
**Wetland Mitigation Banking in Ohio
and
the Mitigation Bank at Big Island**

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This report is one in a series of independent evaluations of innovations in environmental management commissioned by the National Academy of Public Administration's Center for the Economy and the Environment. The entire series is available at the Academy's website, www.napawash.org, and will be available in print in late 2000.

The U.S. Congress initiated this study in FY 1998 when it asked the Academy to undertake an independent evaluation of some of the most promising innovations in environmental management. A panel of Academy Fellows and other experts is guiding the project. The panel selected the research topics and researchers, and encouraged the researchers to offer their own findings and recommendations. The reports in this series are the work products of the research teams; neither the Academy nor the project panel endorses their findings and recommendations. The panel will use the research reports as a foundation for its own report and recommendations to Congress and the U.S. Environmental Protection Agency later this year.

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Wetland mitigation banking is a form of environmental protection/compensation for “trading” restored, created or (less commonly) enhanced or preserved wetlands for wetlands lost “unavoidably” to development. The bank provides mitigation through establishment of a larger wetland that furnishes credits to compensate for the loss of numerous smaller wetlands. Regulatory agencies responsible for ensuring no net loss of wetlands commonly require trading ratios (requiring greater than 1:1 replacement acreage) to compensate for the uncertainty of mitigation, differences in wetland type or location, and/or (in some cases) to obtain some net increase in wetland area or function. A wide range of considerations determines adequacy, appropriateness and trading ratios to be applied in particular circumstances. Wetland mitigation banking emerged as a significant alternative for offsite mitigation during the 1980s; its use has expanded since the early 1990s. In November 1995, five federal agencies¹ jointly issued a “Federal Guidance for the Establishment, Use and Operation of Mitigation Banks,”² which has spurred further expansion of mitigation banking, and set up guidelines for its operation. While mitigation banking has developed rapidly in Ohio, and such growth is not isolated. A 1993 study by the Environmental Law Institute found only 46 wetland mitigation banks in the United States, but current U.S. Army Corps of Engineers (the Corps) estimates are in the range of 350 (only some of which, however, involve market relationships between sellers and buyers).³

Construction for Ohio’s first wetland mitigation bank began in 1993. As of June 1999, Ohio had six mitigation banks operating or approved; two proposed banks not yet approved; and four additional banks in design phase, with detailed plans still to be submitted.⁴ The Ohio Wetlands Foundation (OWF) submitted its preliminary plan for the Big Island Pooled Mitigation Site in Marion County, Ohio, the second of the state’s mitigation banks, in April 1994; the Huntington District of the Army Corps of Engineers approved the modified plan in December 1994. The mitigation site was located in the Big Island Wildlife Area, managed by the Ohio Department of Natural Resources (ODNR), and met ODNR’s goal of expanding wetland habitat in the wildlife area. The major construction effort was completed in 1995; the last sale was completed in April 1999. By the end of 1999, OWF was to submit the final report for a required five-year monitoring period. The Corps approved the development of the mitigation site and its use as a bank prior to the 1995 guidance, but the requirements for Big Island in most respects reflect those included in the guidance (although approval of the bank did not involve the multi-agency process required by the guidance).⁵

I. THE FRAMEWORK FOR BIG ISLAND AND MITIGATION BANKING IN OHIO

A. The Federal Framework

Over the past three decades, the federal government has developed a protection program to stop and, if possible, reverse the rapid loss of the nation's wetlands. In 1998, EPA's National Wetlands Policy Forum established a national goal of "no overall net loss" of wetlands. EPA and the Corps subsequently confirmed the national goal as part of a 1989 memorandum of agreement. In the Clean Water Action Plan, the Clinton administration has proposed a goal of no net loss of wetlands and, beginning in 2005, a net increase of 100,000 acres/year. The cornerstone of the federal wetlands protection program is Section 404 of the Clean Water Act, which requires permits "for the discharge of dredged or fill material into the navigable waters" of the United States.⁶

The scope of application of the program has gradually been expanded through regulations and court decisions to include virtually all wetlands which are either adjacent to rivers, streams or lakes—or, more specifically, all wetlands which are construed as falling within a definition of "waters of the United States" which includes "wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce...."⁷ Examples of uses of wetlands which have been interpreted as falling within the protection of the interstate commerce clause are use for recreation by interstate travelers or use, or potential for use, by migratory birds.⁸ In addition to the CWA, there are federal wetland protection provisions focused on reversing loss of wetlands from agriculture (administered by the National Resource Conservation Service [NRCS] in the Department of Agriculture), protecting fish and wildlife habitat and endangered species (administered by the the Fish and Wildlife Service [FWS] in the Department of Interior), and protecting coastal wetlands (administered by the National Marine and Fisheries Service [NMFS] in the Department of Commerce's National Oceanic and Atmospheric Administration).

Under Section 404 of the CWA, both EPA and the Corps play crucial roles in wetland protection. EPA is responsible for setting out the binding environmental criteria for issuing permits, while the Corps serves as the principal permitting authority for regulation of activities impacting wetlands. The Corps must evaluate permit applications in accordance with the environmental criteria established by EPA; the Corps must also consult with EPA, other federal agencies, and appropriate state agencies on individual permit applications under CWA Section 404. Under Section 401, the relevant state agency (e.g., Ohio EPA) must provide water-quality certification for a permit.

In cases where EPA regards a permit decision of the Corps as allowing unacceptable damage to wetlands in the course of a development project, EPA retains the right to veto such a permit.⁹ While rarely used, the authority for such action provides the agency with significant leverage on complex, potentially controversial, permit actions.

In addition to the issuance of individual permits, the Corps issues nationwide permits

(NWP)—general permits for aggregate small wetland impacts—for which the Corps requires minimal review. The most important of the NWPs for the Big Island wetland bank (as well as other Ohio banks) has been NWP 26 for “Headwaters and Other Isolated Waters Discharges.” Under that NWP, prior to 1996, the Corps authorized fills of covered wetlands of up to 10 acres; fills of up to one acre required no prior notification of the Corps. Fills affecting between one and 10 acres required a preconstruction notice (PCN) to the Corps, and the Corps had 30 days to notify the applicant if there were any reason not to continue; if the area of the fill was between 3 and 10 acres, the PCN was also referred to the other relevant agencies for comment. In 1996, the Corps revised NWP 26 so that the largest covered fill is now three acres. A PCN is required for fills of 1/3 acre to three acres (with a report to the Corps of fills under 1/3 acre), and referral for comment to other agencies for fills of between one and three acres.¹⁰ (The Corps is currently proposing to evaluate many NWPs, including the elimination and replacement of NWP 26, in early 2000.)

There is considerable discretion for Corps district offices in administering the provisions. In Ohio, responsibility for various parts of the state is divided among four such offices: the Huntington, West Virginia; Buffalo, New York; Pittsburgh, Pennsylvania District; and Louisville. The Huntington District Office is responsible for the area of Ohio that includes both the Big Island mitigation site and the city of Columbus—the area from which most of the demand for mitigation at Big Island originated.

B. Mitigation Banking

Mitigation banking operates within the context of general, and evolving, federal policy on mitigation of wetland losses. For individual 404 permit applications, applicants are required to evaluate a sequence of alternative options: looking first for opportunities to avoid wetland impacts altogether, then to minimize or limit the extent of the “unavoidable” impacts, and finally to mitigate those impacts—with a preference for on-site, in-kind mitigation. Banking becomes an option only when a developer has met the second sequencing step. While the objective of the sequencing approach to preventing wetland loss is to prevent unnecessary development impacts on wetlands and to prevent localized losses, the results have often not realized that goal. Development pressures continue to lead to approval for wetland fills, and some retrospective studies of the results of site-by-site mitigation projects have indicated major shortfalls in both the implementation and outcomes of required mitigation.¹¹

Mitigation banking has emerged as an approach for better resolving the need for assured mitigation success in those cases where offsite mitigation of the impacts of development on wetlands has been deemed acceptable. The wetland bank creates “credits” which a developer purchases to compensate for the wetlands lost through development activities.

Credits are generally expressed in terms of acreage, with ratios to account for uncertainty and ensure adequate improvement. Other requirements may involve the location of lost wetland in relation to the bank, the type and quality of the wetland loss in comparison to the compensating wetland in the bank, and the functions (e.g., habitat, hydrological, water quality, recreational) of each. The 1995 “Federal Guidance for the Establishment, Use and Operation of Mitigation Banks” characterizes the benefit of the approach.

By consolidating compensation requirements, banks can more effectively replace lost wetland functions within a watershed, as well as provide economies of scale relating to the planning, implementation, monitoring and management of mitigation projects.¹²

The guidance defines wetland mitigation banking as:

wetland restoration, creation, enhancement, and in exceptional circumstances, preservation undertaken expressly for the purpose of compensating for unavoidable wetland losses in advance of development actions, when such compensation cannot be achieved at the development site or would not be as environmentally beneficial. It typically involves the consolidation of small, fragmented wetland mitigation projects into one large contiguous site.¹³

The guidance discusses a number of issues and objectives related to mitigation banking:

- **Type of replacement:** The guidance notes that restoration of former wetlands is preferable to creation because of the greater likelihood of appropriate hydrologic and other conditions. Preservation of existing wetlands is appropriate for some degree of credit only in very limited circumstances. In-kind replacement of the type of wetland is preferable, but out-of-kind mitigation may be allowed as appropriate on a case-by-case basis.
- **Sequencing and on-site mitigation:** The guidance maintains the sequence of avoiding or limiting wetland impacts. The language on the preference for on-site mitigation specifically allows use of bank credits when “use of a mitigation bank is environmentally preferable to on-site compensation.”¹⁴ The guidance points to potential advantages in terms of projects with adequate scope to have a higher probability of success; greater opportunity for agencies to ensure implementation and completion, improved financial, scientific and planning resources available to bank developers; and completion of some of the mitigation prior to project impacts.
- **Agency coordination:** Requires development and approval of a banking agreement for each individual bank and review and approval of the bank’s progress by a Mitigation Banking Review Team (MBRT), which includes representatives from the Corps, EPA, FWS, NMFS, NRCS and state, local or tribal resource agencies. The Corps usually chairs the MBRT; in the case of proposals governed

by the Food Security Act—because they are for sites on agricultural land—NRCS serves as chair. The objective is consensus, but the chair has ultimate authority.

- **Geographic limits:** A bank’s service area may be the watershed, county or other area “wherein a bank can reasonably be expected to provide appropriate compensation,”¹⁵ but exceptions are allowed on a case-by-case basis.
- **Timing of credits:** While it would be preferable ecologically to require that the replacement wetland be completed prior to sale of credits, the guidance allows some sale of credits prior to completion to help finance a bank. While an example of 15 percent had been provided in the original proposal, the final guidance provides flexibility with respect to the percentage.¹⁶
- **Monitoring:** Monitoring of performance must continue through the first five years following completion of bank construction.
- **Long-term management:** The agreement must include some arrangement for long-term maintenance after the period of construction and monitoring, most typically with a non-profit or government agency.
- **Financial assurance:** The guidance requires some form of financial assurance against failure of the banking project from the bank sponsor, e.g., an escrow account, a performance bond, insurance.. While it provides no specific guidelines on appropriate levels of assurance, it stipulates that they should be sufficient to cover contingencies, remedial actions, monitoring and long-term maintenance.

C. The State Framework in Ohio

Two state agencies, the Ohio Environmental Protection Agency (Ohio EPA) and the Ohio Department of Natural Resources (ODNR), have major roles with respect to wetland mitigation banking in Ohio. Both the banks approved subsequent to the 1995 guidance are members of the MBRTs. ODNR is responsible for protection of wildlife and wildlife habitat, and for management of wildlife areas. For mitigation banking sites developed on ODNR land, ODNR is ultimately responsible for long-term management of the sites.

While there was no MBRT for Big Island, both Ohio EPA and ODNR participated in the review of the Big Island banking proposal. ODNR was heavily involved in the design of the Big Island site, which is on a wildlife area under ODNR management. ODNR and the Huntington District of the Corps of Engineers were the principal agencies involved in initiating wetland mitigation banking in Ohio.

Ohio EPA has state regulatory authority with respect to wetlands, including

responsibility for setting relevant state water-quality standards. Under Section 401 of the CWA, Ohio EPA is responsible for certifying that federal actions are in accordance with state water-quality standards. That includes certification both of individual 404 permit actions and of the Corp's nationwide permits, providing an opportunity for the state to impose its own water-quality standards on the permit. Subsequent to its certification of the NWPs in 1996, Ohio EPA developed and issued new wetland water-quality standards regulations. They require greater attention to the quality of affected wetlands, and will be the basis for Ohio EPA's approach to 401 certification of the next round of the Corps' NWPs.¹⁷

II. IMPLEMENTATION

The primary impetus to initiate wetland mitigation banking in Ohio came from the Corps, the Division of Wildlife in the Ohio Department of Natural Resources and the Ohio Homebuilders Association. The Division of Wildlife was looking for ways to reduce wetland losses, and develop additional wetland habitat for waterfowl and other wildlife. The homebuilders were looking for an alternative to the uncertainties and delays of site-by-site mitigation of wetlands filled during construction of houses, and provided loan support to create the Ohio Wetlands Foundation (OWF), a non-profit organization with the specific purpose of developing mitigation banks.

In initial discussions among the relevant state and federal agencies about the potential for wetland mitigation banking in Ohio in 1992, ODNR, the FWS and the Huntington District of the Corps were supportive, but Ohio EPA and U.S. EPA-Region 5 were skeptical. ODNR worked with OWF to identify potential sites for banks. The first site identified was near Hebron, Ohio, on land owned by ODNR. Because the area affected by construction at the Hebron site was too small to require referral of the PCN to other agencies, the Huntington District of the Corps approved Hebron with little discussion with the other agencies.

Big Island, the second mitigation banking site, was identified by ODNR and OWF in 1993 while OWF was finishing construction at Hebron. The site, on the Big Island Wildlife Area, was once again an area under ODNR management. ODNR was interested in expanding the existing wetlands at Big Island, but lacked the resources to undertake the work itself. The area originally identified for the bank was 80 acres, eventually expanded to 348 acres (246 restored, 102 enhanced).¹⁸

OWF and ODNR Division of Wildlife drew up an agreement in September 1992—and revised it in September 1993—that governs the relationship between ODNR and OWF with respect to the Big Island site. The agreement specified both a general goal and specific requirements.

The Foundation and the Division of Wildlife agree that their Wetland Mitigation Bank will provide the maximum benefit to the citizens of the State of Ohio if the Foundation, the Division of Wildlife and the Corps use their best efforts to coordinate the selection, design, construction/restoration and maintenance of new wetland habitat to be created by the Foundation....

The parties will seek mitigation sites which will allow for the creation/restoration of a variety of habitat types. The parties will use their best efforts to identify wetland mitigation sites in at a minimum the four quadrants of the State to ensure that future mitigation efforts will result in the construction of valuable wetland habitat throughout the State.¹⁹

Other specifications in the ODNR/OWF agreement included the following:

- submission by OWF of a preliminary mitigation plan to ODNR, which had a thirty-day comment period;
- submission by OWF of a final mitigation plan to ODNR which incorporates a description of hydrology and ecological objectives for the site, maps showing original and anticipated conditions, a discussion of necessary maintenance subsequent to construction;
- submission by ODNR of the revised plan to the Corps for approval;
- a maximum two-year construction period for OWF after Corps approval;
- submission of five annual monitoring reports by OWF;
- payment by OWF to ODNR's Wetland Habitat Fund of \$1,000 per acre to support ODNR's long-term maintenance of the site.

This ODNR/OWF agreement for Big Island became the model for the next wetland mitigation bank in Ohio, the Sandy Ridge Wetlands Mitigation Bank, which was the first developed subsequent to issuance of the federal mitigation banking guidance in 1995. OWF constructed Sandy Ridge outside of Cleveland in Lorain County on land owned by Lorain County Metro Parks (Metro Parks). The language of the Metro Parks/OWF agreement is virtually identical to that between ODNR and OWF.²⁰ For Sandy Ridge, an MBRT agreement was signed by all agencies.

In April 1994, OWF submitted a PCN for the Big Island mitigation site to the Corps' District Office in Huntington, which has responsibility for both the area of the mitigation

site and the areas for which mitigation would be required. OWF submitted the final plan (“A Plan for the Ohio Wetlands Foundation’s Mitigation Site at the Big Island Wildlife Area in Big Island Township, Marion County, Ohio”) in October 1994. A PCN was required because the construction at the mitigation site required placing fill material into 1.41 acres of wetlands (for construction of a berm). The Corps requested comments on the PCN from EPA, Ohio EPA, ODNR and FWS.²¹

Because the development of Big Island preceded the final federal mitigation banking guidance (December 1995), no MBRT action was required for review of the bank. There were, however, extensive discussions among the Corps, ODNR, FWS, Ohio EPA and U.S. EPA, leading to some modifications in the original plans. Ultimately, while the other agencies approved the bank, U.S. EPA opposed it due to concerns about the adequacy of both the mitigation plan, and the financial assurance mechanisms in case of failure of the mitigation effort.

The Corps approved OWF’s Big Island application in December 1994, stating that the final mitigation plan met the criteria for NWP 26. The approval included several conditions for the operation and evaluation of the bank (discussed below).²² Between the approval of the Big Island mitigation bank in 1994 and June 1999, four additional banks received approval from the Corps.²³ All those banks, however, received approval after development of the national guidance, and the approvals involved consensus agreements of the state and federal participants on the mitigation banking review teams.

A. Methods for Achieving Environmental Goals

There are substantial uncertainties inherent in wetland mitigation. How can real equivalence be assured between a mitigation area and the original wetland that was damaged or destroyed? How similar are the characteristics of a restored area to the original site? Does it support the same functions (e.g., water-quality protection, flood control, habitat support)? Does it affect the same geographic area or watershed? Will the engineering effort actually result in a functioning wetland that meets original design objectives?

Finding workable answers to those questions has been a continuing challenge for wetland mitigation, and a central focus of attention for banking since its emergence in the 1980s. The history of site-by-site mitigation has provided substantial examples of the risks. Writing of a study carried out by Florida DEP in the early 1990s, the coordinator of mitigation for DEP noted that its review of mitigation found that:

One-third of the required mitigation was never implemented, although the permitted destruction of wetlands already had occurred. Of those that were completed, few were in compliance with important aspects of the agreed-upon mitigation plan, and only 27 percent were deemed ecologically successful, with an expectation that remedial action could raise that level to 63 percent....

Replacement of “traditional,” on-site mitigation with mitigation banks is expected to alleviate the problems identified in the reports on mitigation effectiveness by improving compliance with regulatory requirements and the performance of created, enhanced, or restored wetlands.²⁴

The 1995 federal guidance pointed both to consolidation of the mitigation effort itself and to greater efficiency in compliance oversight of the resulting site as among the significant advantages of banking:

Mitigation banks provide greater flexibility to applicants needing to comply with mitigation requirements and can have several advantages over individual mitigation projects, some of which are listed below:

It may be more advantageous for maintaining the integrity of the aquatic ecosystem to consolidate compensatory mitigation into a single large parcel or contiguous parcels when ecologically appropriate....

Consolidation of compensatory mitigation within a mitigation bank increases the efficiency of limited agency resources in the review and compliance monitoring of mitigation projects, and this improves the reliability of efforts to restore, create or enhance wetlands for mitigation purposes.²⁵

Mitigation banking is seen as providing the opportunity to have larger, more sustainable, more professionally constructed and maintained, and better monitored sites, while also creating the potential to observe the success of a mitigation prior to approval of use of most of the credits. A 1997 study by Ohio EPA, however, indicates that Ohio has experienced much greater success than that reported by Florida with respect to the extent of implementation and the level of success of mitigation, while raising questions about relative benefits and detriments of size in mitigation projects:

We did not discover a single case where a wetland impact had occurred and a corresponding mitigation project had not been done....

[The] data shows an average replacement ratio of wetland acres established on the ground of 1.26:1.... Although the 1.5:1 mitigation ratio was not met in all

projects, the remaining acreage that has not developed into jurisdictional wetland has helped to contribute to the creation of an upland buffer surrounding the wetland.²⁶

Ohio EPA is concerned that an emphasis on the benefits of larger, consolidated mitigation sites in the banking program may be misplaced, and result from a misinterpretation of the reasons for failure of some mitigation programs.

Wetland mitigation science has come a long way in the past several years. Reports of failures in the past were almost always linked to bad planning that resulted in a bad project. Many earlier attempts relied on creation rather than restoration, almost a sure formula for a wetland of low functional value. Also, it has become apparent that, whether a mitigation bank or an individual project, appropriate buffers to protect what is constructed are essential....²⁷

Ohio EPA feels that future mitigation banking efforts are more likely to approach ecological equivalency by placing greater emphasis on proximity to the affected site and contribution to overall watershed objectives. The MBRT process should provide an adequate oversight mechanism to ensure integrity of a mitigation effort, whatever the size of the bank.

The approaches agencies have adopted in Ohio, therefore, both build on national efforts to make mitigation banking effective, especially since the 1995 guidance, and reflect state-specific concerns and views. State and federal agencies in the state have used trading ratios, locational restrictions, performance criteria, timing requirements for credit sales, and requirements for long-term management to provide assurance that mitigation banks will achieve environmental results. They have also required those who construct the mitigation sites and sell the credits (the “bankers”) to provide assurance for performance (discussed below under accountability).

Trading ratios

The Corps of Engineers required a trading ratio for purchasers of mitigation credits from the Big Island wetland mitigation bank in Ohio. The purpose of the ratio was to compensate for the uncertainties in the success of the actual mitigation project, and for differences in wetland functions and location between the original and replacement wetlands. Developers purchasing mitigation credits from the Big Island bank²⁸ had to purchase 1.5 restored or created wetland acres in the mitigation bank for every acre destroyed by their construction projects. If existing wetland acreage were enhanced by the mitigation project—if degraded wetlands were restored to higher quality—the enhanced acres would each generate only a half-credit. For enhanced acreage, therefore,

the effective trading ratio was 3:1.

Those trading ratios applied to use of credits from Big Island and other Ohio mitigation banks until 1998. In May 1998, Ohio EPA issued new water-quality regulations for wetlands, with more restrictive trading ratios.²⁹ The rules established three categories of wetlands:

- Category 1 wetlands “support minimal wetland functions.” They do not provide critical habitat, have low species diversity, are likely to be hydrologically isolated, and are dominated by non-native species.
- Category 2 wetlands “support moderate hydrological, habitat, recreational and other wetland functions.... Likely to be dominated by native species but generally would not have habitat for rare, threatened or endangered species.” They may be “degraded but still have a reasonable potential for reestablishing lost wetland functions.”
- Category 3 wetlands “support superior wetland functions.” They have “high levels of biodiversity, a high proportion of native species or other high functional values.” They provide habitat for threatened/endangered species. Examples would include “high quality forested wetlands (including old growth forested wetlands, mature forested riparian wetlands, vernal pools and wetlands which are scarce regionally or statewide including bogs and fens.”

For each of these categories, the Ohio EPA regulations established different mitigation ratios, as well as differing requirements with respect to the quality of the wetlands providing mitigation:

- For Category 1, the required mitigation ratio is 1.5:1; destroyed wetlands must be replaced by wetlands equal in value to category 2 or category 3 wetlands.
- For Category 2, wetlands destroyed must be replaced by wetlands of equal or higher value, and mitigation ratios range from 1.5:1 to 2.5:1, with the higher ratios for offsite mitigation and for forested wetlands.
- For Category 3, replacement wetlands must be of equal or higher value, and the replacement ratios range from 2:1 to 3:1, with the higher ratios for offsite mitigation and forested wetlands.

While the Corps could technically ignore those new ratios for nationwide permits until Ohio EPA uses its 401 certification with the next round of nationwide (or regional) permits, the Huntington District has already begun to apply them. The April 1999 agreement for the Slate Run mitigation bank, for example, stipulates that “medium Category 2 wetland status ... shall be achieved in order to receive credits for the wetland

areas.”³⁰ For individual 404 permits, Ohio EPA can impose those (or higher) ratios through the 401 certification process.

Locational Restrictions

The Big Island bank is on the same river that flows through Columbus, Ohio—the source of most of the development for which the mitigation is required—but the bank is approximately 60 miles up-river from the city. The question of proximity to the site of the damage has been an issue both for Big Island and for the other Ohio banks.

For the Big Island site, the Corps specified in its conditions for OWF that geographic and watershed restrictions would be determined case-by-case, in coordination with the resource agencies, for each applicant.³¹ In fact, the vast majority of credit purchases came from the same watershed, even if 60 miles away; in a few cases, developers in the Columbus area were allowed to use credits for sites on different watersheds.

In its 1998 water-quality rules, Ohio EPA included geographical restrictions as well as the revised mitigation ratios. The first option is to avoid or minimize local disruption altogether. For all three categories, applicants “must demonstrate that alternatives to impacting the wetland have been considered.” An additional requirement for Category 2 is that the impacts must be “necessary for important social and economic development.” Further, for Category 3 wetlands, the developer must demonstrate a public need for the project. Assuming the developer has met those tests, the following locational restrictions apply where mitigation takes place.

- For Category 1 wetlands, mitigation is permitted anywhere within the same Corps District (of which there are four in Ohio).
- For Category 2 and Category 3 wetlands, the impacts “must be mitigated on-site (within a one-mile radius) if there exists a high likelihood of success for such an endeavor.” If not, then mitigation must be within the same watershed. The definition of watershed for these regulations is geographically narrower than that previously used by the Corps.³²

Performance requirements

The general goal for Big Island and other mitigation banks is to produce “a diverse, high quality wetland.”³³ Specific conditions (e.g., hydrologic conditions, plant diversity, animal use, vegetation to be planted) were specified during the process of plan approval. In the case of Big Island, the Corps formally developed those conditions, but with

substantial input from ODNR, Ohio EPA, FWS and NRCS. For subsequent banks, the MBRT determines the conditions.

While an objective of mitigation banking (or other mitigation) is to produce a site that replaces as many characteristics of the lost wetland as possible, the primary objective is to produce a self-sustaining wetland that requires minimal construction disturbance and long-term maintenance. The MBRT agencies are in agreement that it is important to restore the natural conditions of a wetland that previously existed at a site, rather than trying to force development of wetland characteristics that are not natural to the site. At Big Island, for example, a major objective was to restore the hydrologic conditions that existed before the wetlands originally at the site were drained for farming. That meant finding and pulling out the hundreds of feet of tile drains originally installed to convert the area to agricultural use.

Timing requirements for credit sales

One of the potential benefits of mitigation banking is that a mitigation site can be in place and functioning before the wetland losses are incurred. That provides an opportunity to make certain that the mitigation is working before a developer is allowed to destroy existing wetlands. Where the Corps and resource agencies impose site-specific mitigation requirements under a 404 permit, the likely result is that the development occurs first and mitigation occurs later. If the mitigation fails, the damage is already done, although the applicant is still responsible for developing a functional replacement wetland; even if the mitigation doesn't fail, there may be temporal losses of wetland values.

For a banker, however, a requirement that all sales must wait until a mitigation project demonstrates success can be a significant financial problem. Where the banker is a government agency (most commonly transportation departments), the issue is simply one of determining the year for the budget outlay. But for independent bankers building a site for multiple users, some coverage of up-front costs can be crucial to the viability of the banking effort.

For Big Island and subsequent Ohio mitigation banks, the Corps and the MBRT have permitted the banker to sell up to 30 percent of available credits at the time that the agencies approve the banking project, provided that construction begins within one year of the first sale. The remaining credits "may be sold ... upon implementation of the ... Plan and a demonstration acceptable to the Corps that the ... Site is likely to meet performance goals."³⁴ The MBRT applied a more stringent timing restriction to the Slate Run site (April 1999), but returned to the previous language for the subsequent Three Eagles bank (September 1999). For sales after the first 30 percent, the Slate Run

agreement stipulates that credit sales may only take place after “a demonstration acceptable to the MBRT that the Slate Run Site has met the performance goals.”³⁵

Long-term management requirements

One of the crucial questions in wetland restoration is assurance that a restored wetland will be maintained—not just for the period of construction and development, but permanently thereafter. The preferred solution in Ohio has been to have a government land manager take the responsibility, with up-front financing provided by the banker so that long-term maintenance of the bank will not be subject to the vagaries of year-to-year government budgeting.

OWF is responsible for the Big Island site only until it submits a fifth-year monitoring report (which it did by the end of 1999), requests the Corps to release it from management responsibility for the site, and pays a long-term management fee to ODNR, and the Corps (with other state and federal resource agencies) reviews and approves the adequacy of the site restoration.³⁶ At that point, ODNR’s Division of Wildlife will assume responsibility for “perpetual maintenance” of the mitigation site. When the responsibility shifts to ODNR, OWF “will pay to the Division of Wildlife, Wetland Habitat Fund..., the amount of \$1,000 per acre of constructed/restored wetlands to assist in the maintenance, monitoring and/or study of wetlands in the State of Ohio.”³⁷ OWF has virtually identical agreements with Lorain County Metro Parks for the Sandy Ridge site and with Columbus and Franklin County Metropolitan Park District for the Slate Run site.

All of those sites are on publicly owned land. In the case of the Three Eagles site, the land was originally privately owned. OWF purchased the area on which to site the bank. After final approval of site restoration (following the fifth-year monitoring report), OWF will donate the land to ODNR, along with the \$1,000 per-acre payment into the Wetland Habitat Fund.

Requirements for Developers

Depending on the size of the site for which they are seeking mitigation, developers who want to purchase credits from one of Ohio’s wetland mitigation banks must either submit an application for an individual Section 404 permit, or submit a PCN for approval under a nationwide permit. In either case, an applicant must propose a mitigation plan for the impacts it proposes on existing wetlands. For developers, purchase of mitigation bank credits may often be the easiest approach. For larger PCNs, the Corps will refer an

application to other state and federal resource agencies for a brief comment period. As discussed above, the size restrictions under the NWP's changed in 1996, and significant changes are likely in the structure of the NWP's in early 2000. Under either scenario (assuming the proposed dredging or filling of existing wetlands is approved at all), when the Corps issues a permit, it specifies mitigation requirements for the wetland damage allowed by the permit, which may either be acceptance or modification of the developer's original proposal, or an alternative requirement. In the case of an application for dredging or filling of larger or more valuable wetlands, the Corps may impose more stringent requirements—e.g., more credits to offset the lost functions. The existence of the mitigation bank does not enable a developer to short-circuit any of the permitting requirements. In cases where on-site mitigation is not required, use of bank credits may provide the easiest route for meeting mitigation requirements (although the more-stringent Ohio EPA requirements related to the location of the mitigation for Category 2 and Category 3 wetlands may sometimes prevent the use of such credits).

B. Trading Mechanisms

The actual purchase of credits by a developer is a direct transaction between the developer and the banker. Neither the Corps nor the other resource agencies approve the transaction. But a developer who proposes to use bank credits to meet mitigation requirements must submit a legally binding purchase agreement as part of its application. Since there is always the possibility that the Corps will reject the proposed use of bank credits, or that negotiations for a 404 individual permit will be protracted, there are contingency elements in the agreement for both parties.

For Big Island, for example, OWF required developers to pay the fee for the credits at the time of the agreement. But the money was refundable.

The Client and the Foundation are aware that Section 404 permit process must be completed by the Corps and that this Wetland Mitigation Agreement will be used by the Corps to document Clients mitigation plan. Therefore, the Client's payment of \$ ____ will be held by the Foundation until such time as the Corps issues its approval to proceed with the wetland impacts. The Client will provide the Foundation with a copy of the Section 404 permit or other Corps approval to proceed.³⁸

To avoid a situation under which OWF would dedicate credits that might be need by other clients, to one client for a long period of time only to lose the transaction if the Corps rejected an application or mitigation approach, OWF also built in a potential escape clause for itself.

Due to the delays often encountered during the Section 404 permit process and the importance of initiating and completing the Foundation's wetland restoration/enhancement efforts at individual mitigation sites, the Foundation retains the right to terminate this Agreement if, within four (4) months from the receipt of payment from the Client, it does not receive acceptable notice of the Corps' issuance of a permit to Client for wetland impacts at the development site.... Provided, however, that the Foundation must return the Client's mitigation payment and notify both Client and the Corps in writing prior to terminating the Agreement.³⁹

Some clients may purchase credits well in anticipation of future needs. Ohio Department of Transportation, for example, purchased some credits from Big Island in March 1997 that were still unused in April 1999.⁴⁰

The price of mitigation bank credits is also determined directly between buyer and seller. Prices could be individually negotiated. OWF, however, sets a single price for all credits. For most of the sales of credits at Big Island, the price was \$16,000 per acre.

C. *Accountability*

The Corps established a number of conditions for OWF at Big Island to ensure accountability. The MBRTs⁴¹ have established similar conditions for subsequent mitigation banks. The conditions include performance-assurance stipulations for the banker, informational and tracking requirements, and auditing and evaluation requirements.

Performance assurance

For Big Island and for all subsequent banks, the Corps or the MBRTs have required OWF to place \$300 per acre—up to a limit of \$25,000—into an escrow fund which can be used as a source of funds to remediate any failures in the development of the mitigation site. The funds may be released to OWF after successful attainment of the performance goals for the site.

The restriction on sales discussed previously serves a similar role. There must be a demonstration of performance prior to sales of 70 percent of the credits.

Information and tracking requirements

Banks must maintain and regularly submit a ledger to the Corps tracking the generation and purchase of credits at each site. The determination of available credits may change during the course of bank development (either upward or downward due to revised evaluations of the numbers of acres restored or enhanced). In the case of Big Island, the mitigation efforts eventually led to restoration of far more acres than originally anticipated.

The ledger provided by a banker provides information on the client, the contract date, the date of approval by the Corps, the acres filled by the buyer and required from the bank (taking into account the trading ratio), and the restored acres (full credit) or enhanced acres (half credit) used to fill the purchase. The table below illustrates the recordkeeping through excerpts from the OWF ledger for Big Island.

Table 1: Excerpts from Big Island Ledger

Client name	Contract date	Date approved	Acres filled	Acres required	Acres restored	Acres enhanced	Full credits
Columbus Corp .	1/3/95	1/31/95	2.63	3.945	4		4
City of Marion	11/26/96	12/27/96	2.95	4.425	5		5
Lane/ODOT	3/26/97		0	0	22		22
The Super Amer Group	7/21/97	9/4/97	0.66	0.99		2	1
Rick Gostel	10/20/97	12/2/97	1.81	2.8	1.285	3.03	2.8
Nationwide Mutual	2/11/98	1/6/99	1.18	2.4	2.4		2.4

Auditing and Evaluation Requirements

Starting with Big Island, banking agreements have had measures to evaluate the results of the mitigation efforts at banks. The banker must provide the Corps with monitoring reports on the progress of the mitigation for five years after completion of construction. The original agreement between ODNR and OWF required the development of a plan for the monitoring. The plan “will identify generally accepted performance standards and provide for implementation of corrective action if the constructed/restored wetlands fail to meet the accepted performance standards.”⁴²

After submission of the fifth-year monitoring report, the MBRT members (or, in the case of Big Island, the Corps and other resource agencies⁴³) visit a site to evaluate the results and determine whether to approve the mitigation effort prior to transition to management by the long-term manager. An earlier on-site review is required at the end of year three. The fifth-year report for Big Island is due to the Corps from OWF at the end of 1999. After receiving the report, the Huntington District of the Corps, in coordination with federal and state resource agencies, will determine “if the Foundation will be released from monitoring, management and remediation responsibilities.”⁴⁴

The Huntington District also tracked the relationship between the type of wetland restoration at Big Island and the types of wetland losses requiring mitigation. The District added notations to OWF’s ledger of transactions to indicate the type of wetlands dredged or filled, along with an estimate of the type of wetland being restored at Big Island (e.g., forested, emergent, scrub-shrub). In Table 1, for example, with respect to the entry for Rick Gostel, the Corps information includes that the filled acreage was all forested, and credit is attributed to the restored and enhanced forested acreage at Big Island.

To go beyond evaluation of wetland types alone, and to try to incorporate evaluation of wetland functions and values, Ohio EPA has developed the Ohio Rapid Assessment Method (ORAM), which was adapted from a scoring system first developed by the state of Washington.⁴⁵ ORAM provides a system for developing a numeric score as an assessment of the functional value of a wetland. It considers a range of factors to evaluate a wetland’s functions, including wetland type, diversity, hydrology, location, habitat, and size. While developers are not required to use ORAM, they are encouraged to do so. The Huntington Corps District office has developed an assessment score of the first mitigation bank in Ohio (the Hebron site) using ORAM. Ohio EPA expects the ORAM model to evolve as understanding of wetlands increases.

D. Stakeholder Involvement

Under the MBRT process, the six participating federal and state agencies—the Corps, EPA, FWS, NRCS, ODNR and Ohio EPA—have participated in making decisions on all the mitigation banks since Big Island. All of the participants in the Ohio MBRTs have indicated the value both of the consensus decision-making and the consistency in decisions between banks. The Big Island bank preceded the guidance. There was no MBRT, and EPA did not agree with the decision to proceed with the bank. The other agencies, however, all participated in trying to shape the Big Island agreement, even though the Corps had the authority to make the decision. Table 2 provides a comparison

of the Big Island agreement and the first banking agreement by an Ohio MBRT under the national guidance—perhaps a reflection of the extent to which the Big Island agreement was a major step in the direction of the cooperative approach of the MBRTs.

Table 2: A Comparison of Steps and Requirements under the Corps Stipulations for Big Island and the Banking Agreement for Ohio’s First MBRT-Approved Bank—Sandy Ridge

Steps & Conditions	Big Island	Sandy Ridge
Site selection & agreement	OWF & ODNR (8/93)	OWF & Lorain County Metro Parks (MP) (10/95)
Wetland delineation (following Corps procedures)	OWF; review by ODNR, Corps (Huntington, WV District)	OWF; review by MP, Corps (Buffalo, NY District), MBRT
Preliminary/final mitigation plan & site design: 1. identification of areas in which wetlands to be restored/enhanced 2. restoration/enhancement methods (construction, vegetation to be planted) 3. sources of hydrology 4. anticipated wetland & habitat types to be created 5. performance standards 6. provisions for corrective action 7. required maintenance measures 8. 5-year monitoring plan	OWF; review by Corps, ODNR, OEPA, FWS	OWF; review by MP, Corps, MBRT
Credit generation	1 credit for acre for restoration/creation; 1 credit for 2 acres for enhancement	1 credit for acre for restoration/creation; 1 credit for 2 acres for enhancement
Mitigation ratios	1.5 credits for each mitigated acre	case-by-case (minimum 1.5:1)

Approval of final plan	Corps (with comments from ODNR, OEPA, NRCS, FWS) (12/94)	
Approval of banking agreement		MBRT (Corps, EPA, OEPA, ODNR, NRCS, FWS) 8/96
Construction (including seeds, plants) [to be substantially complete” within 2 years]	OWF	OWF
Establishment of contingency fund (\$300/mitigation credit sold up to \$25,000 in escrow fund)	OWF	OWF
Annual monitoring reports for 5 years	OWF	OWF
Maintenance & corrective action during 5-year monitoring period	OWF	OWF
Timing of withdrawal	30% at approval	up to 30% at approval of banking agreement (but construction must be completed within one full growing season from sale of first credits); remainder after implementation, and demonstration that site likely to reach performance goals
Wetland mitigation agreement	OWF & client/developer	OWF & client/developer
Long-term maintenance	ODNR	MP
Payment for long-term maintenance	from OWF to ODNR	from OWF to MP

While all interested agencies have participated in the development of mitigation banking in the state, and while the concerns of developers appear to be reflected in the efforts of the bankers, one stakeholder group generally feels that it has not been an active part of the

process. While banking proposals require a PN, and environmental groups have an opportunity to provide their comments to the Corps, some in those groups believe they have not been adequately involved in the decisions on mitigation banking, and are largely skeptical about the potential environmental outcomes of the promotion of banking, either in Ohio or elsewhere.⁴⁶

III. RESULTS

Since the approval of the Hebron and Big Island banks, there has been substantial mitigation banking activity in Ohio. Several new banks are either complete or under development, and the initial three OWF banks have sold all their credits. This section reviews the level of banking activity in Ohio, as well as some indications of the environmental and economic outcomes.

A. Activity

Between the approval of Big Island and the final sale of mitigation credits from the bank in December 1998, there were more than 80 purchases of Big Island's mitigation credits. Buyers included a wide range of developers—homebuilders, larger construction operations, local governments, the Ohio Department of Transportation and others. OWF has also sold all available credits from the Hebron and Sandy Ridge banks. The level of activity has attracted new bank developers, and led to the initiation of numerous additional banking proposals.

Table 3 from ODNR shows the development of mitigation banking in Ohio from the Hebron site through June 1999. The first part of the table provides a status report on existing banks and on those projects undergoing review in the MBRT process in Ohio. The second part of the table includes banks currently under development for which the bank sponsors had not, as of June 1999, submitted detailed plans to the Corps.

Table 3: Mitigation Banking in Ohio Status (6/99)
Mitigation Banks Completed or Under Negotiation⁴⁷

Site, Banker	Location, Acreage	Status	Long-term manager
Hebron State Fish Hatchery, Ohio Wetlands Foundation (OWF)	Licking County 33 acres	Built, five years of monitoring concluded [bank filled]	ODNR, Division of Wildlife
Big Island Wildlife Area, (OWF)	Marion County 380 acres	Built, year four of monitoring [bank filled]	ODNR, Division of Wildlife
Sandy Ridge Metro Park, (OWF)	Lorain County 115 acres	Built, year two of monitoring [bank filled]	Lorain Metro Parks
Slate Run Metro Park, (OWF)	Fairfield County 130 acres	MBRT agreement signed, construction finished 6/99	Columbus Metro Parks
Little Scioto Bank, The Wetlands Center	Marion County 130 acres	MBRT agreement signed, not yet constructed	ODNR, Division of Wildlife
Panzer Brothers Bank, Panzer Bros.	Summit County 95 acres	MBRT agreement signed, not yet constructed	Revere Land Trust
Cherry Valley & Grand River Lowlands, Wetland Preservation Inc.	Ashtabula County +100 acres at two sites	MBRT agreement not yet signed	Mt. Pleasant Rod & Gun Club
Three Eagles Bank , (OWF)	Sandusky County 150 acres	MBRT agreement not yet signed	ODNR, Division of Wildlife, (tentative)

Banks Currently at the Planning Stage

Ohio Wetland Foundation	Geauga County	?
Wetland Preservation Inc.	Carroll County	Mount Union College (tentative)
Applied Ecological Consultants	Fayette County	Division of Wildlife (tentative)
Applied Ecological	Williams County ~40 acres?	Division of Wildlife

Consultants		
Leslie Farm Trust	Wyandot County, ~50 acres	?

The table demonstrates both the growing number of banks and the increasing number of bankers. In addition, the success in selling out Big Island and the other two early banks, and the diversity of those purchasing credits, indicates that mitigation banking is playing an increasing role in meeting offsite mitigation requirements. Agency staff noted that an important factor in the success of the mitigation banks has been that the primary bank developer, OWF, has its roots in the home-building industry, and understands where the development pressures, and mitigation banking needs, are emerging due to strong industry contacts.

B. Environmental Results

The most basic environmental goal for wetland mitigation banking in Ohio is to ensure no net loss of wetlands—the minimum national goal for wetlands protection. The goal is to protect not just wetland acreage, but wetland function and quality. As mitigation banking has evolved in the state, the state and federal regulatory and resource agencies have clarified and modified their definition of that goal, and of the requirements for meeting it.

With respect to the actual results of the mitigation efforts at Big Island, the fourth-year monitoring report prepared for the Corps by OWF’s contractor concludes:

The mitigation design plan involved the restoration of former wetlands (190 acres projected) and the enhancement of existing wetlands (102 acres projected) within the Big Island Wildlife Area. This 1998 monitoring session accounted for 201 acres of wetlands restored and 146 acres of wetlands enhanced at the site....

Overall, data collected from the 4 year monitoring period indicates that the wetlands at Big Island Wildlife Area Wetlands Mitigation Site are being successfully restored and enhanced. Vegetation diversity continues to increase, as does the dominance by hydrophytic species, and the conversion of upland habitat to wetland habitat. The restoration and increase in hydroperiod of this wetland system has resulted in the development of habitat used by a diversity of birds, mammals, amphibians, reptiles and invertebrates.⁴⁸

On the basis of current evidence, ODNR and Huntington District Corps staff feel that the site is an environmental success. For ODNR’s Division of Wildlife, the site fulfills a major objective of expanding wetlands habitat in the Big Island Wildlife Area.

Some stakeholders are concerned, however, about the location of the site relative to the locations for which it is providing mitigation. The Big Island bank is on the same river that flows through Columbus, Ohio—the source of most of the development for which the mitigation is required. But the bank is approximately 60 miles up-river from Columbus, and even some of those who agree that Big Island is a very high-quality mitigation site providing important wetland values are doubtful that it does much to benefit the areas where the development is taking place. In some cases, projects using the Big Island bank were in the Columbus area, but in different watersheds.

C. Economic Results

As noted above, mitigation banking in Ohio has increased significantly since the first bank was constructed in 1993. All of the banks have been multi-user. Even with the increased specificity of the requirements that banks must meet in terms of type, quality and location of mitigation relative to the characteristics of the impacted sites requiring mitigation, an active banking market appears to be developing, both in terms of the number of individual transactions and in terms of the number of companies proposing to develop banks.

Economic results for the developers of the banks

OWF was originally founded to provide a service to homebuilding companies by providing a way to resolve wetland mitigation requirements on other than a site-by-site basis. The president and all of the original board members of OWF, as well as the \$80,000 loan to fund start-up operations, came from the Homebuilders Association.⁴⁹ Since OWF is a non-profit corporation, it is limited to charging uniform prices for its services, rather than negotiating different prices with different buyers. As a result, OWF has not tried to charge whatever the market would bear, since one of its goals has been to serve homebuilders, whose property-values and ability to pay are less than those of developers of larger properties (e.g., office buildings, shopping centers). For Big Island, OWF charged \$16,000 per acre. OWF estimates that the costs per acre for establishing mitigation banks have ranged between \$8,000 and 11,000 per acre. Those costs include planning, construction, monitoring, and providing a payment to the agency that will undertake long-term management after completion of the five-year monitoring period. Most of the OWF banks have been on land owned by public agencies. Where the land must be purchased (e.g., \$2,000 per acre for the Three Eagles Bank), the costs will be higher (and possibly the prices). Nonetheless, even with OWF's pricing constraints, the development of the banks can be profitable. Assuming that the jurisdiction of the 404 program remains the same, questions for the future are the extent to which more restrictive mitigation credit requirements will drive up the costs of bank development or

restrict the geographic area of mitigation credits, and the extent to which such changes will affect pricing—as well as the overall extent of the mitigation banking market.

Economic results for the developers

Developers who have purchased mitigation credits from the banks have gained three major economic benefits:

- avoidance of the direct costs of constructing an individual mitigation site—more costly than a bank site because of the need to contract for special wetland technical and engineering skills required, as well as because of the lack of any economies of scale
- ability to use an entire development property—quite possibly exceeding a value of \$100,000 per acre in the Columbus area—for development, rather than building elsewhere or setting aside a portion of the property for on-site mitigation
- limited transaction costs for purchasing mitigation credits from OWF.

Economic costs/benefits for agencies (transaction costs)

For the responsible agencies, mitigation banks offer an opportunity for more cost-effective use of resources in managing and enforcing proper mitigation. While involvement with the planning for a bank, participating on the MBRT, and visiting a site on several occasions is more resource-intensive than work on most individual sites, the time per acre is far lower, allowing substantially greater efficiency in evaluation of the total amount of mitigation. For Ohio EPA, for example, the time required to review an individual mitigation site varies quite widely, depending on how much manipulation is necessary at the site to try to regain hydrology. An average figure might be about two days for review, plus a day for a site visit. Banking proposals usually involve two site visits, review of the mitigation plan (sometimes two or three versions), discussions with applicants and resource agents, and approval of the banking instrument. Total review time may run from a week to a week-and-a-half.

For ODNR there is the special benefit that mitigation banking has made possible the construction of wetland sites to increase the volume and diversity of habitat on ODNR lands—sites where ODNR had an interest in wetland development, but lacked the necessary resources. As part of the agreement, as discussed above, a banker provides funding to ODNR to pay for long-term site-management costs; the agreed amount on all sites through mid-1999 has been \$1,000 per acre.

IV. BARRIERS AND DRIVERS

What factors have most affected the development of mitigation banking in Ohio, and could affect its growth in the future? While there are a few clear-cut barriers and drivers, there are also some issues with more ambiguous effects. As the specific summaries below discuss, the growth of the mitigation banking market has largely been due to a mixture of agency initiative; a nationally led, locally implemented consensus process for decisionmaking on mitigation banks; major development pressures; and the mitigation requirements established by the Clean Water Act. Potential barriers, which have not thus far had significant adverse effects on mitigation banking in the state, include restrictions on the timing of sales, geographical limits on sales, availability of appropriate land, and the availability of in-lieu fee arrangements.

Initial agency positions on banking

The strong support for mitigation banking of several of the responsible agencies was a major factor in launching the initial banks. The Huntington District of the Corps and ODNR were the leading advocates for the development of banking. Ohio EPA was initially resistant at the time of the Hebron bank, but became more positively involved in the design of Big Island. EPA Region 5 was adamantly opposed to the Big Island bank. The work of ODNR and the Corps was crucial to winning converts; the impact of EPA's opposition was somewhat lessened by the resource limitations which prevented Region 5 wetlands staff from participating directly in deliberations or site visits in Ohio.

National guidance and MBRT process

Wetlands mitigation involves issues that fall within either the regulatory or resource concerns of several agencies at both the federal and state levels. One of the important developments at the federal level that has helped spur the rapid expansion of mitigation banking since the mid-1990s, both in Ohio and nationally, was the 1995 multi-agency "Federal Guidance for the Establishment, Use and Operation of Mitigation Banks." Five agencies—EPA and the Departments of Interior (FWS), Agriculture (NRCS), Commerce (NMFS) and the Army (Corps)—signed an agreement which defined for all regional and field offices, as well as potential banking participants, a unified approach defining and supporting appropriate circumstances and approaches for the use of banking. Equally important, the agreement included a process for involvement and consensus-building of appropriate state and federal agencies during decisionmaking and implementation for individual banks.

Our review of mitigation banking in Ohio points to the great value of that process. At the time of the Corp's 1994 approval of the Big Island site, only the second in the state, the

guidance had not yet been signed and, as noted above, there was significant controversy among the agencies as to the appropriateness and specific conditions for banking. Subsequent to the guidance, eleven additional banks have been approved or are under development, and there is a forum for the agencies to address both broad issues and specific concerns.

Development pressures

The demand for mitigation derives from the combination of the mitigation requirements of the Clean Water Act and development pressures. Since the early 1990s, the Columbus, Ohio area has had a heated economy and development market. The result has been substantial demand for mitigation credits. There has also been substantial demand in the Cleveland area. Some areas of the state, even with ample potential mitigation banking sites, have too little development activity to justify the investment to develop a bank. An important facilitating factor has been that the leading banker, OWF, not only has developed substantial expertise on mitigation, but has close ties to the developers in the state, and can anticipate where needs are likely to occur.

Mitigation of small impacts

A review of the sales of credits at Big Island shows that almost a third of the purchases were to mitigate wetland losses of less than an acre—the smallest a tenth of an acre. The requirement for developers to mitigate small losses (less likely a decade ago) may not lead to the largest sales, but it does result in continuing pressure for developers to make use of mitigation banks as a source of credits.

Timing restrictions on sales

The agreements for most of Ohio's banks have allowed sales of 30 percent of the projected credits when the banking project is approved, and sale of the remainder when bank construction is completed and the MBRT concludes that the mitigation site "is likely" to meet performance goals. The agreement for Slate Run specified that sale of remaining credits depended on a finding that the site "has met" performance goals. Depending on interpretation, that could involve up to a several-year postponement of sales, with serious financial implications for the developer of the bank. Since sales have not yet reached 30 percent of credits at Slate Run, the potential interpretation and implications are not yet clear. But the subsequent Three Eagle agreement returned to the original language.

Geographic restrictions and land availability

Both the site restrictions for mitigation for Ohio EPA’s Category 2 and Category 3 wetlands and the effort to develop a plan for smaller mitigation sites tied to watershed objectives could limit the size and location of future banks—making banks more costly and difficult to site. Requiring closer proximity to development activities, for example, could result in substantially higher prices for land, in those cases where the banks are constructed on privately owned, rather than publicly owned, land. On the other hand, there may be few remaining available large sites in any case, and integration of mitigation requirements with watershed planning may create additional pressure for developers to make use of available bank sites and mitigation expertise.

Availability of in-lieu fee arrangements

One of the factors that has reduced the discomfort of environmental agencies with banking has been the development of clear criteria, safeguards, and accountability measures for banks, along with the likelihood that substantial steps toward realizing mitigation results will have occurred before most bank credits are purchased and used. In-lieu fee programs provide greater “flexibility.” Developers may pay into a fund that will be used to pay for future mitigation. The danger of that approach is that the dredging and filling of current wetlands can proceed in the absence of any assurance as to the adequacy of the funding for the needed mitigation, or the adequacy of future mitigation efforts, or even that the funding will ultimately be used to mitigate the wetland losses. There is a great chance that such arrangements will be cheaper than banking—potentially undercutting banking markets—and provide far fewer safeguards for the environment. That need not be the outcome: it would be possible to impose rigorous requirements on in-lieu fee systems. Both bankers and environmental agencies, however, are concerned about the potential impacts of those systems.

¹Army Corps of Engineers, U.S. EPA, the National Resources Conservation Service (NRCS) of the Department of Agriculture, the National Marine Fisheries Service (NMFS) of the Department of Commerce, and the Fish and Wildlife Service (FWS) of the Department of the Interior.

²60 FR (11/28/95), 58605-58613. The guidance was originally proposed in March 1995 (60 FR 12286 (3/6/95)).

³Environmental Law Institute, *Wetland Mitigation Banking*, Washington, D.C. 1993. Information from Robert Brumbaugh, Institute for Water Resources, U.S. Army Corps of Engineers, 10/5/99.

⁴Information from the Ohio Department of Natural Resources; see list below. The first two banks (Hebron and Big Island) preceded the 1995 guidance, and did not go through the formal multiagency review process required by the guidance.

⁵Information on mitigation banking in Ohio, both general and specific to Big Island, includes information from interviews with John Marshall, Ohio Department of Natural Resources (8/5/99), Mick Micacchion, Ohio EPA (6/10/99, 8/5/99, 8/16/99, 8/19/99), Jim Sutliff, Ohio Wetlands Foundation (8/5/99, 8/16/99, 10/11/99), Sue Elston, EPA Region 5 (6/21/99, 8/19/99), Kim Baker, Ohio Department of Natural Resources (6/10/99), Sandy Doyle-Ahern (8/13/99), John Demarest, BBMC Engineering (8/13/99), Jeff Scalding, Ohio Environmental Council (8/16/99), Julie Sibbing, National Audubon Society (8/15/99), Kim Brown, Huntington District, Army Corps of Engineers (6/24/99, 8/19/99), Mark Taylor, Huntington District, Army Corps of Engineers (6/10/99), Steve Metivier, Buffalo District, Army Corps of Engineers (6/24/99, 8/15/99), Bill Westbrook, Building Industry Association of Central Ohio (8/18/99), Mark DeBrock, NRCS, Columbus, Ohio (6/24/99), Ken Multerer, FWS, Columbus, Ohio (6/10/99), Ken Lammers, FWS, Columbus, Ohio (6/10/99).

⁶CWA, Section 404(a).

⁷33 CFR 328.3(a)(3).

⁸NRDC vs. Callaway, 392 F. Supp. 685 (D.D.C. 1975); 33 CFR 328; 40 CFR 230.3 & 232.2.

⁹CWA, Sec. 404(c)

¹⁰The PCN includes the wetland delineation, description of the fill, and the plan for mitigation of the impact.

¹¹For example, Paul E. Scodari, *Measuring the Benefits of Federal Wetland Programs* (ELI, 1997), 40-41, summarizes a Florida DEP study which found that only 27 percent of 119 wetland mitigation measures for sites were successful.

¹²60 FR (11/28/95), 58605. The guidance was signed by the Corps of Engineers, EPA, the National Resources Conservation Service, the Fish and Wildlife Service, and the National Oceanic and Atmospheric Administration.

¹³*Ibid.*

¹⁴*Ibid.*, 58606.

¹⁵*Ibid.*, 58610.

¹⁶The percentage has generally been 30 percent in Ohio.

¹⁷Ohio Administrative Code 3745-1-05 and 3745-1-50 to 3745-1-54.

¹⁸Geoenvironmental Consultants, Inc., *A Monitoring and Management Report, Year 4, for the Ohio Wetlands Corporation's Wetland Mitigation Site at the Big Island Wildlife Area in Big Island Township, Marion County, Ohio (Un Trib. Scioto River - Wetland/Fill - 057345)*, (Nov. 10, 1998), 1-2.

¹⁹“First Amended Agreement between Ohio Department of Natural Resources, Division of Wildlife, and the Ohio Wetlands Foundation,” signed by Jim Sutliff, President of OWF (8/10/93); Richard Pierce, Chief, Division of Wildlife, ODNR (8/18/93); and Francis Buchholzer, Director, ODNR (9/1/93).

²⁰“Agreement between Lorain County Metro Parks and the Ohio Wetlands Foundation,” signed by Ohio Wetlands Foundation (9/26/95) and Lorain County Metro Parks (10/2/95).

²¹Letter and attached conditions on permit application for Big Island Pooled Mitigation site (UN Trib Scioto River B Fill-057154) from Michael D. Gheen, Chief, Regulatory Functions Branch, Huntington District, Corps of Engineers, to John Kiertsher, Envirotech Consultants, Inc., December 9, 1994.

²²Ibid.

²³Several more were under consideration. See below in Section III.

²⁴Ann Redmond, Terrie Bates, Frank Bernardino, and Robert M. Rhodes, “State Mitigation Banking Programs: The Florida Experience,” in *Mitigation Banking: Theory and Practice*, edited by Lindell L. Marsh, Douglas R. Porter, and David Salvesen (Washington D.C., Island Press, 1996), 57-58.

²⁵60 FR (11/28/95), 58606.

²⁶Siobhan Fennessy (Division of Surface Water, Ohio EPA), “A Functional Assessment of Mitigation Wetlands in Ohio: Comparisons with Natural Systems” (June 1997), 41-42.

²⁷Comment by Mick Micacchion, Division of Surface Water, Ohio EPA, November 1999.

²⁸That is, developers who had passed the threshold sequencing questions with respect to the unavoidability and minimization of impacts.

²⁹Ohio Administrative Code 3745-1-05 and 3745-1-50 to 3745-1-54.

³⁰“Banking Instrument: Slate Run Mitigation Site,” signed by OWF, Columbus and Franklin County Metropolitan Park District, the Huntington District of the Corps, EPA, FWS, NRCS, Ohio EPA, and ODNR (April 1999), 10.

³¹Letter and attached conditions on permit application for Big Island Pooled Mitigation site (UN Trib Scioto River B Fill-057154) from Michael D. Gheen, Chief, Regulatory Functions Branch, Huntington District, Corps of Engineers, to John Kiertsher, Envirotech Consultants, Inc., December 9, 1994.

³²Ohio EPA divides the state into 37 watersheds.

³³Geoenvironmental Consultants, Inc., *A Monitoring and Management Report*, 4.

³⁴“Sandy Ridge Mitigation Site Mitigation Bank Review Team Agreement,” signed by OWF, Buffalo District of the Corps, EPA, FWS, NRCS, Ohio EPA, ODNR, Lorain County Metro Parks (August 1996), 2-3.

³⁵“Banking Instrument: Slate Run Mitigation Site,” 3.

³⁶As of the end of May 2000, OWF had not yet requested review and approval of its final monitoring assessment by the Corps, since it was not yet ready to pay the substantial long-term management fee (approximately \$300,000) to ODNR.

³⁷“First Amended Agreement between Ohio Department of Natural Resources, Division of Wildlife, and the Ohio Wetlands Foundation,” 8. For Big Island, this will amount to approximately \$300,000.

³⁸Ohio Wetlands Foundation, “Wetland Mitigation Agreement,” 4.

³⁹Ibid., 2-3.

⁴⁰OWF, “Big Island Mitigation Bank Summary.”

⁴¹This is plural because the exact membership of the MBRT depends where the site is located in Ohio. There are four Corps Districts in Ohio, and the Corps member of the MBRT depends on the District in which the site is located. For Sandy Ridge, for example, the Buffalo District chairs the MBRT. For Slate Run and Three Eagles, the Huntington District is chair. The original, pre-MBRT sites at Hebron and Big Island were both in the Huntington District.

⁴²“First Amended Agreement between Ohio Department of Natural Resources, Division of Wildlife, and the Ohio Wetlands Foundation,” 5-6.

⁴³ The distinction is legal only, since all the agencies but EPA have been involved with Big Island. EPA has, because of lack of resources, not visited any of the banking sites in Ohio for which it serves on an MBRT.

⁴⁴ Letter and attached conditions on permit application for Big Island Pooled Mitigation site.

⁴⁵Ohio Rapid Assessment for Wetlands, Version 4.0 draft, Ohio EPA, January 5, 1999.

⁴⁶ See Julie M. Sibbing, “Mitigation’s Role in Wetland Loss,” *National Wetlands Newsletter*, Vol. 19, No. 1 (January-February 1997), 1, 17-21.

⁴⁷ Table compiled by ODNR.

⁴⁸ Geoenvironmental Consultants, Inc., *A Monitoring and Management Report, Year 4*, 27-28.

⁴⁹Information from Jim Sutliff, president of OWF. OWF has since replaced some original Board members and repaid the \$80,000 loan.