowed only in the conversion of frequently-cropped wetlands, with restoration allowed on prior converted wetlands. For more information on Swampbuster, see CRS Report 96-35 ENR, Agricultural Wetlands: Current Programs and Legislative Proposals.

[16] For background information on the CRP, see CRS Report 97-673, Conservation Reserve Program: Status and Current Issues.

and operations. The Corps representative chairs all teams, except the NRCS representative chairs banks that are limited to wetland losses on agricultural lands in conjunction with the swampbuster program. The primary purpose of these teams is to facilitate the timely development of an acceptable banking instrument, but they are involved in other ways as well.

Project Considerations. The central goal of any bank is to manage a self-sustaining, functioning wetland ecosystem. The criteria encourage restoration projects to replace the wetland values that would be lost over creation projects. Experience has shown that restoration sites are much more likely to succeed than sites where wetlands are created. The credits at a bank should be at least equal in acreage, functions, and values to similar wetlands that will be degraded through anticipated projects. Each bank is to have a specified number of credits that it can provide for compensatory mitigation. Each proposed activity which must compensate for adverse impacts to wetlands can be authorized to use a mitigation bank as a condition of a permit, as long as credits are not resold or used to compensate for multiple activities. However, the same credit can be used for an activity which requires approval by more than one agency.

Geographical Considerations. The guidelines stress that the designation of the banking service area should be based upon the "consideration of hydrologic, edaphic and biotic criteria," with a strong preference for replacing the losses at the impact site with similar wetland functions, similar positioning in the broader landscape, and similar species populations. For example, purchasing credits at a freshwater wetland bank may not be appropriate compensation for the degradation of a brackish or saline wetland. Debiting from mitigation banks which have different functions than affected wetlands may be limited to banks that are developed to accomplish a specific resource objective. All permit reviews are handled on a case-by-case basis.

The selection of a bank site should be based on how it will function in the context of the watershed, and not on what land happens to be available, as often has been the case with mitigation. Banking may have its greatest potential for success when it is part of a watershed-based wetland plan. However, such planning is especially difficult for banks that serve linear projects passing through multiple landscapes or watersheds, such as new highway or pipeline corridor locations. The guidelines emphasize that banking should be used only after the three-step process of avoidance, minimization, and on-site mitigation has been followed, which is likely to fit with watershed planning goals.

Crediting and Debiting Procedure. Credits and debits designate the units of trade. Credits represent the composite of wetland functions at a bank site, while debits represent either the loss of wetlands and their functions at a project site, or the wetlands values that are withdrawn from a bank when a transaction is approved. The number of wetland credits available from the mitigation bank should be determined using an appropriate functional assessment methodology acceptable to all parties with official responsibilities, including members of the mitigation bank review team. A single method should be used to quantify the value of both credits and debits. Credit and debit documentation is to be submitted to the chair of the mitigation bank

review team each time a transaction is approved. The guidance allows the use of an acreage measure if a functional assessment methodology is impractical.

Compensation Ratios. Some banks do not always issue credits at a ratio of 1:1; that is, each acre of wetland lost is not treated as identical to an acre gained at the bank site. The ratio may be different because:

- the value of the wetland debits varies;
- the value of the credit depends on the pre-bank wetland functions;
- the bank recognizes different levels of risk of success in various banking situations;
- the transaction involves different types of wetlands; or
- some functions are valued more highly than others.

The replacing of a naturally-occurring wetland with one that is restored or created may also lead to a variable ratio. The ratio may change over time, as well; it may decrease as the wetlands at the bank site become established and the risk of failure declines.

A bank in Eugene, Oregon, for example, uses variable compensation ratios. It gives restored wetlands a full credit, but only 0.66 for created wetlands and only 0.44 for enhanced wetlands.[17] Therefore, at a restored mitigation bank site of 3 acres, for example, a credit would be 3.0, but if the bank site was an enhanced wetland, the credit would only be worth 1.32. Using the same example and viewed from the applicant's perspective, 3 acres of degraded wetlands would require purchasing credits worth 3 acres of restored wetlands, but 7.5 acres of enhanced wetlands. In this example, the "quality" of the 3 acres to be affected or lost is not considered. It is not clear from published sources whether variable credits are widely used, but they appear to be more widely used now than in earlier years, and may reflect an increasing sophistication and creativity in banking.

Bank Sponsor Responsibilities. The bank sponsor is responsible for assuring the success of all operations at the bank site. The bank sponsor carefully manages the accounting procedures, financial considerations, and long-term maintenance of wetland functions and values for the banking entity. The bank sponsor should submit all appropriate documentation to the team. Prior to any debiting from a bank, the sponsor must satisfy three requirements:

- the banking instrument and final mitigation plans must be approved;
- the bank site must be secured; and
- appropriate financial assurances must be confirmed.

In addition, initial physical and biological improvements to the bank site should be completed within the first growing season following the first debiting by the bank. Federal and state agencies will oversee the maintenance of the bank site. One source of information about the condition of the site is the monitoring reports prepared by the bank sponsor. The bank sponsor can be held responsible to finance additional

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[17]Testimony submitted by Steve Gordon on behalf of the Council of Lane County Governments to the Senate Committee on Environment and Public Works, March 14, 1996.

resource improvements if the team determines that the bank is not achieving the objectives outlined in the authorization documents.

Banking instruments, the agreements between the bank operator and regulatory agencies, have taken many forms, ranging from memoranda of agreement to permits to corporate charters. Topics commonly addressed in banking instruments include the permitting and approval process, bank management and operation, credit production and evaluation, client relationships, and, if appropriate, long-term bank ownership. These agreements vary in several ways, including the amount of detail, the duration of the agreement, the methods prescribed to resolve disputes, and enforcement mechanisms. If the model banking instrument that the Interagency Wetlands Work Group is developing is widely adopted, it will gradually bring greater uniformity to future agreements.

Support for Mitigation Banking

Many advocates of banking view it as a promising alternative to current mitigation programs, which some characterize as ineffective. They argue that banking can make important contributions to achieving the overall national policy goal of "no net loss." The benefits ascribed to banking below are generally supported by the experiences recounted at congressional hearings.

Consolidation of Small Wetland Losses

Mitigation banks encourage the restoration and creation of larger wetland areas than on-site mitigation. Banks generally have higher success rates and lower cost ratio per mitigated acre.[18] Wetlands within banks may also be more enduring because the sponsor has the opportunity and a strong commitment to implementing a long-term program for preservation and maintenance of wetland values. Additionally, combining many wetland acres in a single site may allow the mitigation effort to focus on a habitat with especially desirable characteristics.

By contrast, individual on-site mitigation projects are typically smaller and fragmented. Often such sites are less hospitable to the creation or restoration of wetlands, and may have a lower probability for establishing a sustainable habitat. Numerous scattered sites have proven inefficient and difficult for public agencies (with limited staff) to monitor, and for applicants (who have little commitment to protecting long-term wetland values beyond what is required by regulatory agencies) to maintain.[19] In addition, a large majority of permit applicants do not have professional staff knowledgeable about wetlands ecology and are often interested in minimizing the financial and other resources that must be devoted to their mitigation effort.

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[18]Kusler, J. "The Mitigation Banking Debate". *National Wetlands Newsletter*. v.14, n.1, (January/February 1992), p.4.

[19]Reppert, R. *Wetland Mitigation Banking Concepts*. Alexandria, VA; July 1992. p.12.

Proponents contend that having the banker select a site for mitigation banks is an additional advantage. A banker has a strong incentive to choose a location at which a project could flourish. Often, conventional mitigation ends up being placed on lands which the applicant owns or can easily purchase at the time that the permit process is being completed. These sites may be far less than ideal for establishing and maintaining wetland functions and values. The process of locating and establishing a bank helps insure that it will be located at a hydrologically and ecologically favorable place.

Planning and Implementation

Mitigation banks may have a better design for long-term maintenance and operation than on-site mitigation projects. Bank sponsors make a substantial financial commitment to the success of each project, and are much more likely to retain experts, including biologists, engineers, and ecologists, to design and monitor the site.[20] Scattered mitigation projects are more likely to fail, especially if applicants have little wetland experience, because they seek to minimize additional costs. Supporters of mitigation banking claim that the extra scientific and technical effort that goes into establishing a bank will continue with a stronger commitment to successful implementation, including proper siting, design and construction, and long-term maintenance of the site.

The timing with which credits are made available has been subject to some debate. Entrepreneurial bankers want the flexibility to sell at least some credits as they develop the site to raise implementation funds. Skeptics of mitigation banking want some credits to be withheld from the market until the performance of the wetland can be certified. Also, if credits are sold only after the bank is operating and the wetland functions are in place, then the purchase of credits will bypass temporary losses associated with on-site mitigation. These temporary losses can be significant if they occur during the breeding or nesting season, or if a flood occurs, for example.

The federal guidance supports sale of some credits before the bank is fully functional at sites where it can determine that there is a high likelihood of success. Some sites, such as a bank in Eugene Oregon, sold "uncertified" credits at a lower prices. In this case, they sold them only during the first 6 years of the project and the quantity that could be sold was limited.[21] For commercial banks, the longer the time before credit sales are allowed, the greater the economic exposure for the bank sponsor.

Monitoring and Evaluation

Monitoring wetland values at mitigation sites is more practically accomplished at a larger mitigation bank. The process is more efficient because a single entity

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[20]Riddle, E. "Mitigation Banks: Unmitigated Disaster or Sound Investment?" , Lo *Proceedings: National Wetland Symposium - Mitigation of Impacts and Issues*, New Orleans, LA. Oct. 8-10, 1986, pp. 353-358.

[21] Testimony submitted by Steve Gordon on behalf of the Council of Lane County Governments to the Senate Committee on Environment and Public Works, March 14, 1996.

would operate a bank. For a federally-approved bank, the banking agreement defines responsibilities for maintaining wetland values. Follow-up evaluation activities by mitigation banking review team members would identify adjustments that are necessary to protect the site values that are identified in a bank management plan. If a sponsor fails to comply with its banking instrument, it could be held accountable for its violations, up to a rescission of its approval to operate the bank. Numerous recent reviews have shown that most agencies do not have adequate staff to monitor the many small mitigation projects or to initiate actions against violators.

Improved Regulatory Climate

The availability of mitigation banks may allow for faster permit processing and more streamlined decision-making by federal agencies. Bank credits can serve as a bond or collateral to enforce compliance with the required mitigation measures. The mitigation bank can recover the cost of establishing the credit units through a credit purchase. This system can be much more efficient then a series of on-site mitigation projects.

Criticisms of Mitigation Banking

Mitigation presents the difficult challenge of creating, restoring, or enhancing complex wetland ecosystems. Many wetlands have evolved over thousands of years, with animal and plant communities that reflect precise relationships between wet and dry conditions. Opponents of mitigation and mitigation banking are concerned that it is difficult to determine how fully these complex ecosystems can be reestablished or replicated in a short time. Opposition comes from the members of the environmental and scientific communities, but it is also important to note that within both these communities, views range from support to strong opposition. One likely source of skepticism from environmentalists and scientists is that they may measure success by different, typically higher, standards than regulators. Another source is that the poor results from on-site mitigation have heightened skepticism about banking, and many critics have similar criticisms of both.

As mitigation banking is relatively recent and untried for many types of wetland ecosystems, bank sponsors may not recognize current or potential problems. If a banking site fails to maintain the promised value of the credits, then a double loss results; at the bank and at the purchaser's project site.

Encourages Wetland Destruction

Critics are concerned that the expanded use of mitigation banking will allow greater destruction of wetlands. Banking provides a more efficient system for completing mitigation requirements to applicants by simply allowing them to purchase credits. Opponents worry that this relatively simple process will lead to a decline in the quality of regulatory decision-making since a credit purchase may become an increasingly accessible alternative when on-site mitigation is not feasible.

Opponents also hypothesize that if mitigation banking flourishes, pressure will grow to use it before avoidance or minimization measures are fully considered,

resulting in even more wetland destruction. Mitigation banking could be exploited by applicants who might try to promote inappropriate projects or avoid more complex and costly, but environmentally superior, mitigation activities.

Uncertainty of Replacing Natural Ecosystems

Opponents claim that limits to the techniques of preservation, enhancement, and creation of wetlands must be recognized. Preservation of existing wetlands could result in a net loss if they were merely maintained to compensate for destroyed wetlands. Enhancement may not completely off-set impacts to wetlands either, and artificial enhancement could accelerate the loss process if it allowed for the introduction of different habitats and species that did not replicate the wetland it was intended to replace.

A portion of all banks have involved creation. However, creating wetlands remains generally regarded as an experimental technique among knowledgeable scientists. Critics contend that created wetlands may not be as successful as natural wetlands. To date, created wetland areas have not replaced the equivalent attributes of natural wetlands. Wetland protection advocates caution that a created wetland must be evaluated over a long time period before a conclusion can be drawn on whether equivalent functions and values have been replaced and the site is self-sufficient. Credit purchases should be authorized only after this objective is achieved, and contingency plans, including some form of a performance bond in case the bank fails, should be included.

Dissimilar Replacement of Wetland Habitat

Opponents claim that replacement of similar functions and values of altered wetlands will be difficult to accomplish through a bank. Ideally, mitigation should occur in the same watershed as the affected site, and should have similar ecological characteristics, sometimes referred to as in-kind mitigation. Since mitigation banks are not at the same site as the project, they may not fully replicate the mix of functions and values that the affected wetlands provided. That mix may be impossible to recreate due to ecological differences, the location of the bank in the watershed, or surrounding land uses. For example, it may be impossible to recreate significant flood storage at a wetland with the same value at a bank site, even in the same watershed. Differences are often more subtle than this example, yet have a substantial effect on the value of the resource. Critics contend that differences should be accounted for in the credit system, and any uncertainty about how to value the credits and debits should err in favor of protecting wetland resources.

Opponents also believe that the diversity of species supported by the wetland to be altered should be fully replaced. They argue that even when replacement is attempted, identical habitat may not be readily established at another site, resulting in declines or the potential loss of some species, and in less diversity in the ecosystem.

The availability of banks could promote more purchases of mitigation credits at sites with different replacement values. In terms of vegetation, for example, shrub, marsh, or tidal wetlands have been the most common replacement projects. These

wetlands require less planning, management, and expense than other types of wetlands, such as bottomland hardwood forests, and generally are more likely to be successful. Some types, such as those with peat soils or ones that rely on ground water or rainfall, are more difficult to create or restore. As a result, banks with "easier" sites could be established more widely and quickly. While applicants and bank sponsors would seek to use these easier sites whenever possible, they might provide inadequate or inappropriate credit for degraded wetlands from a different biological community. Expanding mitigation banking opportunities could stimulate this kind of inappropriate mitigation, and lead to a debate over whether the bank is a success with either less than anticipated benefits or a different mix of benefits.

While the federal guidance addresses this issue by stating that in-kind compensation of wetland impacts should generally be required and the requests for out-of-kind mitigation will be handled on a case-by-case basis, critics wonder whether federal agencies can be counted on to vigorously monitor these requirements. Requests for out-of-kind mitigation are supposed to be approved only when it is a part of an area-wide management plan designed to address a specific resource objective.

Nature of Crediting and Debiting Techniques

Critics contend that a consensus should be reached on the value of wetland credits purchased for mitigation before banks can be utilized. Such an agreement is necessary so that when debits are measured, team members and others can determine the amount of credit necessary for appropriate compensation. Disagreements over the value of a credit can be contentious, in part because alternative methods for calculating these values are available. Probably the most widely-used method is some version of the Habitat Evaluation Procedure (HEP), first developed by FWS 20 years ago. HEP comes in several forms, and has several competitors as well. Some of these methods are relatively simple to use, while more complicated ones better assess the values and functions; no single method appears to be simple yet sophisticated. A new method for assessing functions being developed and field tested by the federal agencies, the hydrogeomorphic approach, is not yet fully in place. Another cause of disagreements is whether and how to differentiate the value of credits for wetlands that are created, restored, or preserved at the bank site.

Bank Operations

Critics worry that banking proponents are not sufficiently concerned about both the start up of banks and the long-term liability to ensure that wetland values will be maintained. As a part of the start up, there will be pressure to sell credits before they have matured at the site, a practice characterized as "speculating in wetland credit futures."[22] If the bank fails after selling credits, wetland values at both the old and new sites are lost. Also, financial pressures on bank sponsors from the private sector

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[22] Testimony submitted by Jan Goldman-Carter on behalf of the National Wildlife Federation to the Senate Committee on Environment and Public Works, March 14, 1996.

could cause them to seek public lands and agency expertise, generating additional taxpayer costs.

Long-term responsibility may be at risk if enforcement mechanisms and operating controls are inadequate and a bank fails. Many banking agreements appear to offer little detail on enforcement and responsibility should a bank fail. There is little evidence about the frequency with which this kind of information is included in agreements, or even what should be required, at a minimum. Requiring a bond and a clear assignment of liability would certainly be important to ensure the protection of public values.

Congressional Considerations

Mitigation banking is drawing increasing attention from Congress. Some Members may view banking as an additional means to slow the decline of wetlands and attain the "no net loss" goal. Others may view banking as an approach that would relieve some pressure on Congress to act to further protect private property rights by providing a market-based option that also could increase flexibility for federal agencies administering wetland programs. Implementation of the pilot program mitigation banking provisions in the 1996 Federal Agricultural Improvement and Reform Act (1996 farm bill) through the Conservation Reserve Program could create substantial new opportunities on agricultural lands. The steadily increasing number of operating banks demonstrates an expanded interest and an ability to overcome impediments.

Economic activity and growth will continue to threaten the existence of some wetlands, keeping the issue of wetland protection before Congress. On-site mitigation projects have a poor track record, supporting the claims of those who believe that these efforts are not effective. The potential for banking to be more successful, especially under some conditions, appears viable. However, mitigation banking will be inhibited unless conservation interests support it, banking entities prove that they can make the program work for a long time period, and mitigation requirements are achieved. For Congress, the policy debate will continue to center on how national policy should endorse or support mitigation banking as a practical mitigation alternative for wetland protection programs. However, the 105th Congress has yet to act on legislation that would affect mitigation banking activities.

In the 104th Congress, the House did address many of these issues as it considered H.R. 961, Clean Water Act reauthorization legislation. Provisions in this bill, which passed the House in May 1995, would have modified the § 404 program in many ways. Among other things, it would have required the Corps to issue regulations governing mitigation activities in wetlands and regulations for the establishment, use, and oversight of mitigation banks. The Senate did not act on this bill, or on other legislation which included similar mitigation and mitigation banking provisions.

The Senate Environment and Public Works Committee, however, did explore current mitigation banking efforts at a March 14, 1996 hearing. Witnesses suggested that there is considerable entrepreneurial interest and activity. They identified

examples of current experiences, successes and impediments, and suggested further changes that they believe would help mitigation banking flourish. One tension in banking was between the flexibility that proponents sought for success and the tight administration that critics thought should be placed on these activities to ensure that wetland resources are protected. A policy topic not addressed at the hearing that seem certain to receive future congressional attention, is whether the federal government should provide financial or other incentives. Should any incentives be provided for all federally-endorsed banks, for selected "model" banking efforts, or for no banks? Also, are non-financial incentives, such as streamlining the permit process or providing scientific or technical assistance, either appropriate or necessary, and if so, under what circumstances? Should a revolving fund be established to support overall banking efforts?

Federal agencies have moved slowly in adopting mitigation banking policies. After President Clinton announced his wetland policies in August 1993, including support for mitigation banking, more than 2 years elapsed before the final guidance was issued. With five agencies having to agree on the many specific issues surrounding implementation, perhaps this is not surprising. But even after the release of final guidance for banking, concerns over banking policy remain, and are likely to continue.

Implementing the mitigation banking guidelines could help ensure that degraded wetlands are fully replaced. Yet, many unanswered questions remain. Development interests are generally strong supporters of the concept of banking. They view banking as another alternative for the mitigation process. Many environmentalists are skeptical of mitigation banks. They claim that banking policy endorses wetland destruction, with little assurance that functional values will be protected over the long term. Some of them will only support mitigation banking if use is limited to a last option and monitored closely. They want mitigation banks to have precise, scientifically sound rules that provide for guaranteed banking success. Though the federal guidance seems to respond to many of these arguments, mitigation banks must provide some long-term success stories before concerns can be alleviated. Congress may continue to encourage banking generally, as it did in the 1996 farm bill, but it is also likely to address these issues as part of legislation that authorizes any specific mitigation banking programs or policies.

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