

Fifth Stakeholder Forum on Federal Wetlands Mitigation

FORUM REPORT

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**Federal Highway Administration
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Fifth Stakeholder Forum on Federal Wetlands Mitigation

Forum Report

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**The George Washington University Law School
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Washington, DC

Prepared by the
Environmental Law Institute

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Federal Highway Administration
NOAA National Marine Fisheries Service
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
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ELI publishes Research Reports and briefs that present the analysis and conclusions of the policy studies ELI undertakes to improve environmental law and policy. In addition, ELI publishes several journals and reports—including the *Environmental Law Reporter*, *The Environmental Forum*, and the *National Wetlands Newsletter*—and books, that contribute to education of the profession and disseminate diverse points of view and opinions to stimulate a robust and creative exchange of ideas. Those publications, which express opinions of the authors and not necessarily those of the Institute, its Board of Directors, or funding organizations, exemplify ELI's commitment to dialogue with all sectors. ELI welcomes suggestions for article and book topics and encourages the submission of draft manuscripts and book proposals.

Fifth Stakeholder Forum on Wetlands Mitigation Forum Report

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Executive Summary

On May 10-11, 2006, the Fifth Stakeholder Forum on Federal Wetlands Mitigation was held in Washington, D.C. at The George Washington University Law School. The forum was sponsored by the Federal Highway Administration, NOAA National Marine Fisheries Service, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service.

The 2-day meeting was designed to achieve the following objectives:

- Review and solicit input on recent developments in federal mitigation regulations and policy;
- Discuss recent findings on the character and performance of mitigation; and
- Discuss future research priorities for the direction of federal aquatic resource mitigation.

The forum provided an opportunity for a diverse group of stakeholders to discuss the proposed rule on compensatory mitigation for losses of aquatic resources that was released on March 28, 2006, compensatory mitigation and the watershed approach, and future research priorities for the direction of federal aquatic resource mitigation. Stakeholders included representatives from federal and state government, non-profit organizations, academia, and the private sector (e.g., third-party mitigation providers). The forum was designed to capture a variety of opinions on the proposed rule and other issues. It was not designed to yield consensus-based directives for the agencies. However, several themes revisited repeatedly by the forum participants deserve mentioning.

- Participants supported the proposed rule's provisions to raise standards, ensure equivalency, and improve the success of all types of mitigation. Participants suggested, however, that the rule needs clarification on the length of the required monitoring period, long-term management responsibilities, requirements related to financial assurances, the use of preservation for compensation, and natural catastrophe provisions. Participants also suggested that the proposed rule includes too many "may" statements and too few "must" statements, which may lead to inconsistent application of the principles outlined.
- Participants raised several issues concerning third-party mitigation under the proposed rule. Participants suggested that the proposed rule needs clarification on the determination of service areas, and several stated that ecological rather than economic considerations should drive the definition of service areas. Participants also suggested that the rule should clarify the use of a functional assessment for determining credits and impacts. Several participants suggested maintaining the acronym MBRT (Mitigation Banking Review Team) rather than adopting the proposed rule's acronym IRT (Interagency Review Team). Participants also expressed support for the proposed bank approval and dispute resolution timelines.

- Several participants felt that in-lieu-fee programs should not be phased-out under the proposed rule. Overall, participants agreed that in-lieu-fee programs, and any mitigation approaches, should be held to standards that are equivalent to those required of mitigation banks. The North Carolina Ecosystem Enhancement Program was repeatedly presented as a good example of a successful hybrid between in-lieu-fee mitigation and mitigation banking. Several participants voiced support for the phase-out of in-lieu-fee.
- Participants repeatedly emphasized the important role of states and state programs in relation to the watershed approach and watershed planning, the third-party Mitigation Banking Review Team process, data collection and tracking, and compensatory mitigation compliance inspections.
- Participants expressed support for the watershed approach to compensatory mitigation and other wetlands restoration projects. However, participants raised issues about the role federal and state regulatory agencies may play in developing watershed plans; the quality and depth of the required assessments and the minimum information requirements necessary to implement a watershed approach in the absence of watershed plans; and the clarity of the scale of a watershed, particularly as it relates to service area size. Participants were also concerned about how mitigation decisions will be made using the watershed approach in the absence of a formal watershed plan. Several participants expressed support for using regional general permits as a programmatic tool to implement a watershed approach.
- Participants stressed the need for adequate funding to support the watershed approach and watershed planning, the G-ORM/WORM database and associated data tracking efforts, and the Corps' compliance efforts for compensatory mitigation.
- Several participants suggested that better data management and dissemination is needed in order to make existing published and unpublished data more readily available and useable. Several participants also suggested that monitoring reports could be standardized and utilized for collecting data. Some members of the banking industry suggested that bankers should formalize their site-selection processes and share their data in a watershed context.
- Participants expressed an interest in incorporating wetland delineation, National Wetland Inventory data, and data associated with other restoration projects in the Corps' new ORM database. However, participants stressed that standard procedures need to be developed in order to incorporate these data.
- Participants suggested that mitigation providers that fail to submit monitoring reports in a timely manner should be assessed penalties. Corps representatives stressed that compliance issues will improve with the roll-out of the new ORM database.
- Participants suggested a number of options for studies that would help increase the knowledge base on the success and quality of wetland mitigation sites. Several participants stressed the need to conduct studies that explicitly compare the ecological performance of mitigation sites, particularly banks,

based on the type of mitigation provider. Participants also suggested that developing strong, enforceable, equivalent performance standards will improve mitigation success.

Introduction

On May 10-11, 2006, the Fifth Stakeholder Forum on Federal Wetlands Mitigation was held in Washington, D.C. at The George Washington University Law School. The forum was sponsored by the Federal Highway Administration, NOAA National Marine Fisheries Service, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service. The forum provided an opportunity for a diverse group of stakeholders to discuss the proposed rule on compensatory mitigation for losses of aquatic resources that was released on March 28, 2006, compensatory mitigation and the watershed approach, and future research priorities for the direction of federal aquatic resource mitigation. Stakeholders included representatives from federal and state government, non-profit organizations, academia, and the private sector (e.g., third-party mitigation providers).

The 2-day meeting was designed to achieve the following objectives:

- Review and solicit input on recent developments in federal mitigation regulations and policy;
- Discuss recent findings on the character and performance of mitigation; and
- Discuss future research priorities for the direction of federal aquatic resource mitigation.

PowerPoint presentations, audio recordings of the forum, and links to many of the policy and technical documents discussed in this report are available through the Environmental Law Institute's web site (<http://www2.eli.org/research/wetlandsmitigationforum2006.htm>). Other information related to federal wetlands mitigation can be found on the web sites of EPA's Wetlands Division (<http://www.epa.gov/owow/wetlands>) or the Regulatory Program of the U.S. Army Corps of Engineers (<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/index.htm>). The Mitigation Action Plan web-site, which includes information on the status of action items, as well as final and draft policy documents, is: <http://www.mitigationactionplan.gov>.

The forum was designed to capture a variety of opinions on the proposed rule on compensatory mitigation for losses of aquatic resources and other issues. It was not designed to generate consensus opinions or develop consensus-based recommendations.

BACKGROUND

This Stakeholders Forum was the fifth in a series designed to provide an opportunity for the federal wetlands agencies to exchange information and solicit feedback on the development of federal wetland mitigation policy with a broad group of stakeholders. The first forum, held in 1999 in Washington, D.C., was designed to solicit input on the development of joint interagency guidance on the use of in-lieu-fee arrangements. Final interagency guidance on the use of in-lieu-fee mitigation was released in 2000.

In 2001, several studies were released that sought to address the status of federal compensatory mitigation in the United States. In May 2001, the Government Accountability Office (GAO, then the General Accounting Office) released a report entitled, "Wetlands Protection: Assessments Needed to Determine Effectiveness of In-Lieu-Fee Mitigation," and in June 2001, the National Academy of Sciences' National Research Council (NRC) released its study, "Compensating for Wetland Losses Under the Clean Water Act."

In October 2001, the Environmental Law Institute (ELI), in coordination with several federal agencies, the Maryland Department of the Environment, and the Baltimore National Aquarium, administered the Second Stakeholder Forum on Federal Wetlands Mitigation in Baltimore, Maryland. The forum was designed to give participants the chance to discuss the conclusions and recommendations of the NRC and GAO reports, as well as other reports and studies, on compensatory mitigation. A report issued by the Environmental Law Institute summarized the presentations and discussions from the forum and was used by the federal agencies to guide development of future guidance on mitigation. That report, as well as audio recordings and the PowerPoint presentations, are available on ELI's website (<http://www.eli.org/research/wetlandsmitigationforum.htm>).

In December 2002, the Corps issued a revised Regulatory Guidance Letter (RGL), which replaced an earlier one released in October 2001. The revised RGL was developed with input from the federal agencies that play a role in wetlands protection. The RGL was intended to improve compensatory mitigation implemented under the Clean Water Act in support of the Administration's "no net loss" of wetlands goal.^A

The RGL was part of the National Wetlands Mitigation Action Plan (MAP), which was released in December 2002, by the U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA), in conjunction with the Departments of Agriculture, Commerce, Interior, and Transportation. The MAP was intended to provide the participating federal agencies with a roadmap to guide them with the development of a number of guidance documents, research, and other activities through 2005. The MAP lists 17 action items intended to improve the effectiveness of compensatory mitigation under §404 of the Clean Water Act.

Following the release of the Mitigation Action Plan, a federal interagency team, the Mitigation Action Plan Workgroup (MAP Workgroup), was formed to coordinate work on the action items outlined in the plan. For additional information about the MAP, and an update on the status of the action items, see the National Wetlands Mitigation Action Plan website at: <http://www.mitigationactionplan.gov/>.

In July 2003, ELI hosted the Third Stakeholder Forum in Portland, Oregon. The forum was co-sponsored by the City of Eugene, Federal Highway Administration, NOAA Fisheries, Natural Resources Conservation Service, Oregon Department of Transportation, Oregon Division of State Lands, Port of Portland, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and Washington Department of Ecology. The event was designed to review progress on the actions set forth in the MAP, solicit feedback on MAP tasks to be completed in 2003, and solicit input on future MAP items and goals for 2004-2005.

In September 2004, ELI hosted the Fourth Stakeholder Forum in Tampa, Florida. The forum was designed to review progress on the actions set forth in the 2002 MAP, solicit feedback on MAP tasks to be completed in 2004, and solicit input on future MAP actions and goals for 2005. A report issued by the Environmental Law

^A U.S. Environmental Protection Agency. December 24, 2002. Regulatory Guidance Letter. *Available at* http://www.epa.gov/owow/wetlands/pdf/RGL_02-2.pdf.

Institute summarized the presentations and discussions from the forum and was used by the federal agencies to guide development of future guidance on mitigation. That report, as well as PowerPoint presentations, is available on ELI's website (<http://www.eli.org/research/wetlandsmitigationforum.htm>).

The following is a summary of the presentations and discussions that took place during the Fifth Stakeholders Forum. Points made by participants are summarized and attributed where appropriate. ELI apologizes in advance for any misrepresentation of the speakers' meaning or intent.

Summary of Presentations and Facilitated Discussions

Day One began with opening remarks from Benjamin Grumbles, Assistant Administrator for Water, U.S. Environmental Protection Agency (EPA). Palmer Hough, EPA Office of Water, Wetlands Division, provided an overview of the U.S. Army Corps of Engineers (Corps) and EPA's proposed rule on Compensatory Mitigation for Losses of Aquatic Resources. His presentation was followed by questions and three sessions of facilitated discussion, during which participants were asked to provide comment on the strengths and weaknesses of the proposed rule, as well as their thoughts on issues they felt were omitted from the rule. The facilitated discussion on the proposed rule was divided into three sessions: session I addressed general considerations and requirements, session II was devoted to administrative requirements and performance standards, and session III focused on issues specific to third-party mitigation.

The remainder of Day One was devoted to a discussion of compensatory mitigation and the watershed approach. Susan-Marie Stedman, NOAA National Marine Fisheries Service (NMFS), reviewed the federal agencies' progress to date on the issue. Joy Zedler, University of Wisconsin, Madison (UW), discussed what wetland resources get restored without a watershed plan, what should get restored with a watershed plan, and what could happen with no plan under the proposed regulations. These presentations were followed by questions and a facilitated discussion that addressed the strengths and weaknesses of the watershed approach as currently proposed.

Day Two began with a review of the future of wetlands databases by Bob Brumbaugh from the Corps' Institute of Water Resources (IWR). His presentation on ORM, G-ORM, and WORM was followed by questions and a facilitated discussion that focused on compensatory mitigation data management.

Sherry McDonald, from the U.S. Government Accountability Office (GAO), gave a presentation on GAO's September 2005 report on the Corps' oversight of compensatory mitigation. Her presentation was followed by a response from the Corps delivered by Brumbaugh. The participants then had time to ask questions of McDonald and Brumbaugh about issues concerning the Corps oversight of compensatory mitigation.

The next section focused on current and future studies on the character and performance of mitigation. Steve Martin, Corps – Norfolk District, provided an overview of the Corps' recent survey of district mitigation practices. Siobhan Fennessy, from Kenyon College, gave an assessment of recent studies on the performance of wetland mitigation sites. These presentations were followed by time for questions and a facilitated discussion, during which participants were asked to identify possible areas of future research on the character and performance of mitigation.

The forum concluded with a wrap-up and closing statements from Brian Frazer, Chief of the Wetlands and Aquatic Resources Regulatory Branch, EPA Wetlands Division, and Bob Brumbaugh from the Corps' Institute for Water Resources.

Details of each presentation and facilitated discussion are summarized below.

Recent Developments in Federal Mitigation Regulations and Policy

COMPENSATORY MITIGATION RULE: CORPS/EPA NOTICE OF PROPOSED RULEMAKING Palmer Hough, U.S. Environmental Protection Agency

On March 28, 2006, EPA and the Corps released a set of proposed regulations designed to promote the goal of “no net loss” of wetlands and stream². The goal was to develop a consistent set of science-based standards for all forms of compensatory mitigation under the §404 program.

There are three forms of compensatory mitigation under the §404 program: permittee-responsible mitigation (PRM), in-lieu-fee mitigation (ILF) and mitigation banks. With PRM, the permittee, or a contractor paid by the permittee, performs the mitigation work. The responsibility for doing the work and the liability for ensuring its success remains with the permittee. Mitigation plans associated with PRM often do not include the same level of detailed information and assurances that are required of mitigation banking instruments, and do not benefit from the mitigation bank review process. For both ILF and mitigation banking, the permittee pays a third party to conduct the compensatory mitigation. The third party, an ILF provider or mitigation bank sponsor, takes over the responsibility for doing the work and the liability for ensuring its success. Unlike mitigation banking, many ILF operators collect funds prior to identifying a mitigation site, which has become problematic. For example, there have been case studies of ILF programs that have been able to collect funds but have not been able to translate those funds into projects on the ground. The goal of the proposed rulemaking, as directed by Congress, was to squarely address some of these and other inequities among the forms of compensatory mitigation.

Both the Corps, in its environmental assessment in support of the proposed rule,³ and the Environmental Law Institute (ELI)⁴ have recently surveyed Corps districts around the country to characterize the compensatory mitigation work being conducted. The numbers that are reported by ELI and the Corps are essentially identical. These studies reported that approximately 60 percent of all compensatory mitigation is satisfied through PRM, a third is satisfied through mitigation banks, and 7 percent is satisfied through ILF mitigation. According to the Corps’ report, 33 percent of compensatory mitigation is done on-site, 16 percent is a combination of on-site and off-site, and 51 percent is completed off-site. Thus, the majority of compensatory mitigation, 67 percent, is either off-site or a combination of on-site and off-site. Thirty-three percent of the off-site mitigation is associated with mitigation banks, while 11 percent of the off-site mitigation is completed through PRM, and 7 percent is ILF mitigation.

The Corps’ Environmental Assessment divides mitigation banks into two categories: single-user banks and commercial banks. Single-user banks are typically developed by government agencies to serve their own

² U.S. Army Corps of Engineers. March 28, 2006. Compensatory Mitigation for Losses of Aquatic Resources: Proposed Rule. *Available at* <<http://www.epa.gov/owow/wetlands/pdf/MitRuleNPRM.pdf>>.

³ U.S. Army Corps of Engineers. March 13, 2006. Draft Environmental Assessment, Finding of No Significant Impact, and Regulatory Analysis for Proposed Compensatory Mitigation Regulation. *Available at* <http://www.usace.army.mil/inet/functions/cw/cecwo/reg/news/Draft_EA_Reg_Analysis.pdf>.

⁴ Environmental Law Institute. April, 2006. Status Report on Compensatory Mitigation in the United States. *Available at* <<http://www.epa.gov/owow/wetlands/pdf/ELIMitigation2005.pdf>>.

needs. The number of single-user banks has been growing since the early 1990s. As of 2005, there were 86 single-user banks in operation, and 49 more were in the proposal stage. Commercial banks evolved after single-user banks and have been increasing at a much faster rate. As of 2005, there were 305 active commercial banks, not including the 59 banks that were sold-out by 2005. In addition, 149 more commercial banks were in the proposal stage as of 2005. ELI's numbers, which are slightly more recent than the Corps', show that these numbers continue to increase. The ELI study, which includes information from all 38 Corps districts, identified 438 active or sold-out banks. The vast majority of the banks identified by ELI are commercial ventures banks. Sixty-seven percent of the commercial banks are private, while 27 percent are single-user banks. ELI identified one bank that is a combination public/private bank. The number of ILF programs grew rapidly from 1995 to 2001. However, both the Corps' inventory and the ELI study show a drop in the number of ILF programs in 2005 to 58 active programs. Both reports offer potential explanations for this drop. There are currently only seven ILF programs pending approval.

The 2004 National Defense Authorization Act of 2004⁵ directed the Corps to develop equivalent standards for the use of all three forms of compensatory mitigation. The Corps and EPA worked throughout 2005 to develop the proposed rule. From December 2005 to March 2006, the White House Office of Management and Budget (OMB) reviewed the rule. Other federal agencies, including the Department of Transportation (DOT), the Department of the Interior (DOI), NMFS, and the Department of Defense (DOD) reviewed the rule and provided comments. The proposed rule was published in the federal register on March 28, 2006. Hough announced that the comment period for the proposed rule was extended by one month to June 30, 2006. He provided participants with instructions on how to submit comments and stated that although the agencies will listen to the comments provided by participants at this Forum, they must be submitted through one of the official means in order to be part of the public docket.

Inspiration and supporting materials for the proposed rule were provided by four national mitigation guidance documents: the 1990 memorandum of agreement,⁶ the 1995 banking guidance,⁷ the 2000 ILF guidance,⁸ and the 2002 mitigation Regulatory Guidance Letter.⁹ The EPA and the Corps also relied on the National Research Council's (NRC) 2001 mitigation study¹⁰ and other more recent research. The Environmental Assessment associated with the rule lists all of the research documents that helped to inform its develop-

⁵ H.R. 1588 National Defense Authorization Act for Fiscal Year 2004. <<http://thomas.loc.gov/cgi-bin/query/z?c108:H.R.1588.enr:>>.

⁶ U.S. Environmental Protection Agency. Memorandum of Agreement Between The Department of the Army and The Environmental Protection Agency: The Determination of Mitigation Under The Clean Water Act Section 404(b)(1) Guidelines. <<http://www.epa.gov/owow/wetlands/regs/mitigate.html>>.

⁷ U.S. Environmental Protection Agency. Federal Guidance for the Establishment, Use and Operation of Mitigation Banks. <<http://www.epa.gov/owow/wetlands/guidance/mitbankn.html>>.

⁸ U.S. Environmental Protection Agency. Federal Guidance on the Use of In-Lieu-Fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. *Available at* <<http://www.epa.gov/owow/wetlands/pdf/inlieufee.pdf>>.

⁹ U.S. Environmental Protection Agency. December 24, 2002. Regulatory Guidance Letter. *Available at* <http://www.epa.gov/owow/wetlands/pdf/RGL_02-2.pdf>.

¹⁰ National Research Council Board on Environmental Studies and Toxicology. *Compensating for Wetland Losses Under the Clean Water Act (2001)*. <<http://www.nap.edu/books/0309074320/html/>>.

ment. Stakeholder input and the national Mitigation Action Plan (MAP)¹¹ work products, completed as of 2003-2004, also influenced the development of the rule.

Several themes guided development of the rule. First, the Congressional directive was to develop equivalent, effective standards for the use all three forms of compensatory mitigation. The goal of this rule was to raise the bar for all forms of compensatory mitigation to the level that currently guides mitigation banking by developing high and effective standards. A second major theme was to emphasize the use of the best available science. To this end, the rule addresses 23 of the 29 specific recommendations and goals offered by the NRC report on compensatory mitigation. The six remaining goals are either being addressed by other efforts or were outside the scope of this rulemaking. Chief among the NRC recommendations addressed by the rule is an emphasis on taking a watershed approach to evaluating impacts and selecting compensation sites in the §404 program. The watershed approach is a difficult topic to address, and the agencies anticipate many comments on this topic. The third major theme is ensuring predictability and efficiency of mitigation by clarifying the requirements for the mitigation plans that are required for all forms of mitigation and imposing disciplined timelines. A final major theme is expanding public participation by giving a larger number and broader array of stakeholders an opportunity to influence decisions about compensatory mitigation.

The rule is divided into nine sections. The first seven sections of the rule apply to all forms of compensatory mitigation, while the last two apply to issues unique to third-party compensation. The first three sections of the rule are general considerations and requirements. Sections Four through Seven are administrative requirements that apply to all three forms of mitigation.

Hough proceeded to outline the central issues addressed in the rule. The two major components of Section One are the purpose of the rule and clear affirmation of the existing mitigation sequencing guidelines. The purpose, as Congress directed, is to establish equivalent and effective standards for the use of all three types of compensatory mitigation. Section One also emphasizes the current sequencing requirements to first avoid, and then minimize, and then lastly compensate for impacts to aquatic resources. Given the emphasis on compensation in the rest of the proposed rule, the Corps and EPA felt it important to affirm the avoidance and minimization requirements that must be met prior to reaching mitigation.

Section Two of the proposed rule includes 35 definitions. Most of the terms found in Section Two have been in use for 15 years and have been defined in previous guidance documents. Two definitions, however, have changed slightly: "compensatory mitigation" and "on-site mitigation." Section Two also contains five previously undefined terms including "adaptive management," "functions," "services," "values," and "watershed plan." The Corps and EPA ask for input on whether the new terms are needed and if the proposed definitions are adequate.

Section Three deals with many of the big-picture issues in the rule, including appropriate location of compensation, type of compensation, amount of compensation, the use of preservation and buffers in compensation, and the use of the watershed approach. This section emphasizes that regulators will be taking a

¹¹ US Army Corps of Engineers et al. June 13, 2006. National Wetlands Mitigation Action Plan. <<http://www.mitigationactionplan.gov/>>.

watershed approach to selecting compensatory mitigation sites, and that the district engineer must determine the appropriate amount and type of compensation consistent with a watershed plan. The rule also outlines the principles of a watershed approach to be used in the absence of a watershed plan, including some structured considerations to rely upon when it is not practicable to take the watershed approach. The district engineer will first look at on-site and in-kind options, and if those options will not provide the adequate compensatory mitigation, then the district engineer will look at off-site and out-of-kind options. The Corps and EPA are looking for input on the watershed plan sections of the rule, particularly whether or not the right principles and information needs are outlined for situations when compensatory mitigation decisions must be made in the absence of a watershed plan.

The rule proposes a change to the definition of “on-site,” which was previously defined as compensation projects located on the same parcel of land or on contiguous or *adjacent* land. This definition forces restoration projects to be squeezed in immediately next to impacts. The proposed rule’s definition of on-site replaces “*adjacent*” with “*near*” the impact site. Many states, which define on-site and off-site mitigation, have already adjusted their definitions similarly. In Florida, the definition of on-site was changed to include land on or adjacent to the impact or in close proximity. Other states that have defined on-site have been even more specific (e.g. on-site is defined as within ¼ mile of the impact site). The Corps and EPA are requesting comments on whether the proposed definition is too vague.

Section Three also contains the five factors that apply to site selection for all mitigation projects. The proposed rule states a clear preference for in-kind mitigation because it is the best way to replace what is being lost. There is flexibility in the rule to do out-of-kind mitigation, but all out-of-kind projects must be supported by a watershed assessment. The rule also stipulates that the district engineer must require an amount of compensation sufficient to place lost functions. Outside of a functional assessment, the rule requires a minimum 1:1 replacement ratio. Certain factors such as temporal loss, the quality of the impact and compensation sites, and the method of compensation (e.g. preservation) will increase the ratio above 1:1. There are a number of provisions in the rule that deal with the use of banks, including clarification that banks are eligible to compensate for all authorized impacts. This provision addresses the current patchwork of regulations across the county that limit the use of banks to address only certain types of projects.

Preservation is also addressed in this section. This old definition of compensatory mitigation says preservation can only be used in “*exceptional*” situations, while the new definition says that preservation can be used in “*certain*” situations. This definition change is meant to standardize the states’ approaches to using preservation, and clarify “*exceptional*” by defining the certain circumstances in which preservation can be used. The rule lays out five factors that must be met in order for preservation to be used. For example, the parcel of land has to be under threat and must be protected in perpetuity. The rule also states that preservation should be used in conjunction with other forms of compensation, unless supported by a watershed assessment. In any case, the use of preservation will require higher replacement ratios. This section also briefly addresses buffers. The proposed rule states that buffers may be required to protect mitigation sites and credit may be assigned to them.

Section Three also includes language about how compensatory mitigation projects relate to other federal, state, local and tribal regulatory programs. Compensatory mitigation projects can be used to offset impacts regulated under other programs if the mitigation is consistent with the terms of those programs and off-

sets §404 impacts over and above what is required by the other programs. The rule also prohibits “double dipping,” or selling a specific ecosystem service credit in more than one market. The rule reiterates the 1995 banking guidance provision that federally funded restoration projects (e.g. Wetland Reserve Program or WRP¹² and Partners for Fish and Wildlife¹³) may not generate compensation mitigation credits. However, compensatory mitigation projects that are done in conjunction with and supplemental to those federal projects can generate credit.

The general section of the rule (Section Three) also clearly lays out all of the compensatory mitigation information that must be included as permit conditions, thereby addressing one of the concerns expressed in the 2001 NRC study. The rule requires that the special conditions of every permit must stipulate the amount and type of compensatory mitigation, the party responsible for every phase of the mitigation project, approved plans, performance standards, monitoring requirements, financial assurances, and management provisions. Section Three also states that mitigation should, at a minimum, be concurrent with the activity causing the impact and the initial physical and biological improvements should be completed within the first full growing season following permitted impacts. Finally, Section Three includes strong language requiring appropriate, short-term financial assurances to ensure a high level of confidence that the compensation will meet its performance standards. Financial assurances can take the form of performance bonds, escrow accounts, casualty insurance, letters of credit, or other appropriate instruments. These financial assurances can be phased out as performance standards are met.

Section Four addresses the planning and documentation issues associated with compensatory mitigation. The rule proposes to expand the role of public participation in compensatory mitigation decision-making. In addition to encouraging pre-application consultations, this section requires that all public notices for individual permits explain how proposed impacts will be avoided, minimized, and compensated. This addresses a shortcoming in the traditional §404 program public notices, which did not always include sufficient information for members of the public and commenting agencies to write meaningful comments in a timely fashion.

Section Four also lays out the twelve core components that will be required of mitigation plans for all types of mitigation. The rule proposes that all mitigation plans be required to include project objectives, site selection factors, site protection instruments, baseline information on the impact and compensation sites, credit determination methodology, a work plan, a maintenance plan, performance standards, monitoring requirements, a long-term management plan, an adaptive management plan, and financial assurances. A permittee using a bank would not be required to include these components in the permit because they are addressed in the banking instrument. This will further streamline the permit application process for permittees using banks for compensatory mitigation. A permittee using a bank would only be required to include three components in the mitigation plan: project objectives, baseline information of the impact site, and credit determination methodology.

Section Five deals with ecological performance standards, but does not identify specific metrics for all types of wetland and stream habitats. Instead, the rule proposes that standards would be established based on

¹² National Resource Conservation Service. Wetlands Reserve Program. <<http://www.nrcs.usda.gov/PROGRAMS/wrp/>>.

¹³ U.S. Fish & Wildlife Service. September 27, 2006. Partners for Fish and Wildlife Program. <<http://ecos.fws.gov/partners/viewContent.do?viewPage=home>>.

variables or measures identified in the scientific literature associated with the particular wetland or stream type being mitigated. This section does give examples of how to generate the performance standards. However, every permit for PRM and every mitigation banking instrument would be required to have measurable and enforceable performance standards.

Section Six lays out the general monitoring requirements for compensatory mitigation sites. This section outlines the monitoring report information requirements, submission requirements and timelines, and the monitored metrics and their target ranges. The section also includes a discussion on the minimum monitoring period. The preamble requests comments on the proposed five year minimum monitoring period, specifically, whether it is too short, too long, right on the mark, or whether there are specific aquatic resource types that would require a monitoring period of less than two years. While a five year monitoring period is proposed, the rule indicates that the monitoring period can be extended for those wetlands that have an extended development time (e.g. bogs and forested wetlands).

Section Seven includes the management provisions of the proposed rule. First, the section states that mitigation sites should be protected in perpetuity and lays out the appropriate real estate assurances. The rule expresses a preference for easements held by or title transfer to government agencies or conservation agencies whose mission is conservation. Easements should highlight compatible and incompatible uses for the property consistent with the goals of the mitigation project. There is also a discussion of sustainability issues to address past criticisms that the §404 program includes no requirements for long-term management of wetland or stream restoration and creation projects. Research and practical experience has shown that even sustainable projects often need long-term management including perpetual fire management, invasive species control, manipulation of water control structures, or easement enforcement. The rule states that the permit application or banking instrument would be required to identify the party responsible for the long-term management and the source for funding for management activities. Long-term funding should typically take the form of escrow accounts, endowments, or trusts, which are slightly different than the financial assurances that are required to ensure that performance standards are met.

Sections Eight and Nine of the rule are specific to third-party compensatory mitigation. Section Eight addresses siting mitigation banks, which can be located on public or private land. The rule requires a written agreement from a public entity for any bank that will be sited on public land. The rule also notes that when establishing credits for banks on public land, the credits must be based solely on those functions provided by the bank over and above those provided through the public investments already made to or planned for the site. This part of the rule also discusses the role of the interagency review team (IRT), formerly referred to as the mitigation banking review team, or MBRT. The Corps and EPA are seeking comment on the proposed name change. The MBRT process has been problematic in some areas, but the NRC and others have highlighted the role of MBRTs as one element of mitigation banking that makes it a more reliable form of compensatory mitigation.

The rule proposes some changes to MBRTs to streamline the process, including imposing a disciplined timeline for review and approval of banks. The timeline includes four phases of federal review (sponsor submits draft prospectus, sponsor submits complete prospectus, sponsor submits complete draft instrument, sponsor submits final instrument), of which only three are required. The first phase, review of draft prospectus, is not required of the bank sponsor, but the Corps is required to review and comment on a draft prospectus

within 30 days. Between the required phases of review there are opportunities for the bank sponsor to respond to comment, and there is no time frame imposed on the bank sponsor during these response periods. The Corps and EPA are looking for comment on whether the bank sponsor should have a time frame imposed on them, but sponsors may want enough time to conduct additional research to help respond to agency comments. The Corps has very disciplined timeline requirements. The total time for federal review is no more than 195 days. The Corps' field offices have reported that this timeline will be challenging to implement, but the agency has attempted to funnel additional resources to meeting the timelines.

In addition to requiring that all banking instruments contain twelve mitigation plan components, there are several issues in the proposed rule that are unique to banks. These issues include service areas, credit release schedule, accounting procedures, transfer of liability for site success, and default and closure provisions. A second timeline in the rule involves the dispute resolution process. In the event that there is a dispute among the Corps and an MBRT agency, there is now a new process for resolving issues. If the dispute resolution process is triggered, the bank sponsor is assured of a response within 150 days from submission of the final banking instrument.

Section Eight also states that prior to selling any credits, the bank must have in place an approved instrument or plan, a secured bank site, and established financial assurances. The rule proposes to grandfather banks whose instruments are approved within 90 days of the rule's finalization. Any banks approved after that will need to comply with the new regulations. In addition, any modification to an existing instrument will trigger compliance with all new requirements.

Section Nine of the rule proposes to suspend the authorization of new ILF programs after 90 days of publishing the final rule. The rule also proposes a five year transition period for existing ILF programs. Within that time frame, the programs must either comply with the new standards for banks or close.

The comment period for the proposed rule has been extended to June 30, 2006. The agencies will be doing outreach through the comment period. All of the submitted comments can be accessed through www.regulations.gov. The agencies will respond to every substantive comment. The agencies have been working on developing a strategy for implementation of the rule. One proposed component of the strategy is to develop an IRT academy, or a training course for state and federal regulators who will serve on IRTs to develop the scientific, legal and financial expertise they need to make effective decisions within the disciplined timelines.

Hough concluded by discussing how the rule dovetails with the National Mitigation Action Plan. The agencies view the rule as an unanticipated opportunity to take the issues that were being worked into guidance through the MAP process and put them into a regulation that may be a more effective tool for improving the success of compensatory mitigation. When the MAP was released in December 2002, the agencies did not know that Congress would call for regulations above and beyond the guidance that is called for in the MAP. Before focus was shifted to the rule, the agencies had completed 8 of 17 tasks of the MAP. Work continues on impact/mitigation data collection efforts, and issues about how impacts and mitigation are being tracked. Six guidance documents were in various phases of development, including guidance on off-site/out-of-kind mitigation, preservation, buffers, difficult to replace wetlands, performance standards, and the watershed approach. When the rule is finalized, the agencies, with stakeholder input, will determine

which guidance documents are still necessary and which have been addressed through the rule. The final rule may also lead to the development of other guidance documents that were not anticipated by the MAP.

Questions and Facilitated Discussion

General Questions

One participant inquired about the procedures for finalizing the proposed rule (Klimek). Hough responded that when the comment period closes, the Corps and EPA will organize all of the comments into a database, analyze which stakeholder groups are responding to which issues, and incorporate the comments into a response document. In developing the comment response document, the Corps and EPA will identify any changes to the rule that might be needed. Once this is accomplished, the new preamble (the comment response document), the new rule, and the new environmental assessment will go back to OMB and the agencies' district offices for comment, which is expected to take at least three months. The rule will then be published in its final form sometime by late fall or early next year. There will be no further opportunity for public comment after the publication of the final rule (Hough).

Mann suggested that the agencies should explore whether the inequity that exists between the three forms of compensatory mitigation is due to the structural differences among the types or due to the way the agencies enforce existing regulations and guidance. The final rule should reflect this analysis. Hough responded that currently the three different forms of compensation are governed by three different guidance documents, which were written at three different points in time. In addition, the banking guidance includes far more detailed and comprehensive recommendations than those for PRM or ILF. For example, banks are required to conduct significant upfront planning, have in place financial assurances for long and short-term management, and secure proper real estate instruments. One of the goals of the proposed rule was to put all of the regulations in one document with a set of clear administrative regulations and ecological standards that apply to all forms of compensatory mitigation. There are also some real structural differences between banks and ILF programs that the proposed rule attempts to address. The regulators' risk is minimized for banks because banks must have a site secured and because the sale of credits is phased ("phased credit release"). ILF programs, however, carry with them an increased risk for regulatory agencies because the transfer of liability is not as absolute (Hough). Brumbaugh added that in terms of enforcement, the proposed rule is a rule, which carries with it more weight than guidance.

Kelly asked whether the economic cost factor in determining compensatory mitigation was new. Hough responded that similar language exists in regulations established in 2002. In the larger context, economics is always a factor because all decisions about appropriate impacts and appropriate compensation are made in light of what is appropriate and practicable, and a component of the practicability analysis is cost. Ewoldt suggested that the rule eliminate all of the "should"s and replace them with "must"s.

Session I: General Considerations and Requirements (Sections 1-3).

Goldman-Carter suggested that the **preamble** language allowing financial assurances to lapse should be removed; financial assurances should be required in all circumstances. Hough responded that the agencies found instances in which district engineers were not aware that financial assurances had lapsed. The agen-

cies are seeking comment on whether or not the rule should include a provision requiring the district engineer to be notified in advance of financial assurances lapsing (Hough). Howard suggested that government agencies, as well as private sector and non-profit mitigation providers, should be required to establish dedicated financial assurances. Ryan added that the new requirements established by the rule must carry with them additional funding for the regulatory agencies to ensure that they have the capacity to meet the required deadlines.

Howard stated that the regulations should state: 'The purpose of this part is to establish *'equivalent standards and criteria'* not just *'standards and criteria.'* Goldman-Carter suggested that §1c should include a direct reference to the §404(b)1 requirements for practical alternatives in the rule, which are separate from the sequencing requirements. Taylor added that the rule should include further guidance and criteria for district engineers to use when determining if avoidance and minimization have been adequately performed. Hanson stated that §1d of the rule is not clear about the meaning of *'accounting for regional variations'* when determining performance standards and monitoring requirements for compensatory mitigation.

Many of the participants suggested changes to definitions proposed in the rule. Bersok stated that the inclusion of uplands in the definition of *buffer* is good, but the definition for *compensatory mitigation* should be expanded to explicitly include work in uplands. Murin thought that the definition of *compensatory mitigation* and *compensatory mitigation project* should not include enhancement because the definition of *enhancement* says it may lead to decline in aquatic resource function and does not result in a gain in aquatic resource area.

Several participants thought that the definitions of *on-site* and *off-site* should be clarified. Hanson added that the definition of *off-site* should clarify whether there will be restrictions on possible mitigation sites based on watershed needs. Ryan suggested that the definition of *on-site* would be improved by removing or defining "near." Shreeve suggested that *on-site* mitigation should be defined as that taking place in the sub-watershed in which impact occurs and *off-site* that taking place outside the sub-watershed. Sub-watershed is the area that drains into the impacted stream or wetland, which could be major river basin or small creek drainage.

Zedler suggested that the definition of *reference aquatic resources* should exclude the last three words, *'and anthropogenic disturbances,'* because with this clause, the definition does not exclude any wetlands from being utilized as reference aquatic resources. Kelly added that the rule should further clarify how to reconcile the definition of *service areas* with the boundaries of a *watershed plan*, especially if the watershed is much broader than the service area. Mann suggested that there is an inconsistency between the preamble language concerning the watershed approach, which references the NRC approach to watershed planning, and the definition of *watershed plan* in the rule, which includes multiple stakeholder interests.

Spethmann suggested that the term *"economically viable"* as proposed to be used in defining service areas, should be defined in the rule. The potential for migrating wetlands from high value areas to low value areas and transferring wetland benefits across the landscape needs to be taken into consideration in an economic evaluation. Rolband stated that the rule should define *in-lieu-fee mitigation*. He added that *'pooled mitigation'/'wetland condos'* should be defined in the rule, and perhaps this type of mitigation should be prohib-

ited. The rule also needs definitions for *urban*, *suburban*, and *rural*, and a provision for how to deal with the transition between these areas over time (Rolband).

Gilinsky stated that the rule should clarify the limits of the authority of the Corps district engineer to determine if out-of-kind mitigation is appropriate (§3b). Kelly suggested that when reliance on a watershed plan is not practicable, the Corps should not automatically revert to placing preference on on-site mitigation; there should be a preference for siting mitigation in the most ecologically preferable sites within the service area. Mann stated that the rule should include 'where ecologically preferable' under the conditions that allow compensatory mitigation requirements to be satisfied by any particular bank. Creasman stated that the rule needs clarification as to whether in-kind mitigation means wetland-for-wetland or wetland-type-for-wetland-type (§3e).

There was some discussion about the watershed approach to compensatory mitigation as presented in the proposed rule (§3c). Both Norris and Shreeve stated that the rule should clarify the role that the Corps, EPA, and outside parties will play in developing and approving watershed plans. Hough responded that the rulemaking does not carry with it significant funding for watershed planning; rather, the agencies hope that the rule will encourage existing programs to target their efforts towards watershed planning that includes a role for compensatory mitigation. Rolband stated that the rule does not adequately clarify the watershed scale that should be used to determine how mitigation decisions are made. Durbin suggested that the preamble includes some language that provides flexibility for determining the scale of the watershed. Steadman suggested that the rule should specify a minimum level of information required or minimum standards required for the watershed approach.

A participant inquired whether the goal of the watershed approach for compensatory mitigation was primarily to identify potential mitigation sites or to identify strategies and goals for what mitigation should be provided (Mogensen). Hough responded that although the NRC report stated that on-site and in-kind may work, it is more effective to base mitigation decisions on a thorough evaluation of watershed needs. The watershed approach should be used to both identify locations for mitigation as well as indicate the type of mitigation that is needed. The rule recognizes that in the absence of a watershed plan or supporting data, regulators can fall back on traditional preferences for on-site and in-kind mitigation (Hough). One participant asked if a private entity can sponsor the development of a watershed plan (Howard). Hough responded that they may, but since watershed plans may range in quality the Corps and other agencies have discretion over which plans may be used in the context of making compensatory mitigation decisions.

Another participant questioned whether there is opportunity for one Corps district to take the lead on watershed planning in areas where Corps districts overlap in order to create consistency among decisions (Murin). Hough responded that Corps regulators have emphasized the need to be more involved in watershed planning efforts in order to inform permit and compensation decisions. The Corps is spending resources to build the right data management systems so that project managers will have the ability to access that data and use it in making impact and mitigation decisions (Hough). Barry added that for the past few years, the Corps has been working on a "lead district initiative," which would establish one designated district for mitigation decision-making, but they are still dealing with political obstacles to this approach.

Howard added that the Defense Authorization Act stated that the rule should require phased credit release for all types of mitigation, including permittee responsible mitigation (§3f). Martin added that the Act required that equivalent standards on the use and operation of mitigation should be applied to the maximum extent *practicable*.

Murin stated that the rule should explicitly state that mitigation banks may be used for compliance and enforcement actions (§3g).

Two participants stated that the role of states in approving watershed plans and prioritizing locations for mitigation should be specifically recognized in the rule (Gilinsky, Norris). Several federal agency representatives responded that the proposed rule does not require the district engineer to approve plans in order to site compensatory mitigation projects; instead it gives the district engineer discretion to decide if a plan is comprehensive enough to characterize environmental resources in that watershed and whether or not it meets the Corps' needs for mitigation project siting (Hough, Durbin, Brumbaugh). Gilinsky stated that the Commonwealth of Virginia and the Association of State Wetland Managers (ASWM) are involved in a number of wetland mapping projects to "preidentify" areas for mitigation. Gilinsky and Kelly (§3h) suggested that the proposed rule's consent of the use of preservation as a mechanism for compensatory mitigation may conflict with a state's "no net loss" policy, by both allowing preservation-only mitigation projects and allowing replacement to be calculated using functional measures rather than acreage measures.

In the section on buffers, Vandervoot suggested that the rule should read "shall give credit" instead of "may give credit" for buffers (§3i). Kelly stated that the rule needs further clarification on the types of activities that will be considered "supplemental to" federally funded wetlands restoration projects in terms of generating credits for these activities (§3j). Seaborn stated that the rule should include a provision for project-specific banks so that bankers can assume responsibility for projects that are designed for specific impacts (§3k).

Session II: Administrative Requirements and Performance Standards

Martin suggested that conceptual, rather than final mitigation plans, should be required in order to obtain a permit. Requiring a final mitigation plan may unduly burden those that regularly submit permits, such as state departments of transportation or large developers (§4c1). Several participants suggested alternative terms to "conceptual" plan, such as initial plan or working plan, and that any plan should be required to reach a high bar in terms of performance and should be tied back to the permit (Hanson, Mogensen, Kelly). Rolband suggested that the rule should define "final plan" and any other terms that may be used for the required plan (e.g. sketch plan, conceptual plan, and construction documents). In order to meet equivalent standards, if mitigation banks are required to submit a final mitigation plan prior to credits being released, the same should be required of PRM (Kelly). Strand expressed support for requiring equivalent standards and provisions for mitigation plans for all types of mitigation providers (§4c). However, she added, the rule should include a phase-in period so mitigation providers and permit applicants can prepare to meet the new, strict mitigation plan requirements rather than allowing exceptions or modifications from the stricter requirements (Strand).

The preamble contains language about removing liability for “acts of God.” Albritton stated that this language should be part of the adaptive management plan (§4c12) and liability should not be waived for such acts. (For clarification, the proposed rule includes a discussion of “natural catastrophe provisions” (p. 15527). Hough responded that the agencies would appreciate comments on whether or how such provisions should be included the text of the rule.

Hanson suggested that the rule should include language recognizing the role of economic theory in determining credits (§4c6). Rolband stated that financial assurances should be tailored based on the costs of performing the mitigation work so that if the provider fails to complete the mitigation, there is sufficient funding for another entity to provide the mitigation (§4c13). The proposed rule needs further clarification on whether financial assurances should be phased out as performance standards are met, as credits are released, or whether 100 percent of the financial assurances are needed until all standards are met (§4c13, Kelly).

Several participants voiced support for the proposed rule’s ecological performance standards section, especially if the standards are based on the project’s goals and location (§5, Murin, Gilinsky). Hanson stated that the final rule should clarify the “reasonable amount of effort” that is necessary for measuring performance standards, and Mann added that performance standards should be based on providing *sustainable* mitigation (§5).

Murin voiced support for the monitoring section, but several participants raised issues concerning the proposed length of the monitoring period (§6b). Ryan suggested that the rule should allow for flexibility in the length of the monitoring period and that the monitoring period should be tied to meeting performance standards. Rolband added that monitoring periods should be consistent, at least within each Corps district, based on specific wetland or mitigation types regardless of type of provider. Gilmore suggested that the rule provide additional clarity and criteria for when a monitoring period must be five years, may be waived, or may be extended. The five-year monitoring period might be insufficient for specific wetland types (specifically forested wetlands) (Gilinsky), and should be adjusted upward to recognize regions with particularly short growing seasons (Hanson).

On the subject of monitoring reports, Rolband stated that information from the reports should be fed back to mitigation providers or consultants and that data should be reported in a consistent manner to support analysis on the state of the art in mitigation design. Goldman-Carter added that there should be repercussions for the failure of mitigation providers to submit monitoring reports.

Sibbing and Kelly suggested that the rule should use the terms “shall” or “must” instead of “should” in the sections on protecting sites in perpetuity (§7a as is “. . .*should* be provided long-term protection”, “. . .*should* restrict or prohibit incompatible uses”) and sustainability (§7b as is “. . .*should* be designed to the maximum extent practicable to be self-sustaining”). The proposed rule should explicitly state that all of the terms and conditions of the original permit or bank agreement (Thabault), or more specifically the conditions that apply to the mitigation site (Rolband, Ewoldt), should flow to the long-term manager (§7b). Murin stated that once performance standards are achieved, mitigation sites should revert to regulated jurisdictional wetlands (i.e. waters of the United States) (§7b). Sibbing added that §1b of the rule states

that use of resources as compensatory mitigation that are not otherwise subject to regulation does not in and of itself make them subject to regulation.

Gilmore suggested that the rule should include a provision addressing situations when long-term active management or stewardship may no longer be practicable (e.g. sea level rise; or if endangered species is no longer present, §7b). Hough responded that the proposed rule addresses this issue in the preamble through the natural catastrophe provisions. Martin added that these concerns may also be addressed through the adoption of adaptive management plans.

Ryan stated that capitalization of long-term management agreements should be determined by the permittee and long-term manager, rather than the MBRT (§7d). He added that the rule should provide additional clarification and standard, consistent language on what long-term management is, and on the responsibilities of long-term managers (§7d). Goldman-Carter suggested that the rule should require government agencies who serve as long-term managers for mitigation sites to have financial assurances. She added that if the permitted impacts are caused by private activities, the management of the mitigation should be privately financed. Thabault stated that the rule should require that long-term financing be calculated in future dollars (§7d).

Session III: Third Party Mitigation

Several participants indicated their preference for keeping the acronym MBRT instead of changing to IRT (Gilinsky, Rolband). Howard added that all mitigation types should have equivalent standards, and those programs that can not meet the standards should be terminated (§8).

One participant suggested that the role of states and state programs in this section is not prominent enough in relation to the role of federal agencies and that states should have a more equal role with federal agencies in reviewing and approving banks (§8, Gilinsky). The rule should specifically say that the state should be MBRT co-chair if a state program is in place. In addition, the district engineer alone should not have final authority for approval of a banking instrument in such circumstances (Gilinsky, Murin). Spethmann suggested that state §401 certification programs should allow states some power to deny certification of §404 permits. Although all states have §401 authority, 17 states have other wetlands laws that go beyond §404 (Gilinsky).

A participant inquired about whether an agency may serve on an MBRT if it has no intention of signing the document (Rolband). Hough responded that the rule states that the Corps chairs the MBRT, and the state is a co-chair in states with a permitting program. Other federal agencies (EPA, NRCS, NMFS, and U.S. Fish and Wildlife Service (US FWS)) can participate. However, the Corps has discretion over the size of the MBRT and whether to allow non-federal agencies, other than the state permitting agency, to participate. The rule makes it clear that an MBRT participating agency does not have to sign the document/instrument; however, all of the participating agencies are encouraged to sign (Hough). Ryan asked if non-federal members of the MBRT would be held to the timelines identified in the rule for bank approval. Hough responded that, in drafting the rule, EPA and the Corps did not feel it was appropriate to impose timeline requirements on state agencies. However, the agencies hope that state and federal agency timelines will run concurrently (Hough).

Several participants voiced support for the dispute resolution process outlined in the rule (§8d, Vandervoot, Gilinsky), but suggested that there should be an explicit role for the states (Gilinsky). Vandervoot added that the timelines offered in the proposed rule should be applied to other Corps decision-making processes.

Vandervoot suggested that the rule provide further clarification on how the agencies will define “public lands” in the discussion on siting mitigation banks (§8a2). Kelly added that the rule should require protection in perpetuity for credits sold on public lands (§8a2).

Hanson suggested that the rule include more gender-neutral terms. Goldman-Carter stated that the final rule should remove the suggestion, currently in the proposed rule, that the timeframe for public comments on approval of mitigation bank can be shorter than 30 days. The rule should require that the district engineer make the bank prospectus available to the public (§8c4, Goldman-Carter). Ryan and Rolband stated that the rule should clarify how the service area size will be defined. The service area could, for example, be based on a specific Hydrological Unit Code (HUC) or on regulatory needs (§8c5, Ryan, Rolband). Several participants added that ecological, rather than economic considerations, should drive determination of service areas (§8c5, Ryan, Mann, Albritton, Thabault). Spethmann indicated that additional economic-based research is due to emerge, which will provide a way to value goods and services. As a result, he recommended that the economics language should not be removed. Kelly added that service area size should not be defined by the type of bank sponsor in order to ensure equivalent standards for all mitigation (§8c5). Rolband suggested that there should be considerations for suburban areas when addressing service areas (§8c5). He added that federal agencies that have not signed a banking agreement should not be able to block the use of the bank for permitted impacts (§8c7, Rolband). Vandervoot stated that the rule should provide additional clarification on whether the Corps can require upland preservation for a mitigation project and not give credit for it (§8d6).

Bersok voiced support for the rule’s language allowing the use of other methods, such as functional assessment, for determining credits (§8k). Taylor expressed concern that the wetland types that a bank offers may not appropriately compensate for specific types of impacted wetlands and that the functional assessment may not be practicable because the mitigation in the bank has been done in advance and may not offer the full range of possible impacted functions (§8k2). Hough responded that section §3e of the proposed rule has a discussion on the type of wetland appropriate for compensation. The proposed rule states a preference for in-kind mitigation (Hough). The value of mitigation banking is that it is creating replacement in advance of impact (Spethmann), and the concern that specific impacted functions are mitigated is often addressed through the use of ratios (Ryan). For projects with larger impacts, it may be preferable to do project-specific mitigation rather than buy bank credits to ensure that specific impacts are adequately compensated (Seaborn).

Spethmann suggested that this section of the rule include further clarification on whether there is also an obligation to use a functional assessment to evaluate impacts, which may be a disincentive for using a functional assessment to determine credits (§8k2). Bersok added that the rule should clarify the use of functional assessment units for determining preservation, as well as riparian, buffer and upland credits (§8k5). She added that the term “essential” be defined in terms of credits for riparian, upland and buffer

areas, so these areas are not used as sites for mitigation of last resort (§8k6). Aquatic resources and upland buffers could be adequately replaced through permit conditions and replacement ratios (Norris). Hanson expressed concern that under the proposed rule, buffers will be used to meet compensatory mitigation requirements, when prior to the rule, they have largely been used to minimize impacts in the sequencing process (§8k6).

Albritton stated that the proposed rule should specifically state that credits for preservation should only be permitted when the preservation is identified through a watershed plan (§8k5). One participant expressed concern that the concept of “value” has been left out of the rule, particularly in the calculation of credits and determination of performance standards (§8k5, Christie). The proposed rule needs clarification on whether credits are automatically released if the Corps does not respond to the banker within the specified time frame (§8k8, Ryan). Mogensen responded that the rule should include a timeline for the Corps to notify bankers of credit release.

Vandervoot stated that it is restrictive to require a bank sponsor to notify the district engineer each time a credit is sold. He suggested that bank sponsors submit information on credit sales based on a specific reporting schedule (§8l). Kelly suggested that the rule should include a statement requiring the chair of the IRT to report deficiencies in a monitoring report to bank sponsors within a reasonable period of time (§8l). There should be more stringent language in the rule as to which banks can be used for specific impacts (§8m, Thabault). Ryan pointed out that there is a discrepancy between the Corps and EPA language on the ability of wetland credits to be purchased as part of an enforcement action (§8m).

Spethman asked whether previously approved mitigation banks will be grandfathered if the banking instruments are updated or as sites are added to the bank. Mann stated that the section on bank authorization should contain language stating that authorization of banks should be contingent on their consistency with existing watershed plans (§8). Mogensen suggested that the rule should include an appeals process if a bank is denied at the end of the one-year period; the rule should specify a way to rectify concerns (§8).

Several participants expressed support for retaining in-lieu fee as a method for compensatory mitigation under the proposed regulations; indicating that there will be many unmet mitigation needs if ILF programs are phased-out (§9, Albritton, Bersok, Kelly, Klimek, Murin, Thabault). Klimek indicated that North Carolina will submit specific comments on conditions under which ILF programs could work, programmatic approaches to compensatory mitigation, and the regulatory review process for mitigation. Murin stated that the rule should provide more flexibility to allow the continuation of ILF programs designed to mitigate for small acreage impacts, or those in states that have more specific mitigation requirements than those in the §404 program. Several participants suggested that the regulations should require ILF programs to spend the collected funds within a specific timeframe (Albritton, Thabault, Rolband). Albritton added that ILF programs should be required to meet high standards such as conducting watershed planning, monitoring, and interagency review. Rolband referenced the Virginia ILF program sponsored by The Nature Conservancy (TNC), which has received a large amount of funds, much of which has yet to be spent. Albritton responded that TNC agrees that it is a priority to spend their in-lieu fees. He added that although the program has not spent all of the fees collected, it has provided mitigation to compensate for lost aquatic resources well above the required ratio. TNC’s non-profit status allows them to receive bargain sales on high quality lands that have been identified as priorities for protection through an extensive planning process. The program

has received money for approximately 180 acres of impacts and has restored 405 acres and preserved 2,500 acres of uplands and wetlands.

Lewin asked if the proposed rule would apply to any innovative mitigation approaches that may emerge in the future. She asked if, for example, such methods will be held to the new standards or if new guidance will be required. Hough responded that the proposed regulations require all future mitigation methods to be held to the same standards. He added that the federal agencies were reluctant to write a set of regulations that would stifle the development of innovative solutions. If novel approaches need to be addressed more formally, then the agencies will issue a new rulemaking (Hough).

Kelly stated that the North Carolina Ecosystem Enhancement Program (NC EEP) is a good example of how to achieve high-performing mitigation and more equivalency with an ILF program. The NC EEP is not a classic ILF because it has a commitment to provide mitigation five years in advance of permit issuance by 2014. In addition, the program ties credit release to meeting performance standards. Christie added that ILF programs may be addressing the loss of function, but not the loss of value.

Ryan suggested that the final rule include a preference for using mitigation banks to compensate for permitted impacts where mitigation banks and in-lieu fee programs have the same service area. He added that the five-year phase-out period for ILF programs is too long. Ryan also suggested that ILF programs should be required to identify sites in advance, have approved mitigation plans, start the IRT process within one year, and complete the mitigation within two years. There should be a requirement to have competitive private sector advertisements (i.e., requests for proposals) to provide for the unmet needs that will be experienced during the phase-out period of ILF (Howard). Ryan added that it would be helpful if the final rule defines ILF programs to ensure clarity in what is being phased out (Ryan).

COMPENSATORY MITIGATION AND THE WATERSHED APPROACH

PROGRESS TO DATE ON USING A WATERSHED APPROACH TO COMPENSATORY MITIGATION Susan-Marie Stedman, *NOAA National Marine Fisheries Service*

Stedman's presentation did not attempt to cover the spectrum of state and local efforts focused on using a watershed approach to compensatory mitigation. However, in her presentation, Stedman did seek to summarize and review past discussions on the watershed approach to compensatory mitigation.

The recommendation to take a watershed approach to compensatory mitigation was one of the chief findings of the NRC committee on compensatory mitigation. The NRC report, *Compensating for Wetland Losses Under the Clean Water Act*,¹⁴ recommended that site selection for mitigation would benefit from taking a watershed approach. In response to the NRC recommendation, the MAP included an action item stating that the federal agencies would identify criteria for making compensatory mitigation decisions within a watershed context. The MAP Workgroup anticipated that these criteria would not be released as guidance, but would rather be used as a tool in implementing a watershed approach. In order to start this process, a watershed symposium was held in Washington, DC in May 2004.¹⁵ The recommendations from that symposium were to be used to draft guidance on the use of a watershed approach for compensatory mitigation. The internal draft of the guidance is currently on hold pending the finalization of the proposed rule.

The first purpose of the watershed symposium was to clarify what the science says about prioritizing mitigation in a watershed context. The goal was to identify and discuss existing tools and resources that could be used to implement a watershed approach. The second goal of the symposium was to discuss the logical steps that are necessary to take a watershed approach to mitigation and how the scientific information could be used and applied in a regulatory context. These topics were discussed for three days, and the report can be found at <http://www2.eli.org/research/wetlands.htm>.

One of the major outcomes of the watershed symposium was the development of five "Logical Steps" of a watershed-based approach to compensatory mitigation. Four of the five steps are assessments or analyses: landscape assessment, historical assessment, assessment of remaining aquatic resources, and analysis of priorities and restoration options. The fifth step, a decision making step, includes the determination of where, when, and how much aquatic resources need to be restored, enhanced or rehabilitated.

Other recurrent themes identified by participants of the watershed symposium included a need for the MAP workgroup to develop guidance on planning and designing mitigation in a watershed context, and the need to further define what it means to make mitigation decisions in a watershed context. Taking a watershed approach means a lot of different things to a lot of different people, and sufficient guidance and definitions will help ensure that the approach will work predictably in a regulatory context. In addition, there was also discussion about the kinds of tools that would be useful in applying a watershed approach to miti-

¹⁴ National Research Council Board on Environmental Studies and Toxicology. *Compensating for Wetland Losses Under the Clean Water Act* (2001). <<http://www.nap.edu/books/0309074320/html/>>.

¹⁵ Environmental Law Institute. *National Symposium on Compensatory Mitigation and the Watershed Approach*. <<http://www2.eli.org/research/watershedsymposium.htm>>.

gation, including geospatial tools such as GIS models, checklists and rapid assessment tools, and site specific tools such as intensive surveys.

Following the symposium, the MAP group started drafting watershed approach guidance. The guidance was founded on the draft on-site/in-kind guidance. It is useful to point out that the NRC report did not totally reject the current preference for on-site/in-kind mitigation; instead, it says that the *automatic* preference for in-kind and on-site compensatory mitigation was inconsistent with the watershed approach. The draft on-site/in-kind guidance states that a first step towards taking a watershed approach is evaluating whether on-site/in-kind or off-site/out-of-kind is the most “environmentally preferable” method. The preliminary watershed approach guidance endorses the use of a holistic watershed plan when such a plan is available. The guidance recognizes that watershed plans are not always available, and that there is a real need to develop more plans. One way to address the short-term difficulties involved in moving to a watershed approach is to make a concerted effort to develop more watershed plans. Watershed plans should be developed in cooperation with appropriate federal and state agencies; consider multiple stakeholder interests and competing land uses; and address issues of habitat, water quality, hydrology, cumulative impacts, and restoration priorities.

The NRC report noted that it is not necessary to have a formal watershed plan in place in order to take a watershed approach:

... implementing a watershed approach does not mean writing a plan that is expected to guide future permitting decisions. To call for a watershed approach only is to recognize that management of wetland types, functions, and locations requires structured consideration of watershed needs and how wetland types and location serve those needs.¹⁶

The MAP Workgroup used this recommendation to help guide development of the draft guidance. A watershed approach is a structured consideration of watershed needs. The draft watershed guidance addresses three basic issues. First, the guidance addresses the issues that need to be considered when taking a watershed approach. Second, the guidance begins to lay out steps for taking a watershed approach. Finally, the draft guidance discusses how to implement the watershed approach in a regulatory context in the field. For example, mitigation review teams, standard operating procedures (i.e. a standard way to use watershed approach that is flexible), and regional general permits could help guide implementation of the watershed approach. Standard operating procedures and regional general permits could specifically be used to guide watershed planning.

The next step for the draft watershed approach guidance is to assess public comments on the proposed mitigation rule regarding implementing a watershed approach. Following the finalization of the rule, the MAP team needs to assess if any additional MAP guidance is needed. The agencies may develop watershed guidance that is supplemental to the rule, guidance that addresses certain parts that are missing in the rule, or no new guidance at all. The agencies may also decided to develop recommendations on the baseline information that is needed when applying a watershed approach, how to identify the sources of such in-

¹⁶ National Research Council Board on Environmental Studies and Toxicology. *Compensating for Wetland Losses Under the Clean Water Act* (2001). <<http://www.nap.edu/books/0309074320/html/>>.

formation, how to establish a predictable nationwide framework for federal agencies and stakeholders for implementation of the watershed approach at the local level, and other issues as they arise.

TAKING A WATERSHED APPROACH IN THE ABSENCE OF A WATERSHED PLAN

Joy Zedler, *University of Wisconsin-Madison*

Zedler's presentation addressed three central considerations: what gets restored without a watershed plan, what should get restored with a watershed plan, and what could happen with no plan under the proposed regulations. The presentation focused on the watershed approach and how the approach can account for large scale processes that influence ecosystem functioning.

What gets restored without a watershed plan? In the past six years, with no watershed plan, the U.S. FWS reports that wetland area has increased by approximately 32,000 acres annually in the conterminous United States.¹⁷ The report issued by the Service, however, raised questions about the kind of wetlands that were lost and those that were gained. It demonstrated that there has been a shift in existing wetlands from estuarine and freshwater emergent wetlands to ponds. Specifically, estuarine emergent wetlands declined by approximately 33,240 acres in the past 6 years and freshwater emergent wetlands declined by approximately 142,570 acres. By contrast, ponds increased by a total of approximately 700,000 acres in 6 years, a 12.6 percent increase. In addition, many of the losses documented in the report are from large wetlands and the gains are small wetlands.

The U.S. FWS report includes illustrations documenting the wetlands that were lost and examples of new ponds. The "pondification" of America has happened in the absence of watershed plans. Although pondification has resulted in a net gain of wetland acres, there has been a loss of former wetland types and thus, a loss of wetland functions.

Many small ponds do not provide the same functions as fewer larger wetlands. And, ponds do not replace other wetland types. Environmental engineers have shown that four small ponds hold only half the amount of water as one big pond with the same area. As a result, small ponds only provide half the flood abatement functions as large ponds of the same acreage. In order to replace the water retention volume of one large pond with small ponds, twice the area would be needed. The effect of replacing lost wetlands with ponds on the landscape needs to be considered when calculating mitigation ratios. Ponds are attractive because they are cheap, easy to build, and they do comply with the jurisdictional guidelines. In addition, ponds are appreciated by people. The U.S. FWS district office in Wisconsin reported that people who voluntarily build ponds on their lands under the Partners for Fish and Wildlife program state that they are not satisfied with wetlands that dry up in the summer.

In the absence of watershed plans, wetland acreage is counted after the fact. There has been a net gain of wetlands over the past six years because wetland acres have been gained through compensatory mitigation as well as other restoration programs (e.g. Partners for Fish and Wildlife), which are necessary to turn the corner on wetland loss. Without wetland plans there is no strategy for prioritizing wetland restoration. The

¹⁷U.S. Fish & Wildlife Service. Status and Trends of Wetlands in the Conterminous United States from 1998-2004. Available at <http://wetlandsfws.er.usgs.gov/status_trends/national_reports/trends_2005_report.pdf>

NRC panel called for mitigation efforts to “meet ecological performance criteria” and provide “a matrix of protected, restored, and created wetlands in the watershed that contribute to the physical, chemical, and biological integrity of the waters of each watershed” (p. 139).¹⁸ The NRC panel sought three outcomes of compensatory mitigation: sites designed to “make an ongoing ecological contribution to the watershed”; compensation concurrent or in advance of permitted activity; and assurance of long-term site sustainability, which requires long-term monitoring.

The watershed approach includes several elements: assessment of existing and reference conditions, use of assessment results in resource management planning, and collaboration with landowners in the watershed. Watershed planning must include interaction with other stakeholders.

What should get restored with a watershed plan? Zedler stated that she supports the language in the proposed rule about the watershed approach: “[t]he ultimate goal of a watershed approach is to maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites.”¹⁹ However, the proposed rule also states that a watershed plan “may” involve efforts to inventory aquatic resources, and watershed planning “may” prioritize aquatic resources that are important for maintaining and restoring ecological functions of the watershed. These are important goals. She suggested, however, that the term “may” be replaced by “will” or “shall.” Doing so would support targeted protection and restoration of wetlands in high priority watersheds. The proposed rule also states that the watershed approach should be based on a watershed plan “when available.” If done well, the watershed approach outlined in the proposed rule could be very effective. The use of ambiguous terms such as “when available,” however, could result in no change in the status quo of compensatory mitigation.

Watershed plans are valuable because they can support the prioritization of wetlands for restoration, indicate where the restoration should occur, and determine how wetlands should be restored. There are ongoing efforts to develop a strategy for applying the watershed approach. One study, by Cedefelt et al.²⁰, attempts to develop a prioritization process to determine what to preserve in Vermont’s Lewis Watershed. The authors computerized an approach to prioritize the most important wetlands for preservation by using existing information on wetland function. Data on wetland proximity to an intermittent or first-order stream and wetland size were included in the ranking process. This process could be also used to define priorities for restoration.

Another great example is a watershed plan for restoring river reaches in a watershed south of Sydney, Australia.²¹ The first step in the effort was an assessment of the condition of each reach of the river. Each reach was categorized by status. The first category included those stretches that should be conserved in their current condition. A second category of streams were those determined to be imperiled. The study recom-

¹⁸ National Research Council Board on Environmental Studies and Toxicology. *Compensating for Wetland Losses Under the Clean Water Act* (2001). <<http://www.nap.edu/books/0309074320/html/>>.

¹⁹ Gaylord Nelson Institute for Environmental Studies. *A Watershed Approach to Wetland Services: Prioritizing Wetland Restoration in the Upper Rock River Basin, Wisconsin, USA*. Available at <http://www2.eli.org/pdf/mitigation_forum_2006/zedler.WRMreport.pdf>.

²⁰ Cedefelt, P.T., M.C. Watzin, and B.D. Richardson. (2000) Using GIS to identify functionally significant wetlands in the Northeastern United States *Environmental Management*, 26(1): 13-24.

²¹ Brierley G., K. Fryirs. (2004) *Geomorphology and River Management: Application of the River Styles Framework*. Blackwell, Oxford.

mended that the threats to those reaches be removed. The study also identified a final category of degraded streams, which were ranked for recovery potential (high priority streams for restoration, those that could be restored later, and very degraded streams). This strategy offers a good example for the development of wetland restoration priorities in other watersheds.

In 2005, nine students from the University of Wisconsin-Madison's Water Resources Management (WRM) program were asked to develop a strategy for prioritizing wetland restoration at the watershed scale. The students took a seminar in the spring term to prepare for the summer project. At the end of the summer, they wrote a joint report on the project. The project was supported by the Environmental Defense's Center for Conservation Incentives and the report is publicly available.²²

The students began by identifying the problems with previous attempts to develop watershed plans. Previous approaches often had a single objective; were conducted at a scale that was too large to evaluate potential functions of a restored site; did not integrate local knowledge of a watershed; and were complex, costly or time consuming. The objective of the WRM project was to develop a watershed approach that would use an appropriate spatial scale, integrate local knowledge of ecosystem services, be cost effective, and use GIS. The process of developing the watershed approach involved interviewing resource professionals to learn about existing restoration projects and their goals; identifying the interests and desires of the community; and visiting existing restoration sites to determine what works and what doesn't. The students then synthesized their knowledge in an effort to determine the key physical needs of the basin.

The students then tried to determine an appropriate spatial scale for the watershed plan. The project focused on the Rock River Basin (3,777 square miles) because it contributes more nitrates to the Mississippi River than another river basin in Wisconsin. Dane County has a largely agricultural economy, which produces a lot of nitrates. The students decided that the Rock River Basin was too big, so they chose instead to work with the Upper Rock River Basin. At 1,890 square miles, it was a workable scale for employing the watershed approach. The largely privately owned basin contains many remnant wetlands, but agriculture dominates the landscape. The students then assembled GIS data on the watershed that included watershed boundaries, soils, roads, orthophotos, a digital elevation model, impaired water bodies, hydrography, and the Wisconsin wetland inventory.²³ These data layers were overlaid in order to identify potential wetland restoration sites. In addition, data on sediment and nutrient loss were used to indicate threats to the watershed.

The overall restoration goal identified for the basin was the protection and enhancement of important watershed resources. At this level, the priority resources (e.g., biodiversity reserves, public needs) identified by the study included Horicon Marsh, a RAMSAR Wetland of International Importance, and other significant wetlands and wildlife areas. At this point, the size of the Upper Rock River Basin was too large to effectively prioritize sites. So the students chose two smaller subwatersheds as examples (80,608 and 114,820 acres)

²² Gaylord Nelson Institute for Environmental Studies. A Watershed Approach to Wetland Services: Prioritizing Wetland Restoration in the Upper Rock River Basin, Wisconsin, USA. Available at <http://www2.eli.org/pdf/mitigation_forum_2006/zedler.WRMreport.pdf>.

²³ Wisconsin Department of Natural Resources. April 4, 2006. Wisconsin Wetlands: Wetlands Mapping. <<http://www.dnr.state.wi.us/org/water/fhp/wetlands/mapping.shtml>>

that not all of the wetlands in a prioritized watershed will be restored, and the prioritization will probably have to involve placing wetlands with different primary purposes in different positions.

What could happen with no plan under the proposed regulations? The proposed regulation says, "The level of information and analysis needed to support a watershed approach must be commensurate with the scope and scale of the proposed project requiring a permit, as well as the functions lost as a result of that project."²⁴ This is a piecemeal watershed approach, which could have negative cumulative results. For example, there could be many small impacts to areas with important functions, but because they are small they do not warrant the information and analysis required of larger projects. So the cumulative impact of small projects could lead to large functional losses, but small acreage losses. Likewise, the loss of large areas that are judged to have minimal current functions would result in a small loss of functions but a large loss of area. This is a portion of the proposed rule that deserves careful consideration or it is likely compensatory mitigation will proceed as is. There may be many options in the watershed, but without a plan, the area of ponds may continue to increase.

The current Environmental Defense suit against the Corps for inadequate mitigation in the Southeastern Missouri could serve as a test case. A citizens group has expressed the issue as follows:

To offset the loss of 80,000 acres of wetlands and floodplains, the government would not restore a single wetland but promises to plant 8,000 acres of trees on farmland. No farmers have yet been found to purchase this land from, nor has it been explained how fish will climb over the levee to use these new forests to spawn. Put simply, the project would be an ecological disaster for south-east Missouri.²⁵

In reality, the fish would not only have to climb over the levee to access the forest, but also circumnavigate a series of gates and pumps. The Corps responded that the "proposed wetland mitigation will do exactly what the NRC report recommends." However, this is exactly what the NRC panel sought to prevent. The panel suggested that such heavily engineered projects and the use of complicated structures should be avoided. To justify taking thousands of acres of backwater flooding area and putting it behind a levee, the Corps said that "[m]itigation is based on compensating for lost habitat, not a certain quantity of acreage." This is not at all what the NRC had in mind in its discussion of replacing floodplain functions. This project has moved forward because a habitat evaluation process was conducted, but only a few fish, among the hundreds of fish and other species, were considered. This situation could be used as a test case for whether this kind of project could be permitted under the proposed rule. If so, the rule has serious shortcomings. The question is whether the new regulations would prevent a mitigation provider from selecting just a few functions to mitigate or would allow mitigation providers to ignore the issue of net acreage loss when designing mitigation projects.

This presentation tried to address three questions. First, what gets restored without a watershed plan? The answer is a lot of ponds and a few successful wetlands. Second, what should get restored with a watershed plan? The answer is area, biodiversity, water quality, and flood abatement functions in strategic locations.

²⁴ U.S. Army Corps of Engineers. March 28, 2006. Compensatory Mitigation for Losses of Aquatic Resources: Proposed Rule. Available at <<http://www.epa.gov/owow/wetlands/pdf/MitRuleNPRM.pdf>>.

²⁵ Missouri Coalition for the Environment. 2005. St. Johns Bayou/New Madrid Floodway Project. <www.moenviron.org/waterqualitystjohn.asp>.

Third, what could happen with no plan under the proposed regulations? It is possible that there would be no strategy and the placement of novel wetlands in novel locations with novel hydrologic conditions and novel combinations of species. It is possible that there will be a cumulative loss of wetland area and functions and an increase in ponds. The result will depend on how these rules would be implemented and whether the agencies in charge have the desire, will, funding, resources, and trained personnel necessary to apply the rule effectively. The bottom line is that there is a need to be strategic, to prioritize wetland restoration at the watershed scale, and to find ways to fund, organize, and coordinate the planning process. The watershed plans are necessary to facilitate the identification of high priority sites and support local efforts to fulfill the goals of an overall watershed plan.

Questions and Facilitated Discussion

Several participants expressed support for the watershed approach as a way to drive a site selection process that is based on environmental needs (Gilmore, Klimek). Klimek recommended that participants view North Carolina's watershed plans online at www.nceep.net.

There were several specific concerns expressed related to implementation of the watershed approach for compensatory mitigation. Rolband stated that the watershed approach may not be practical to implement and will be expensive. Sibbing expressed a need to fund the development of a model watershed plan that can be completed quickly and with a high degree of accuracy. Kelly stated that it is not clear how a specific impacted function will be addressed within the context of a watershed plan, or how service areas will be addressed, especially if the watershed plan area is smaller or larger than the service area. Kelly also expressed concern that very specific watershed plans could lead to a "spot lighting effect" for the prime lands identified for restoration, which can lead to increases in land prices and cause problems when working with landowners. Christie added that the watershed approach must be a public planning process, and there should be accountability in the system. Watershed plans should be comprehensive and available to everyone (Gilmore).

Rolband asked Zedler to clarify what the NRC committee meant by watershed scale. Zedler replied that it was a big step to merely recommend the adoption of the watershed approach and, as a result, the NRC report didn't go into a lot of detail on the issue of watershed scale. The scale of the watershed should be based on the nature of the resource, the proportion of the watershed that is wet, the number of potentially restorable wetlands, and the location of the impacts.

Sibbing asked for clarification on the role that regional general permits would play in the watershed planning context. Stedman responded that one way to contribute to watershed planning and the prioritization of wetland restoration sites is to develop regional general permits that include restoration priorities. Projects that then propose permits and mitigation consistent with such regional general permits would benefit from an expedited permitting process. This creates an incentive for people to come together to develop watershed plans or regional restoration priorities. Sibbing suggested that the public agencies may want to support the adoption of regional permits because they would provide better flood and water quality controls. By way of example, Redmond related the work done in Florida that defined impacts, mitigation, and conservation sites on a watershed basis using a regional general permit. Bersok added that in Florida, the

effort was viewed as a win-win situation, which made permitting easier for regulatory agencies and provided assurance for bankers.

Ainslie asked Zedler how the approach for identifying wetland restoration sites in the watershed based on primary function fits in with other approaches (e.g. the hydrogeomorphic approach) that look at wetlands as entities with multiple functions. Zedler responded that when siting wetlands, the process may consider *primary purpose* rather than single purpose. The goal should be to strive to get a wetland to serve a primary purpose while still maintaining its full assemblage of functions. A healthy watershed reduces flooding, filters nutrients, and maintains high biodiversity. All of these functions cannot be maximized in the same site, so a variety of wetland sites are needed across the landscape. Zedler referenced two articles for clarification.^{26,27}

Burks-Copes asked if any of the new tools described in the MAP (e.g. GIS tools and mitigation checklists) are being developed to support the watershed approach, or whether the agencies expect to rely on existing tools. Stedman responded that the MAP Workgroup is not developing any of these tools right now, but ELI's report on the *National Symposium on Compensatory Mitigation and the Watershed Approach*²⁸ highlights the tools that were available two years ago. The MAP Workgroup will continue work once the rule is final. Wilkinson clarified that there were two publications prepared as a result of that Forum. First, a report summarizing the symposium itself, and second, a report prepared in advance of symposium that included a series of case studies on existing tools and approaches for making restoration decisions in a watershed context, a summary of current federal agencies' definitions of the watershed approach, and a literature survey.²⁹

Two participants noted that bankers go through an extensive, often expensive, process to find the best sites for mitigation banks, which could be formalized for the MBRT process (Howard, Ryan). Zedler acknowledged that there are valuable approaches currently being used, and noted that it would be beneficial if information on these approaches was coordinated and archived in order to allow practitioners to learn from and build on one another's efforts. Ryan noted that not all studies are of equal quality, but if there is an incentive for a mitigation banker to find a quality site, they will find it. Howard stated that bankers in North Carolina have been asked not to work in areas that have an associated watershed plan. Klimek clarified that bankers in North Carolina are asked not to work in areas where the state has done detailed planning and is engaged with landowners. Bankers are, however, given incentives to work in areas that have been identified as needing restoration (Klimek).

Several participants discussed the use of watershed plans for federal and non-profit projects that are not associated with compensatory mitigation in order to make the planning most cost effective (Sibbing). Howard stated that watershed planning is just as important for assessing impacts and restoration options as for

²⁶ Zedler, J.B. (2003) Wetlands at your service: reducing impacts of agriculture at the watershed scale. *Front Ecol Environ* 2003, 1(2), 65-72. Available at <<http://www.botany.wisc.edu/zedler/images/Zedler%20Frontiers.pdf>>.

²⁷ Turner, R. E., A. Redmond, and J. B. Zedler. (2001) Count it by acre or function, Mitigation adds up to net loss of wetlands. *National Wetlands Newsletter*, 23(6): 5-6,14-16.

²⁸ Environmental Law Institute. May 2004. National Symposium on Compensatory Mitigation and the Watershed Approach Symposium Report. Available at <http://www.elistore.org/reports_detail.asp?ID=11018>

²⁹ Environmental Law Institute. May 2004. Compensatory Mitigation and the Watershed Approach: A Review of Selected Literature. Available at <<http://www2.eli.org/pdf/wsSymposium/selectedliterature.pdf>>

identifying mitigation sites (Howard). McCarthy voiced support for the USDA Natural Resources Conservation Service (NRCS) programs for habitat and wetland restoration.³⁰ The watershed approach is a key part of NRCS strategic plan, and the conservation security program is based on the watershed approach. The agency is also in the process of accepting grant proposals from watershed districts to support the development of watershed plans in partnership with stakeholders. Fennessy related that a number of pilot projects have been funded to support the development of watershed plans and the prioritization of restoration sites. Progress on watershed planning could be made if information on these efforts was made available (Fennessy).

There was some discussion about implementing a watershed approach within a regulatory framework in watersheds that are still very high quality and where there are few impacts (Norris). Stedman noted that first and foremost, restoration should be planned to replace permitted losses of wetland functions and acreage. In areas of high threat, preservation may need to be a priority ahead of restoration, but action plans may be the more appropriate vehicle to protect these lands. Regulatory measures have to deal with what is practicable, so preservation may be the answer in areas where there is little to restore (Stedman).

There were several specific questions about the University of Wisconsin study highlighted in Zedler's presentation. Gilmore asked about the amount of time the students devoted to the project and whether most of their time was spent in the field or doing GIS. Zedler responded that there were nine students, and much of their time was devoted to learning the process. They had a 2-hour seminar once a week for 14 weeks during the spring and worked half time for 2.5 months during the summer. This was a serious effort, comparable to a thesis research project. Mann asked if the students could have included biodiversity concerns along with water quality concerns if they were given more time. The students did consider biodiversity through analysis of the number of threatened and endangered species and by talking to experts about plant diversity, which allowed them to locate the places that biologists value as resources. The students may also have had GIS layers for the biodiversity issues (Zedler). Strand commented that although the student project was good, the students still did not come up with a watershed plan.

Howard asked Zedler to clarify whether the increase in the area of ponds that has occurred in the absence of a watershed approach was the result of poorly planned compensatory mitigation. He added that it is very rare for ponds to result from mitigation (Howard). Zedler responded that these data were from the U.S. FWS status and trends report, which covered the past six years. The data suggest that during this time frame, the area of ponds has increased by 700,000 acres. The study does not attribute this gain to mitigation, but ponds do result from mitigation. Howard suggested that the presentation should make clear whether or not the area of ponds that result from mitigation is a small percentage of the total increase in pond area. Thabault responded that the report was not designed to attribute the source of wetland gains. Zedler clarified her remarks by saying that the recent increase in ponds was the result of unplanned restoration.

Strand suggested that issues concerning the data, the vehicle (e.g. regional general permit, county plan, private plan), and the political and stakeholder groups should be considered separately. She added that there should be a balance between limited data and the desire to develop watershed plans. In the future, it

³⁰ Natural Resources and Conservation Service. January 17, 2005. Stream and Wetland Restoration. <<http://www.wsi.nrcs.usda.gov/products/stream.html>>.

would be valuable to separate the concepts of watershed plans (science) and land use plans (political) (Strand).

Strand asked whether a top-down, federal, MAP-type strategy fits with bottom-up, science-based, state and local strategies, and whether guidance from federal agencies is needed first or should wait for the development of watershed plans. Stedman responded that these concerns should be addressed in the context of rule, which may not be able to include all of the ground-up strategies. The rule indicates that the watershed approach should guide individual permit decisions, and also suggests that it might be more effective to plan on a regional scale. The proposed rule will probably not be an impediment to watershed groups coming up with different plans. Ideally, all compensatory mitigation decisions would be made in a watershed context, but in the interim, until watershed plans are developed, the proposed rule attempts to incorporate watershed decision-making into the permit process to improve existing approaches (Stedman). Zedler suggested that the agencies should support demonstration watersheds projects across the country, including the development of case studies as templates for different types of watersheds (e.g. dominantly privately owned, dominantly public land, wetland rich, wetland poor).

Several comments addressed the watershed approach as it relates to the proposed rule. The rule should include a purpose statement that ties watershed planning to the Clean Water Act goals in the definition of watershed (Goldman-Carter). The rule does not adequately identify the minimum level of data needed to support mitigation proposals in the absence of a watershed plan (Thabault). Gilmore asked whether the funding currently dedicated to watershed planning by existing in-lieu fee programs will be eliminated if in-lieu fee programs are eliminated. He also asked whether or not it is in the best interest of a state to have private banking institutions pay for watershed planning. Sibbing suggested that the rule should not support the use of the watershed approach in the absence of a formal watershed plan. In absence of a watershed plan, mitigation should continue to be sited as close to in-kind and on-site as possible.

THE NEXT GENERATION OF ORM

ORM, GORM, AND WORM: THE FUTURE OF WETLANDS DATABASES

Bob Brumbaugh, *Institute for Water Resources, U.S. Army Corps of Engineers*

Data collection and management are a real challenge for the Corps. The Corps employs 1,100 regulators, who face considerable amounts of stress. In addition, 38 individual Corps districts make nearly 100,000 permit decisions annually, as well as a comparable number of other types of decisions, such as wetland delineations. District regulators must enter all of these data, such as site location and type of work; type of permit; start and end date of permit; project manager information; and impacts, into a database on mitigation and permits.

In order to tell the entire story of wetland impacts and compensatory mitigation, information on the amount of wetland acre impacts requested, permitted, avoided, and mitigated must be considered. However, there are at least three challenges with tracking these data. First, the data on the number of mitigated acres include the amount of wetland mitigation acres *required*, rather than the amount of mitigation conducted on the ground. Second, these data represent a mix of mitigation type including creation, restoration, enhancement and preservation. Preservation acres are often not recorded due to varying interpretations on whether preservation should be entered into the database. Third, it is problematic to compare mitigation done today with that done five years ago because there is no way to determine the success or compliance of the mitigation that was designed using old technology and planted 5-7 years earlier.

The Corps' current database is called the Regulatory Administrative Management System (RAMS). RAMS is a second generation database designed to collect data on permitted acres and other basic permit information. RAMS was the first regulatory database in pre-formatted letters, which is a benefit to project managers because it provides an incentive for the project manager to enter the data. RAMS made data entry easier and more user friendly, and improved data search capabilities.

However, RAMS had limited capacity to track wetland data. Data collected included only proposed impacts, permitted impacts, and proposed mitigation. In addition, there were initially no options for non-wetland waters, nor were there spatial components. Some districts did employ a stand-alone GIS program to mine data out of RAMS, but these districts did not have an active interface. RAMS was located in each of the Corps' districts, and each district modified the program to meet its own needs. These factors led to a divergence of data consistency across the country and created real problems when the Corps conducted national or regional studies (e.g. Environmental Impact Statements). There was also no public access to data, and each district produced and distributed its own reports. The quarterly permit report system was an attempt to standardize reporting.

The next generation successor to RAMS is the OMBIL Regulatory Module (ORM). OMBIL refers to the Corps' operations and maintenance database. The Corps' regulatory division is within the operations program of the Corps, so this database is archived within the larger OMBIL structure. The database is a national database designed to fix some of the problems with RAMS. ORM will have improved wetlands and water data reporting and will require districts to input data on several new parameters, including the mitigation

method (e.g. restoration, creation, enhancement) and the mitigation type (e.g. mitigation bank). Installation began in 2002, and its roll out has been imminent for many years.

The major flaw is that ORM was originally designed as a national database supporting headquarters, rather than the field. It was thought that a national database with roll up capabilities would benefit the field as data requests from headquarters (e.g. Freedom of Information Act requests or FOIAs) would be greatly reduced and could be handled by headquarters. Some problems, however, have been encountered. For example, although the data verification modules were designed to improve data accuracy, they also made data entry cumbersome. The database required significant duplication of data entry and a significant investment of time in entering data. ORM did, however, minimize the amount of time generating letters, as it is designed to produce pre-formatted letters, a major benefit to the project manager. Because the system was slow, cumbersome, and time consuming, not all of the data were getting entered. Field offices subsequently complained vociferously to headquarters.

There has been a major redesign to ORM in the past couple of years in order to improve the data entry problems and integrate ORM and GIS. The updated program was initially called G-ORM to reflect the inclusion of GIS, but is also referred to as Web-ORM or WORM. The updated database is designed to have a spatial display at the front end. The project manager will be able see the map as a first screen in the database and then data is pulled in from the spatial GIS display. This database is designed to clarify and improve data entry screens to improve the ease of data input. There will be an interface with the web, which will allow for data sharing. The national database will have a nightly download back to the districts for back up and alternate information storage in case the network goes down. There will also be automatic screening tools for endangered/threatened species and critical habitat, historic properties/resources, and water intake structures, which will be installed and improved as districts determine needs. These screening tools are not necessarily decision tools because GIS is not always accurate, and there will be a need for project manager involvement. The goal of the database is to improve data sharing and coordination among all the partners in a manner that supports the watershed approach. A substantial portion of this effort has been supported by OMB through Congressional funding. EPA has also been providing substantial funding to implement this program.

The Corps will launch the database soon. The schedule is very ambitious. The program is currently installed in 18 districts, and the agency plans to have it available in all districts by end of 2006. The Corps will conduct beta testing of G-ORM in 2007.

Another data management program, the Regional Internet Banking Information Tracking Service (RIBITS), will be incorporated within G-ORM/WORM. RIBITS was initially developed as an IRT/MBRT tool to share information, documents, policies, guidance, and bank status among agencies. It was developed at West Engineer Research and Development Center and Kelly Burks-Copes is the lead on the project. It was initially implemented in the Mobile District and is now being implemented in the Norfolk and Sacramento Districts. The intent is to integrate it into the ORM program. The Portland District plans to test RIBITS this year. RIBITS will be part of the WORM module by next year. The system will allow the Corps to share parts of the databases with the public. The Corps is currently working to determine which data will be made publicly available. The agency anticipates that the system will allow a potential permit applicant to check for credit availability at mitigation banks or a researcher to assess the number of banks in an area and their status. In

the Norfolk district, most of the permit information, with the exception of information on the permit applicants themselves, is available to the public.

Questions and Facilitated Discussion

Taylor asked if G-ORM will take the place of or add to the public notice requirement. Brumbaugh responded that G-ORM will not take the place of the public notice, but will be a source of information for the public when evaluating mitigation projects. Martin added that public notices are currently available on each district's website. All of the districts can be accessed from Corps Headquarters' regulatory website and some basic data is available through the districts (Brumbaugh).

Howard asked whether the Corps envisions making technical planning documents (e.g. techniques used in the mitigation plan for a particular project) available through ORM. Martin responded that RIBITS includes a feature called the cyber repository, which is available to the public. The repository will include information such as mitigation banking instruments, design drawings, monitoring reports, and photographs. Each district will potentially decide how much information to make publicly available. This information will help to eliminate a number of standard FOIA requests because all of the information will be available to the public online (Martin). Brumbaugh added that the agency intends to put more information, such as monitoring reports, on the website. RIBITS will also include a "lessons learned" area, which will include success stories and designs that were implemented (Burks-Copes).

One participant suggested that since some historic properties and endangered species information is already available from other state agencies online, it makes sense to include these data through the system (Rolband). Martin responded that the database will not screen any information. He added that information on historic resources is available from each state. Endangered species information may be harder to get, but it may be available in a buffered state from some states (Gilinsky, Martin, Wilkinson). Brumbaugh stated that the FOIA issues associated with these data are being worked out. Although there is a risk in providing this type of data, identifying historical sites and providing data on endangered species may help stakeholders protect the resources (Rolband). Burks-Copes added that the RAMS database does not include historic data on banking. However, the Corps is working to secure funding in future years to identify and enter these data into the database.

Ainslie asked if the spatial data in ORM will be in the form of shape files that can be imported directly into the agency's database, or whether it will only be in a web-based form. Burks-Copes responded that the files in RIBITS will be shape files and the agencies will be able to load their shape files into the system. A lot of the data going into RIBITS is coming from EPA (Martin). EPA is setting up a web service that will allow ORM to link up to the EPA's spatial data to help the Corps with permit decisions. In addition, EPA is going to set up a similar web service that will link to ORM to generate permitting information on impacts and mitigation. The Corps will also likely reach out to the other federal agencies to set up similar two-way exchanges of information (Hough).

Burks-Copes added that RIBITS will also track DOT banks and U.S. FWS species conservation banks. Ultimately, the agencies hope to track at least large mitigation areas as well as ILF mitigation sites (Martin). Burks-Copes added that ILF programs and funds will be tracked with WORM.

Rolband asked if the Corps will put wetland delineations on the database so people can access information on approved survey delineations. Martin responded that this has been considered on a district basis. However, there are georeferencing and data entry issues to consider. It will likely be some time before all delineations are available on the web. Standard protocols for jurisdictional determinations, such as GPS and accurate survey lines, are needed in order to make an online tool useful and reliable (Mogensen, Rolband).

Rolband asked if there was a way to link delineation surveys with National Wetlands Inventory (NWI) maps and data, which may help to improve NWI data. The distinction between jurisdictional and Cowardin wetlands would need to be considered when combining delineation and NWI data (Stedman). There is an effort between ASWM, NWI, and the U.S. FWS to develop the capability to add these data in real time. It may then be feasible to update these data through ORM (Christie). The industry is likely to collect and share data as well (Rolband). Christie added that the United States Geological Survey (USGS) is currently working to put geospatial data and nationwide topographic data layers on its national map. ASWM is working to make sure that wetlands are a critical component of this mapping effort by suggesting that NWI data be incorporated. Having access to geospatial data is necessary to support a watershed approach to compensatory mitigation decision making (Christie).

Integrating the Corps' database with U.S. FWS's master geodatabase for the NWI would allow the Corps' data to be integrated into U.S. FWS's next status and trends report (Thabault). Hough added that this integration is possible, but would require someone at DOI to support the effort (Hough). Stedman stated that the status and trends report is a statistical sampling effort and does not provide comprehensive coverage of the U.S. as do NWI maps.³¹ Whether or not mitigation information could be combined with status and trends would depend upon whether NWI's sampling points are located on mitigation sites; the odds of that may be low (Stedman). Brumbaugh suggested that if there were enough data points, mitigation information could be used in a statistical manner to answer some questions (Brumbaugh).

Kelly suggested that there should be an interrelationship between the web-based platform available through Ecosystem Marketplace³² and the efforts of RIBITS and ORM. Ecosystem Marketplace is an information-based service that identifies and provides information on biodiversity, carbon, and water trading markets. Wilkinson asked if the agencies have coordinated data sharing efforts with other groups, such as non-profit organizations like NatureServe. Hough responded that several EPA programs are interested in utilizing NatureServe's Natural Heritage data and the agency has been negotiating an agreement with NatureServe. They have, however, encountered some security and access issues that need to be addressed (Hough). Howard suggested that cost data developed by state agencies for mitigation purposes should be included in one of these databases. Klimek responded that the NC EEP will provide detailed information on their current cost analysis, and that some of that information is available already.

Ewoldt expressed concern that businesses might be reluctant to provide delineation information free-of-charge to their competitors, since delineations are often costly. Rolband responded that this information is already available from the Corps if a jurisdictional determination has been issued. Martin added that juris-

³¹ U.S. Fish & Wildlife Service. October 12, 2006. National Wetlands Inventory. <<http://www.fws.gov/nwi/>>.

³² The Katooba Group. Ecosystem Marketplace. <www.ecosystemmarketplace.com>.

dictional determinations are FOIAable, but rather than the public needing to go through a FOIA process to gather the information, the Corps would prefer to provide the information to requesters through the internet. One participant asked if will there is an effort to ensure there will not be overlapping data since so many agencies will be involved (Murin). Brumbaugh responded that ORM will only track information on Corps permits (Brumbaugh). Burks-Copes clarified that RIBITS will track banks based on permit numbers and will include state permit data, which will not necessarily be tracked in ORM. Hough added that one challenge is to make sure that the banking ledgers reflect all transactions and credits, including state, federal, local, and county.

Murin asked if the database will track only mitigation conducted through the §404 program or if will it also include information on wetland restoration projects. Martin responded that the system will reflect all bank transactions, including state and federal activities. Wetland restoration activities outside of banks (e.g. Wetlands Reserve Program, Partners for Fish and Wildlife) will not be included in the database. In the future, the goal is to have the database account for the location of all Corps projects in order to support a watershed approach (Brumbaugh).

There was some discussion about whether the permit and spatial data on WORM will be shared with state and federal agencies (Norris, Ainslie). Each district will probably have a unique relationship with the agencies to support the incorporation of all reports as they are received (Brumbaugh, Burks-Copes). Most of the data will be accessible, but some of the spatial data layers will not be made publicly available (Brumbaugh). In the Norfolk District, RIBITS will allow all relevant state agencies to have complete access to data. The system will allow bankers to access and update their ledgers and will allow the MBRTs to access information and upload data, such as monitoring reports. Martin added that joint state and federal §401 applications will be included in the system. The intent is that these data will be available to the public (Martin). Burks-Copes added that some of the critical data security issues should be settled by the end of the month.

Elston asked if the Corps' databases will include data for states, such as Michigan and New Jersey, that have assumed §404 responsibilities. Hough responded that EPA worked to ensure that information from these assumed programs would be included in the database. Gilinsky added that many states, such as Virginia, have their own databases and may not want to enter data into two places or change their systems.

Goldman-Carter asked if regular citizens will be able access WORM to retrieve data on mitigation site locations in order to monitor activities in their watershed. Brumbaugh responded that the intent is to make all of the data available to the public. This should also cut down on FOIA requests to the Corps; and this transparency will also improve data entry error rates by having the public error checking.

Hanson asked Brumbaugh to clarify which part of the program will be tested this year. Brumbaugh responded that three districts already have developed variations on RIBITS and the Portland District will integrate RIBITS into the spatial database WORM this year. One participant sought additional information on an upcoming meeting on data sharing (Hanson). Hough stated that the Corps will be hosting a 4-hour meeting with existing and potential partners on ORM on May 18, 2006 (Hough). Burks-Copes added that the Corps will make the first connection between ORM and RIBITS at the meeting and will demonstrate how they will work. Shreeve asked if the Federal Highway Administration (FHWA) will be involved in the meeting, adding

that most state DOTs would be glad to share information with FHWA. Two participants confirmed that FHWA will be involved in the meeting (Durbin, Brumbaugh).

Hanson asked for clarification on whether the funding mentioned in the presentation was being provided to support development of the database or to fund project managers or data entry training. Brumbaugh responded that a significant amount of the current funding has been spent on historic data conversion and staff training. The funding from Congress has been used to develop the system. It is unclear if data sharing will require additional funding (Brumbaugh). Brumbaugh stated that the Corps is entering into Memoranda of Agreement (MOA) to support data sharing between agencies. The MOAs will address data sharing, coordination, and interagency collaboration. There is a draft EPA/Corps MOA supporting efforts to share data to facilitate permit decision-making (Hough). The Corps would likely make similar exchanges with states and other federal agencies

Rolband asked if the agencies encountered any bankers that were reluctant to participate in the data collection effort. Martin responded that there are some bankers that are not cooperating very well. However, the Corps has collected almost all the data that is needed and is working to upload the data and conduct quality controls. Rolband suggested that the Corps should suspend the credit sales at banks that are unwilling to cooperate. Wilkinson added that all of the banking agreements and in-lieu fee arrangements approved before 2001 are available through ELI's website.³³

By way of clarification, Burks-Copes stated that "RIBITS" is the Regional Internet Bank Information Tracking System. The database allows regulatory staff to track information on mitigation banks, including available credits, banking ledgers, MBRT/IRT calendars, meetings, pictures, habitat classification systems for each district, and all assessment tools for crediting (e.g. calculators, databases with techniques or ratios). The public side of the database includes definitions of banking, information on how to establish a bank, and also allows permittees to shop for bank credits. There is no cost per credit information tracked in RIBITS. Klimek asked why cost data will not be included in RIBITS. Burks-Copes responded that because the costs are negotiated between bankers and clients they cannot be included, but ILF costs are different and can therefore be made public. Howard added that bank information from the state of North Carolina is particularly interesting because it is public and it reflects bargaining pressures. It would be helpful for bankers and regulators to have this information as a public service. This information will likely be included once RIBITS is rolled out in North Carolina (Burks-Copes).

³³ Environmental Law Institute. July 2002. Banks and Fees: The Status of Off-Site Wetland Mitigation In the United States. <<http://www2.eli.org/wmb/banksfees.htm>>.

RECENT GAO STUDY ON COMPENSATORY MITIGATION

GAO REPORT ON THE CORPS OF ENGINEERS' OVERSIGHT OF COMPENSATORY MITIGATION Sherry McDonald, *Government Accountability Office*

At the request of the ranking democratic member of the House Committee on Transportation and Infrastructure (Oberstar, D-MN), the Government Accountability Office (GAO) began a review of Corps efforts to ensure that permitted compensatory mitigation is being carried out.³⁴ GAO was asked to review the guidance the Corps has issued on overseeing compensatory mitigation, the extent to which the Corps oversees compensatory mitigation, and the enforcement actions taken by the Corps if required mitigation is not performed.

Compensatory mitigation can be accomplished by creating a new wetland, restoring a former wetland, enhancing a degraded wetland, or preserving an existing wetland. The Corps can support achievement of the national goal of no net loss by requiring compensatory mitigation as a condition of permits for unavoidable impacts to wetlands. Permittees can perform the mitigation or pay a third party to conduct the mitigation.

For this study, the GAO visited 7 of the 38 Corps districts (Charleston, Galveston, Jacksonville, New Orleans, St. Paul, Seattle, Wilmington). The Charleston, Galveston, Jacksonville, New Orleans, St. Paul and Wilmington districts require more compensatory mitigation than any other districts. In the west, the Seattle District requires the most mitigation. These districts collectively accounted for more than two-thirds of the compensatory mitigation required by individual permits in FY2003. The GAO reviewed a total of 249 files, which included 152 individual permit files (issued in 2000), 85 mitigation bank files, and 12 in-lieu fee arrangements. Most of the projects represented in permit files from 2000 are likely to have been constructed and mitigation associated with these projects could have been carried out. All 85 of the reviewed mitigation bank files had been issued subsequent to the 1995 banking guidance. All 12 of the in-lieu fee arrangements were those that were currently operating in those districts. The GAO also examined agency regulations and guidance on compensatory mitigation and conducted a review of the enforcement options available to the Corps. GAO interviewed officials from Corps headquarters, Corps district offices, and several mitigation bank and in-lieu fee sponsors for this study.

Three primary documents guide operation of the Corps' compensatory mitigation program: the 1999 Standard Operating Procedures for the Regulatory Program (SOP),³⁵ the 1995 Banking Guidance,³⁶ and the 2000

³⁴ U.S. Government Accountability Office. September 2005. Wetlands Protection: Corps of Engineer Does Not Have an Effective Oversight Approach to Ensure that Compensatory Mitigation is Occurring. *Available at* <<http://www.epa.gov/owow/wetlands/pdf/GA005898.pdf>>.

³⁵ Army Corps of Engineers. October 15, 1999. Army Corps of Engineers Standard Operating Procedures for the Regulatory Program. *Available at* <<http://www.swf.usace.army.mil/pubdata/enviro/regulatory/other/sop1.pdf>>

³⁶ Department of the Army, US Environmental Protection Agency, US Department of Commerce, and US Department of Interior. 1995. Federal Guidance for the Establishment, Use and Operation of Mitigation Banks. *Available at* <<http://www.epa.gov/owow/wetlands/guidance/mitbankn.html>>.

In-Lieu Fee Guidance.³⁷ These documents establish two primary mechanisms by which the Corps oversees compensatory mitigation. First, the Corps requires permittees or third party mitigation providers to submit mitigation monitoring reports that indicate the status of the mitigation project. Second, the Corps is authorized to conduct compliance inspections of compensatory mitigation projects.

GAO concluded, however, that parts of the guidance documents are vague. For example, the SOP calls for Corps staff to require and review monitoring reports for mitigation banks and other “substantial mitigation.” But the guidance does not define “substantial mitigation.” As a result, GAO concluded that Corps districts apply this standard differently. For example, in some cases Corps districts require monitoring reports for all mitigation, while others do not require reports for preservation or only required monitoring reports for mitigation over ½ acre. The Corps’ rationale for requiring monitoring reports is that the reports reduce the number of field visits or compliance inspections and save resources. Despite the importance of monitoring reports to the Corps’ efforts, the agency’s guidance does not specify what information should be included in monitoring reports, nor does it address the issue of noncompliance if monitoring reports are not submitted for review. GAO found some monitoring reports that were only a few pages long and had no specific information on the required mitigation. In other cases, Corps files contained very detailed reports that included maps and information on water levels, plant growth, and wildlife at the site. There was a significant amount of variation in the monitoring report found in the districts.

Furthermore, the guidance is inconsistent about the emphasis that should be placed on compliance inspections. One section of the SOP instructs staff to place a high priority on compliance inspections while another section designates these inspections as a low priority. Many district officials told the GAO that their budgets could be reduced if they perform lower priority work.

Overall, the Corps districts visited by GAO have performed only limited oversight of compensatory mitigation. For permittee-responsible mitigation the Corps required monitoring reports for 89 of the 152 permits that were reviewed. However, only 21 of these permit files contained evidence that the Corps had received these monitoring reports. Only 23 (15%) of the 152 permit files indicated that the Corps had conducted a compliance inspection. In addition, even when the Corps conducted oversight, GAO found that the districts did not perform suggested follow-up inspections. In one case, for example, the Corps project manager conducted a site visit and found that although the mitigation was being carried out, it was not yet complete. Although the project manager suggested that a follow-up site visit be made to check on the status of the mitigation project, there was no indication that the follow-up site visit ever occurred.

GAO found that Corps oversight of mitigation banks and in-lieu fee mitigation programs is better than that for permittee-responsible mitigation. The Corps required 60 of the 85 mitigation banks reviewed to submit monitoring reports, and 42 of the bank files contained evidence that the Corps had received monitoring reports. However, only 31 (36%) of the mitigation files indicated that the Corps had conducted a compliance inspection. In many cases, the Corps project managers indicated in the files that compliance inspect-

³⁷ US Department of the Army, US Environmental Protection Agency, US Department of Interior, and US Department of Commerce. 2000. Federal Guidance on the Use of In-Lieu-Fee Arrangements for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. *Available at* <<http://www.epa.gov/owow/wetlands/pdf/inlieufee.pdf>>.

tions had occurred, but those inspections are often not documented. GAO chose to consider only the documented data that were contained in the files. Of the in-lieu fee project files reviewed, the Corps required 6 of the 12 arrangements to submit monitoring reports and 5 of the arrangements had submitted at least one monitoring report. Five in-lieu fee files contained evidence that the Corps had conducted compliance inspections.

The third objective of the GAO study was to determine the enforcement actions the Corps can take if required mitigation is not performed, and the extent to which the Corps takes these actions. GAO determined that the Corps has a variety of enforcement actions available if required compensatory mitigation is not performed. For non-compliant permittee-responsible mitigation, the Corps can issue compliance orders; assess administrative penalties up to \$27,500; require the forfeiture of a bond, if a bond was required as a condition of the permit; suspend the permit; and refer the case to the Department of Justice for legal action. For non-compliant mitigation banks and in-lieu fee arrangements, the actions that the Corps can take depend upon the enforcement provisions included in the programs' authorizing agreements.

Although the Corps can take a variety of enforcement actions, GAO found that the Corps failed to take any enforcement actions in the seven districts reviewed in 2003. Instead, the Corps primarily relies upon negotiation to resolve noncompliance issues. These negotiations include discussions with the permittee or third-party sponsors about the corrective actions needed and the time-frames for completing these actions. Although these negotiations are typically successful, if they are not, the Corps' staff often notifies the responsible party in writing and lays out the potential enforcement actions that may be taken. The Corps sometimes limits its enforcement ability by not specifying the requirements for compensatory mitigation in permits and by failing to establish formal agreements with third-party sponsors that specify the penalties and/or corrective actions that will be required if mitigation efforts are not performed.

GAO found several instances in which a permittee was required to perform mitigation, but the type of mitigation and the time frame for conducting that mitigation were not specified. The Corps is working to ensure that this information is included in all permits and third-party agreements. GAO found, however, that in the St. Paul District, the Corps did not have in place formal agreements with 21 of their bank sponsors. This was primarily due to the fact that some banks in Minnesota already had been approved by the state before being approved by the Corps, which has limited the Corps' enforcement capability. The district has stated that it will renegotiate formal agreements with those banks.

In addition, about half of the in-lieu fee arrangements reviewed did not have formal agreements in place. The Galveston District was unable to provide GAO with any information about how the in-lieu fee programs in its district were operating, how many permittees satisfied their mitigation requirements through the programs, or how much money had been collected by the programs. In another instance, the in-lieu fee arrangement had been in operation since 1994, but the New Orleans district staff could only provide information on how much money had been collected by the program.

The §404 program is crucial to the nation's efforts to protect wetlands and achieve the national no net loss goal. Compensatory mitigation is a key component of this program. However, the Corps has historically failed to place an emphasis on compliance and in its recent study the GAO concluded that little has changed to improve the agency's oversight and enforcement practices. The Corps continues to provide limited over-

sight to ensure that the mitigation it has required as a condition of obtaining a permit has been completed. As a result, the Corps does not know if thousands of acres of required compensatory mitigation has been performed and cannot, therefore, ensure that the §404 program is contributing to the national goal of no net loss. The Corps' efforts have been further hampered by vague and inconsistent guidance that fails to define key terms, specify the actions that Corps staff should take if required monitoring reports are not received, or set clear expectations for oversight of compensatory mitigation. The Corps' efforts have also been limited by insufficient resources. In addition, the Corps has failed to establish agreements with third-party sponsors that would ensure the agency has legal recourse if required compensatory mitigation is not performed.

GAO made three recommendations that were intended to improve the Corps' efforts to establish an effective oversight program. First, the Corps should develop more specific guidance for overseeing compensatory mitigation. Second, the Corps should clarify expectations for oversight of compensatory mitigation. Finally, the Corps should review existing third-party arrangements to ensure that formal agreements, as called for in federal guidance, are in place. The Department of Defense concurred with GAO's findings and recommendations and is taking actions to implement the recommendations.

GAO REPORT ON COMPENSATORY MITIGATION, U.S. ARMY CORPS OF ENGINEERS RESPONSE
Bob Brumbaugh, U.S. Army Corps of Engineers

Brumbaugh stated that the Corps agreed unequivocally with the GAO conclusion that the agency needs to increase its compensatory mitigation oversight and compliance efforts. The agency also concedes that although the GAO study looked at data in only seven Corps districts, the GAO findings are likely representative of the Corps' mitigation oversight and enforcement activity in the remaining districts.

The Corps' response was published as an appendix to the final GAO report. The response states that the Corps has already instituted new performance measures requiring all districts to conduct compliance visits on issued permits and mitigation sites. The Corps' efforts to set new site visit targets can be verified through the Corps' participation in the Office of Management and Budget (OMB) performance program exercise. The administration has supported implementation of the site visit goals by providing extra funds to the Corps to increase compliance. The Corps' Headquarters Regulatory Program has provided OMB with an indication of the performance levels that can be achieved based on the Corps' level of funding. For permittee-responsible mitigation, the target number of site visits required by each district in 2006 is 20 percent. This is a big improvement over what was observed by GAO. Eventually, the Corps hopes to achieve a 50 percent site visits rate, but the success of this effort will depend on the level of funding received by the agency. For general permits, the target is to visit 5 percent of all sites in 2006. Given that there are approximately 30,000 general permits issued per year across the country, this is a large number of site visits. For mitigation sites, which may be required to monitor for 2-8 years, the target number of site visits is 20 percent in 2006, with a long-term target of 25 percent. For mitigation bank sites, the target number of site visits is 50 percent in 2006, with a long-term target of 100 percent each year. In an effort to resolve on-going compliance issues, the Corps' target number of site visits in 2006 is 25 percent of those sites identified as having compliance issues. The site visits are a step toward determining mitigation compliance and possible long-term success of mitigation sites.

The Corps agreed with the GAO recommendation that the agency should establish better guidance on compliance procedures. Several years ago, in an effort related to actions of the Mitigation Action Plan, the Corps required all districts to publish revised mitigation and monitoring guidelines. The Corps sent the districts the ten operating guidelines for ecologically sustainable wetlands highlighted in the National Research Council's 2001 report to be used to develop district mitigation and monitoring guidelines. In addition, the Corps completed a draft SOP (still being reviewed by the districts) that clarifies compliance monitoring. The previous SOP specified which activities should be a priority for regulatory staff in the districts. All tasks "above-the-line" were to be performed before any "below-the-line" tasks were to be addressed. The result that was in many districts, below-the-line items, such as compliance, went unaddressed. The new SOP will tackle this issue. The districts now have performance targets that are being implemented in the field. The Corps is also preparing a report that will provide guidance to the districts on how to develop ecologically based permit conditions that are enforceable. The guidance will support the development of enforceable performance standards upon which compliance will be based. Steve Martin and other state and federal partners (e.g., Jeanne Christie ASWM) are developing a technical support document for the districts on how to prepare written, useable, enforceable performance standards based on information from the experts in the field (e.g., state agencies, NatureServe, Corps districts).

The Corps also agreed with the GAO recommendation to develop expectations for monitoring oversight. To address this, the Corps has developed a new Regulatory Guidance Letter (RGL) that is under review by EPA, OMB and the President's Council on Environmental Quality (CEQ). The RGL will specify that monitoring reports will be included in the ORM database so that these data are accessible along with other permit information. The RGL will specify the data that will be required in all monitoring reports.

Finally, the Corps agreed with the GAO recommendation that formal agreements must be in place for every mitigation bank and in-lieu fee arrangement. The Corps' written response to the report indicates that the proposed mitigation rule will address many of the issues related to this recommendation. The proposed rule will likely require any new third-party arrangement to comply with the requirements in the rule. Brumbaugh concluded that his presentation likely did not address a few of the recommendations outlined in the GAO report.

Questions and Facilitated Discussion

Durbin asked McDonald to clarify whether the GAO report looked at the ecological performance of mitigation sites, or whether it focused on whether the Corps was adhering to existing mitigation guidance. McDonald responded that GAO strictly looked at whether the Corps is doing what it is required to do in order to determine if compensatory mitigation is being conducted. Brumbaugh added that the Corps and other agencies have been relying upon the NRC report to develop written performance standards that are enforceable and ecologically based. The MAP also includes action items related to the development of guidance on performance standards.

Howard expressed concern that the GAO study may have based some of its findings on "outlier banks" (i.e., banks in Minnesota) that are not reflective of the industry. The inclusion of data on these banks may have caused the report to misrepresent the banking industry. Brumbaugh and Norris added that many of the banks in the St. Paul district are overseen by local governmental units as part of an agreement between the

Corps and the state of Minnesota. Minnesota has a state umbrella program, and these banks are treated a little differently (Wilkinson). Although there are a few locally run banks, there are probably 100 commercial banks in Minnesota (Norris). These banks are subject to the same requirements as all banks (McDonald), and the Corps is responsible for the oversight of these mitigation sites (Brumbaugh). GAO tried to account for district variation by calculating statistics for each district separately (McDonald). Howard suggested that future studies should differentiate between banks that are private, for profit, and professionally managed and those that are not. RIBITS will gather data from the St. Paul District, so the Corps may have a better handle on the banking issues there in one year (Burks-Copes).

Strand asked McDonald to clarify what GAO means by compliance site visits; there is concern that these compliance site visits may duplicate other site visits such as those associated with credit releases. McDonald responded that GAO looked at whether the Corps was going out to verify whether required mitigation was complying with permit requirements, banking instruments, or in-lieu fee agreements. Strand asked if the proposed mitigation rule would include a template for compliance site visits. Brumbaugh responded that some districts may already have such a template in place. Martin added that the Norfolk District has a tracking system that includes a data point for compliance site visits. Although the data currently collected are very general, the new database will do a much better job at tracking this information (Martin). ORM will include data that indicate how the mitigation has been accomplished (Brumbaugh). RIBITS includes a credit release schedule to allow the Corps to indicate whether or not credits have been released and if not, why. It will also include all documentation associated with credit release. ORM will handle permittee-responsible mitigation, which is not handled by RIBITS, probably in much the same way (Burks-Copes).

Goldman-Carter asked if the performance measures for compliance inspections are already being applied on the ground nationwide. Brumbaugh responded that all of the districts will have the same targets, but how the performance measure targets will be met and which sites will be inspected will vary by district (Brumbaugh). Several participants asked how the Corps will determine which sites will be visited each year (Durbin). Brumbaugh stated that these considerations are being weighed. Brumbaugh asked Martin how the Norfolk district selects sites for compliance inspection. Martin responded that the decisions are subjective in nature and vary by staff person. Generally, they visit the large, high visibility sites, as well as sites that have a low probability of success.

Gardner asked if the §404 program provides any opportunities for individuals or citizens to identify mitigation sites of concern to conduct their own compliance visits. Brumbaugh responded that once ORM is online, the public will have access to mitigation information, including monitoring reports. Martin added that on a district by district basis the Corps relies on information from the public. Most of the reports of unauthorized activities or noncompliance come from the public (Brumbaugh, McDonald). The goal of the compliance site visits is to cover a statistically significant number of sites over a given period. The methods for choosing site visitation can be changed. The new database will store all the electronic information, including monitoring reports, in one place, which will support efforts to manage files more effectively (Brumbaugh).

Goldman-Carter asked if the performance measures will be a higher priority for Corps staff. Brumbaugh and McDonald responded that this is of paramount concern and will be a higher priority for Corps staff. One participant asked if this new responsibility for site compliance will be included in the project managers' per-

formance reviews (Spethman). Martin responded that the responsibility has been included in the Fiscal Year 2006 individual performance standards. Corps districts will now be held accountable for conducting compliance inspections of certain numbers of banks, individual permits, and mitigation sites. Durbin added that some districts have their own enforcement branch dedicated to compliance and enforcement issues (McDonald).

Spethmann asked if the increased workload will be addressed with increased funding. Brumbaugh responded that the Corps has tied the workload to the level of funding they will receive from OMB. GAO also found that some districts were taking actions to improve compliance on their own; the Jacksonville district had almost tripled the number of compliance inspections since 2003 (McDonald). Spethman suggested that stakeholders talk to Congress about providing the Corps with funding adequate to meet the proposed rule's new requirements. Brumbaugh stated that the Environmental Assessment conducted by the Corps in support of the rule demonstrated that in the short-term, the rule will require significantly increased funding to meet the new requirements. In the long-term, however, the costs and the time spent on compliance will come down (Brumbaugh).

Several participants stressed that the Corps needs to take into consideration states that have their own wetland regulatory programs; these state agencies could coordinate with the Corps to conduct site inspections and thereby increase the number of mitigation sites that are visited (Gilinsky, Hanson). Virginia inspects impact sites, mitigation sites, and all banks on a rotating basis (Gilinsky). In Alaska, compliance issues are constrained by a huge geographical area and a short growing season, so funding is a challenging issue (Hanson). In the past, the Corps has coordinated well with other state and federal agencies to conduct site visits (Brumbaugh). Durbin and Gilinsky suggested that the Corps could also do compliance inspections with no site visit; the agency could send a letter if a required document is not submitted. Many of the districts do not have a tracking system to let them know when monitoring reports are due (McDonald).

Rolband asked McDonald to clarify whether GAO felt there was a preferred method for the Corps to resolve compliance issues; specifically, did GAO state a preference for enforcement actions over negotiation. McDonald responded that GAO did not attempt to make a judgment on which approach is preferable; instead, GAO sought to highlight the enforcement methods that the Corps is employing. McDonald added that GAO found that, while the Corps has a number of enforcement options available, they typically use negotiation first. GAO felt that negotiation works well and seems to resolve most compliance violations. Rolband responded that although some agencies prefer to go the enforcement route, his experience has demonstrated that it is more costly and demanding of energy and time.

Goldman-Carter suggested that monitoring reports should be required as a condition of a permit. She added that the Corps should be required to issue an immediate non-compliance notice, including a reflexive penalty. Martin responded that monitoring reports are typically a requirement of permits associated with permittee-responsible mitigation. Goldman-Carter stated that this requirement is frequently overlooked. Brumbaugh added that there is currently no penalty for a violation (Brumbaugh). Barry and Brumbaugh stated that many of these issues will be addressed through application of the new ORM database, which will give regulatory staff automatic flags to remind them that mitigation report submission deadlines are approaching. Barry added that the Corps will send letters to providers that are not in compliance. She added that doing so is very time consuming (Barry).

Hanson suggested that there should be an enforcement option between an expensive and time consuming enforcement case and a simple letter of non-compliance. A middle-ground option is particularly important for those mitigation providers that currently rely on the fact that there may not be enough funding for a first or second compliance visit (Hanson). Redmond added that enforcement attorneys should be involved in the process of writing permit conditions for performance and monitoring so that judges can understand what they are supposed to enforce. McCarthy stated that the proposed mitigation rule is separate from the set of existing enforcement regulations, which include tools for dealing with non-compliance with permit conditions (McCarthy).³⁸

Spethmann asked if the concept of an MBRT/IRT academy was beyond the conceptual stage. He added that sponsoring such a training course would be very beneficial. Hough responded that EPA has a conceptual proposal under consideration from The Conservation Fund and the Environmental Law Institute. The course will likely be funded by EPA, U.S. Fish and Wildlife Service, and the Corps. EPA is considering how to fund a pilot course. If the course is funded, there would be available space for federal and state regulators.

³⁸ 33 CFR Part 326 (See <<http://www.wetlands.com/coe/coe326p0.htm>>).

CURRENT AND FUTURE STUDIES ON THE CHARACTER AND PERFORMANCE OF MITIGATION

2005 CORPS SURVEY OF DISTRICT MITIGATION PRACTICES Steve Martin, U.S. Army Corps of Engineers, Norfolk District

The Corp's Institute for Water Resources (IWR) was tasked by Corps Headquarters to provide technical assistance with the development of the proposed mitigation rule and associated environmental documents. One task was to evaluate and characterize baseline Corps mitigation practices in the districts across the country. The survey used data from previous district data calls, which involve data requests from Corps Headquarters for extensive, often quantitative, information. If the data are not readily available, districts are asked to use their best professional estimates.

The data collected for the IWR study included ten years of information on the numbers of permits issued, permitted impacts, and associated mitigation. The data were gathered from the districts, as well as previously published information (e.g. ELI and IWR publications), theses, and dissertations. There were still significant gaps in the data on compensatory mitigation. IWR published the *2005 Survey of District Mitigation Practices*,³⁹ which characterizes baseline mitigation conditions, in addition to the *2005 Draft Environmental Assessment and Regulatory Assessment*.⁴⁰

Pulling together the survey demonstrated that there are a number of constraints to characterizing current mitigation practices. First, the survey data represent the current state of mitigation from a short snapshot in time from the middle of 2005. Second, the data had to be collected within a very short period of time (3 weeks) due to the time constraints associated with the timeframe for development of the proposed rule on compensatory mitigation and the timing of other major data calls. Finally, in an effort to reduce the burden caused by this survey on the districts, the survey asked for available data and for district staff to rely upon best professional estimates in the absence of quantitative data.

Corps districts are aggregated into regions referred to as Divisions. IWR received survey responses from 33 of the 38 Corps districts (86 percent). Although not all of the districts provided data, all of the divisions were represented by at least one district. The district data were combined into divisional and national figures, both of which are discussed in the report. Data for non-responding districts were excluded from the analyses so the conclusions would not be biased.

The year 2003 was used to calculate permit information and impact and mitigation acreage because it was the best nationwide data available at the time. It is worth noting that approximately 90 percent of the permits issued during the study period were general permits for activities that have a minimal environmental impact (e.g. minor road crossings, bedding utility lines, temporary construction access, shoreline stabiliza-

³⁹ U.S. Army Corps of Engineers. 2005. 2005 Survey of District Mitigation Practices. Available at <http://www2.eli.org/pdf/mitigation_forum_2006/martin.pres.pdf>.

⁴⁰ U.S. Army Corps of Engineers. November 6, 2006. Regulatory Program. <<http://www.usace.army.mil/inet/functions/cw/cecwo/reg/citizen.htm>>.

tion). Less than 10 percent of all issued permits were individual permits, but individual permits accounted for almost 50 percent of the impact acreage and more than 50 percent of the mitigation acreage required. In addition, more than 50 percent of all of the individual permits that were issued in 2003 required compensatory mitigation, while less than 20 percent of the general permits and a little over 20 percent of all permits required mitigation. This illustrates the fact that many of the activities that are authorized through Corps permits are relatively minor (e.g. maintenance dredging, construction of piers and wharfs) and do not typically require mitigation.

The two methods for permittees to satisfy their compensatory mitigation requirements are permittee-responsible mitigation and third-party mitigation. Third-party mitigation includes the payment in-lieu of mitigation (in-lieu fee) and mitigation banking. However, the differences between in-lieu fee programs and mitigation banks are not always clear. For example, some in-lieu fee programs provide compensatory mitigation in advance of impacts and most operational mitigation banks involve the pre-sale or advanced release of credits before full implementation of the mitigation plan.

The bulk of the compensatory mitigation performed nationwide is permittee-responsible, while in-lieu fee programs make up less than 10 percent and mitigation banks make up 33 percent of the mitigation. The seemingly high percentage of total mitigation acres provided by mitigation banks may be due to the fact that some of the data provided by the districts were estimates. Alternatively, there may have been a substantial growth in the number and use of mitigation banks.

Tidal and non-tidal wetland impacts are contained in Corps data reports, although stream impacts are not. Thus, stream impact data were generated from estimates provided by the districts. In 2003, mitigation banks were focused primarily on providing compensatory mitigation for non-tidal wetland impacts. In-lieu fee programs and permittee-responsible mitigation, on the other hand, provided mitigation for stream and tidal wetland impacts. Mitigation provided by in-lieu fee programs and mitigation banks are typically located off-site or at a distance from project impacts. However, the bulk of permittee-responsible mitigation (55 percent) on a national basis is located on-site, while the rest of the mitigation occurs as either a mix of on-site and off-site (27 percent) or completely off-site (18 percent).

The prevalence of permittees using a combination of on-site and off-site mitigation to satisfy their requirements may be due to an attempt to compensate for specific functions or services, such as water quality or flood storage impacts, at the impact site and other functions, such as habitat restoration, at off-site locations. There was considerable variation in the location of permittee-responsible mitigation among districts. For example, those districts with very active mitigation banking programs had much more off-site mitigation.

All of the districts replied that they used functional or ecological performance standards to evaluate whether or not the mitigation being conducted is providing the desired aquatic resources and the intended functions and services. The 1987 Corps manual on hydrophytic vegetation, wetland hydrology, and hydric soil criteria was most commonly used for this purpose. More than 90 percent of the mitigation banks were required to comply with the 1987 manual performance standards, while this was required of only 60 percent of permittee-responsible mitigation and in-lieu fee programs. This discrepancy between mitigation types is likely due to the fact that permittee-responsible mitigation and in-lieu fee are often used to provide

compensation for stream impacts, and the 1987 manual is not appropriate for evaluating stream mitigation performance. At the time the survey was conducted, the Corps did not know how many approved, proposed, or operational mitigation banks were in existence. Tallying the number of mitigation banks was complicated by the question of umbrella mitigation banks, which have multiple mitigation sites operating under one governing instrument. The Corps decided to treat all the sites that fell under one instrument as one bank. In the past, umbrella mitigation banks had been largely sponsored by single users, such as DOTs, but several states also have very active commercial umbrella mitigation banks (e.g. Minnesota and Virginia). In 2005, there were 305 approved commercial mitigation banks, 149 proposed banks, and 59 fully-debited banks. In terms of regional distribution, almost three-quarters of the nation's mitigation banks are located in the Southeast and the Midwest. This may offer some opportunities for future growth of mitigation banking elsewhere in the country.

There was a marked increase in the number of in-lieu fee programs from 1999-2001. By 2005, the number of programs had dropped off substantially to 1999 levels. By 2005, there were a large number of discontinued in-lieu fee programs, which could be due to decreases in a couple of districts. IWR also found a substantial decrease in the number of proposed in-lieu fee programs in 2005.

There was an attempt, associated with the proposed rule's regulatory analysis, to gather data on the costs associated with permittee-responsible mitigation. However, these data were too difficult to gather because the information is often proprietary and highly variable, as well as dependent on the nature of the impact or restored resource, implementation costs, and land costs. The Corps was able to gather some estimates of wetland mitigation credit prices for both mitigation banks and in-lieu fee programs. The number of estimates was smaller than the number of responses to the survey – 20 districts provided estimates for mitigation bank credit prices and 12 provided estimates for in-lieu fee programs. A number of districts indicated that they did not track these costs. The figures for credit prices were extremely variable between divisions. For example, some districts reported credit prices of more than \$100,000 per acre, particularly in urbanizing and suburbanizing areas in portions of the Los Angeles, Chicago, Portland, Norfolk, and Wilmington Districts. There was a very poor survey response for stream compensatory mitigation credit prices. Only 4 districts provided estimates for stream mitigation banks (\$45-\$400/ linear foot) and 11 districts provided estimates for stream in-lieu programs (\$15-\$400/linear foot). Furthermore, the responses were complicated because districts did not uniformly assess stream credit costs. Cost estimates were reported in linear feet, square feet, acres, or credits, depending on the district.

AN ASSESSMENT OF MITIGATION WETLAND PERFORMANCE

M. Siobhan Fennessy, *Kenyon College*

Fennessy explained there are two ways to evaluate a replacement, or mitigated, wetland. First, the function and acreage of the replacement wetland can be compared to the original wetland that was destroyed or converted. This is one way to gauge the legal success of replacement under the 'no net loss' policy and other related regulations. Second, the replacement wetland can also be compared to reference wetlands, which are the best available examples of the replaced class of wetland on the landscape. This method allows for an evaluation of the ecological success of the replacement program. The two evaluation strategies together give an overall indication of the success of the replacement project.

One of the key conclusions of the NRC report on compensatory mitigation⁴¹ is that the goal of 'no net loss' of wetlands is not being met for wetland functions by the mitigation program, despite progress in the last 20 years. One of major obstacles is the steep learning curve involved with figuring out how to create and restore wetlands for mitigation purposes. The NRC report influenced development of the proposed rule. It also was the impetus for the initiation of a study sponsored by the Ohio Environmental Protection Agency that investigated the ecological success of mitigation on the ground and evaluated the ecological performance of mitigation projects.

The first study described here exemplifies the general findings addressed in the literature over the last ten years about the performance of the mitigation on the ground.⁴² The study was an ecological assessment of wetland mitigation projects. Ten mitigation sites associated with individual permits and permittee-responsible mitigation were compared during drydown to ten natural sites. In-depth measures were developed to evaluate wetlands based on vegetation, amphibian, and macroinvertebrate communities. In addition, in an effort to assess hydrology, ground water and surface water levels were monitored. Soils and ecosystem processes, including biomass production, decomposition rates, and some nutrient cycling rates, were also measured.

The study sought to evaluate different mitigation methods (i.e., restoration and creation sites). Natural wetlands were chosen to represent a full gradient of ecological conditions and human disturbances in order to determine where the mitigation wetlands fall along this gradient. Mitigation wetlands were chosen over a range of ages (0-10 years). The study was designed to take an ecosystem approach to attempt to determine why mitigation sites might be failing, as well as to develop biogeochemical and biological indicators that could be used as performance standards for mitigation projects.

The literature suggests that created wetlands tend to be deeper and have longer hydroperiods than natural sites.⁴³ Hydrological failures are often the leading cause of mitigation project failure.⁴⁴ Data from this study corroborates previous findings. The study included three measures of hydrological condition that were gathered using ground water wells. These wells are an excellent and inexpensive way to generate significant amounts of data. The study found that mean surface water depth and depth to ground water were greater in mitigation sites, indicating a hydrologic disconnect. The study also found that the percent of time that water is in the root zone (upper 30 cm) was much lower in mitigation sites compared to natural sites.

⁴¹ National Research Council Board on Environmental Studies and Toxicology. Compensating for Wetland Losses Under the Clean Water Act (2001). <<http://www.nap.edu/books/0309074320/html/>>.

⁴² Fennessy, M.S., J. Mack, A. Rokosch, M. Knapp and M. Micacchion. (2004) Biogeochemical and hydrological investigations of natural and mitigation wetlands. Ohio EPA Technical Report, Wet 2004-5. Columbus, Ohio

⁴³ Magee, T.K., T.L. Ernst, M.E. Kentula, and K.A. Dwire. (1999) Floristic comparison of freshwater wetlands in an urbanizing environment. *Wetlands*, 19(3): 517-534.; Cole, C. A., and R.P. Brooks. (2000) A comparison of the hydrological characteristics of natural and created mainstem floodplain wetlands in Pennsylvania. *Ecological Engineering*, 14: 221-231.

⁴⁴ Erwin, K.L. (1991) An evaluation of wetland mitigation in the South Florida Water Management District, Vol. 1. Methodology. West Palm Beach, FL.; Galatowitsch, S.M and A.G. van der Valk. (1996) Characteristics of recently restored wetlands in the prairie pothole region. *Wetlands*, 16: 75-83.

Mitigated and natural wetlands also varied in terms of how water levels change over time. During the growing season (May 14 - September 30), a common hydrologic signature of natural wetlands includes a rise in surface water early in the season that tapers off gradually as the season progresses. In contrast, it is common to observe a much more rapid drop off of water in mitigation sites. At mitigation sites, the water is below the level of the well by July. This rapid drop-off results in long periods of the growing season during which there is no root saturation in mitigation sites. This study includes mostly created and some restored wetlands, which reflects the type of mitigation sites found in Ohio.

The scientific literature includes a lot of information on soils. Overall, soil organic matter (SOM) and nitrogen are much higher in natural wetlands than in created and restored wetlands.⁴⁵ Some studies have found that there is no measurable change in accumulation in SOM and other nutrients (i.e. nitrogen and phosphorous) over time in mitigation sites,⁴⁶ while others have shown detectable increases over time.⁴⁷ Nutrient accumulation is, however, a very long-term process and most mitigation sites have not been established for the necessary period of time. There is also evidence to show that soil bulk density is much higher in mitigation wetlands; the soils in mitigation wetlands are much heavier and clay-like.⁴⁸

In addition, microbial activity is lower in created wetlands.⁴⁹ Data from this study support findings from previous studies, which found much lower percent nitrogen levels in mitigation sites compared to natural sites, which may be the key to very low plant community development in the system. Total carbon and phosphorous levels were also much lower in the mitigation sites, indicating the soil community is not as active as in mitigation sites. The study also sought to analyze the nitrogen and carbon content of mitigation wetlands over the age of the sites to determine whether there were any perceivable trends over time. The study did not record a trend towards improvement in nitrogen and carbon content with the age of the mitigation site.

Vegetation is the parameter most often measured in mitigation sites, but this measure may not be very ecologically informative. Although macrophytic communities can develop quickly, species richness is typically lower and the dominance of non-native species is higher in mitigation sites.⁵⁰

⁴⁵ Bishel-Machung, L., R.P. Brooks, S.S. Yates, and K.L. Hoover. (1996) Soil properties of reference wetlands and wetland creation projects in Pennsylvania. *Wetlands*, 16: 532-541.; Craft, C. (2000) Co-development of wetland soils and benthic invertebrate communities following salt marsh creation.

Wetlands Ecology and Management, 8: 197-207.

⁴⁶ Bishel-Machung et al. 1996; Shaffer, P.W. and T.L. Ernst. (1999) Distribution of soil organic matter in freshwater emergent/open water wetlands in the Portland, Oregon metropolitan area. *Wetlands*, 19: 505-516; Cole, C. A., R.P. Brooks, and D. Heller Wardrop. (2001) Assessing the relationship between biomass and soil organic matter in created wetlands of central Pennsylvania, USA. *Ecological Engineering*, 17.; Fennessy et al. 2004

⁴⁷ Craft, C., J. Reader, J. Sacco, and S. Broome. (1999) Twenty-five years of ecosystem development of constructed *Spartina alterniflora* marshes. *Ecological Applications*, 9: 1405-1419.

⁴⁸ Fennessy et al. 2004

⁴⁹ Hossler, K. and V. Bouchard. (2006) Plant and microbial mediated processes in created and restored wetlands. Unpublished data.

⁵⁰ Erwin 1991; Magee et al. 1999; Fennessy et al. 2004; Speils, D. (2005) Vegetation development in created, restored, and enhanced mitigation wetland banks of the United States. *Wetlands*, 25: 51-60.

Biomass production, or primary productivity, in mitigation sites varies relative to natural sites. Productivity is a primary driver of many wetland functions, including nutrient sequestration, water quality improvement, and biodiversity support. However, the findings in the literature are mixed. While some studies have shown equivalence between mitigation and natural sites within five years,⁵¹ others have found higher production in created wetlands.⁵² Still others have shown lower production in created wetlands.⁵³ This study found that natural sites had double the biomass productivity compared with mitigated sites. Biomass productivity is related to nutrient availability and translates to the functions that can be provided by the system.

Ecological performance measures and biological performance techniques have been developed over the past ten to twelve years in Ohio. These measures and techniques provide information about the relative ecological condition at a site. The measures used include vegetation indices of biotic integrity (vBI), which were developed for different types of communities (e.g. vegetation indices emergent communities, forests). vBIs have been calibrated based on reference condition. In this study, natural sites had a much higher average vBI than mitigation sites. The study did not find any high quality mitigation wetlands. The vBI range for the natural sites reflects the gradient of disturbance at those sites, with both high quality and low quality wetlands represented.

The study also reports some of the recovery trajectories for a number of parameters including the floristic quality assessment index (FQAI). FQAI is a plant community measure of ecological condition that correlates well with human disturbance. The study shows that FQAI scores increase over time at mitigation sites, an indication that plant communities develop and go through normal successional processes. In terms of the possible scoring range of FQAI values, however, the scores for mitigation sites are all very low.

The data collected on ecosystem process, including nutrient cycling and decomposition rates, provided insight into the factors limiting the development of mitigation sites. A litter bag study was conducted by placing several mesh bags filled with dried plant material at a number of stations across the sites. Over the course of a year, the percent mass of plant material left in the bags was measured in order to gauge the rate of decomposition. The nutrients associated with decomposition were also measured. Over the course of the study, the created sites had slower rates of decomposition and more mass remaining in the litter bags than the natural sites.

This study found that mitigation wetlands develop slower and are less dynamic. The mitigated sites have fewer nutrients, less organic matter, slower decomposition, slower nutrient movement, and lower productivity than natural sites. The literature contains numerous examples that demonstrate that mitigation wetlands do not have soils that are equivalent to natural sites. In this study, the soil, plant, and decomposition data were combined into a cluster analysis, which indicated how similar the sites were to each other. The

⁵¹ Craft et al. 1999 (coastal restoration marshes)

⁵² Cole, C.A. Conflict at Cape Hatteras: Coastal wetland water quality in a resort environment. In M.C. Landin (ed.), Proc. 13th Annual Conf., Society of Wetland Scientists, SWS South Central Chapter, Utica, MS, pp. 154-159. (mix of created and restored wetlands)

⁵³ Fennessy et al. 2004 (mix of created and restored wetlands)

cluster analysis revealed a clear partition between natural and mitigation sites. One mitigation site, however, had very good quality soil and clustered with the natural sites. A future study will look at the soil characteristics of natural and mitigation sites of different ages (1-5 years to 30-40 years old).

Ohio EPA recently released a report that examines the ecological performance of mitigation banks using the same set of assessment procedures described above. Previous studies have shown that banks are not meeting the 'no net loss' goal in terms of acreage requirements. For example, a survey of 68 banks found that 26 percent did not meet acreage requirements resulting in a loss of 8,400 ha nationally.⁵⁴ The recent Ohio study found that 24 percent of the mitigation banks in Ohio (400 ha) did not meet jurisdictional requirements.⁵⁵ A third, nationwide study of banks judged basic measures of plant community establishment to be successful in only half of the banks surveyed.⁵⁶ On a landscape scale, a recent study published in ELI's *National Wetlands Newsletter* shows a migration of wetlands from urban environments to rural environments.⁵⁷

In order to conduct an ecological assessment of wetland banks in Ohio, random sample plots were set-up within each bank site. The assessment included about 1,000 acres of mitigation banks, which excluded areas that did not meet jurisdictional requirements for each bank (e.g. acres of open water or no vegetation). Twenty-eight percent (275 acres) of the mitigation bank acres sampled did not meet the criteria. Four sold-out banks included 173 non-wetland acres, yet these non-wetland acres were sold as credits to compensate for permitted losses. The ratios for these banks are usually two-to-one and can go up to three-to-one depending on the condition of the impact site. This finding contradicts Ohio's assumption that everything inside the boundary of a created wetland meets the jurisdictional definition of a wetland.

The vIBI has been adopted as a biological criterion in Ohio so it can be used to set targets for mitigation and restoration. A vIBI score of 37.5 has been adopted as an ecological performance standard in Ohio and will now be written into permits. The data show an increased gradient in vIBI scores as the quality of natural wetlands increases; the lowest quality wetlands have the lowest vIBI score. On average, the bank sites are meeting the basic performance standard in terms of vIBI score, but half of the sites were below this standard. On average, the individual mitigation sites fell below the performance criteria goal for vIBI (37.5).

Fennessy presented data from sites of varying size. The study employed a fixed plot sampling technique to account for heterogeneity in the vegetative community. The mitigation bank sites were much larger than the natural sites because the landscape is very fragmented in Ohio. The methods for all of these studies are on Ohio EPA's website.⁵⁸ An amphibian IBI, a multi-metric index of amphibian communities, was also examined for the different classes of wetlands. Again, individual mitigation sites and mitigation banks had lower

⁵⁴ Brown, P.H. and C.L. Lant. (1999). Effect of wetland mitigation banking on the achievement of no-net-loss. *Environmental Management*, 23(3): 333-345.

⁵⁵ Mack, J.J and M. Micacchion. (2006) An ecological assessment of Ohio mitigation banks: Vegetation, Amphibians, Hydrology, and Soils. Ohio EPA Technical Report WET/2006-1. Ohio Environmental Protection Agency, Division of Surface Water, Wetland Ecology Group, Columbus, Ohio. Available at http://www.epa.state.oh.us/dsw/wetlands/Bank_Report_Ohio_Final.pdf

⁵⁶ Spiels 2005

⁵⁷ Ruhl, J.B. and J.E. Salzman (2006) "The Effects of Wetland Mitigation Banking on People" FSU College of Law, Public Law Research Paper No. 179.

⁵⁸ Environmental Protection Agency. October 6, 2006. Wetland Ecology Section Report. <http://www.epa.state.oh.us/dsw/wetlands/WetlandEcologySection_reports.html>.

amphibian IBI scores than the three quality categories of natural forested and shrub wetlands and natural emergent wetlands.

The GAO has suggested that “[t]he establishment of ecological success criteria is not only possible but essential to determine if the objectives of compensatory mitigation are being met.”⁵⁹ To address this suggestion, Ohio has begun to translate monitoring data to performance standards. For example, soil carbon per performance standards were set at the 25th percentile between the mean soil carbon for all quality categories of natural wetlands (meets water quality standards, restorable, and superior) and the mean for mitigation wetlands. This metric can be used as a design criterion and will encourage mitigation providers to choose sites that are more amenable to restoration and mitigation.

Although a lot is known about good project design and management, such information has not always translated well to work on the ground. Soils are crucial to mitigation success, but they are often overlooked in siting mitigation projects or construction techniques. Landscape setting and ecologically relevant performance standards are also critical to help drive assessments over time.

Questions and Facilitated Discussion

Several participants asked specific questions about Fennessy’s study. Rolband asked if the carbon to nitrogen ratios were similar between mitigation and natural sites. Fennessy responded that the mitigation sites had a higher carbon to nitrogen ratio than did the natural sites. Nitrogen is a significant problem that seems to be limiting mitigated wetlands from developing into fully functional ecosystems (Fennessy). Rolband responded that he has been finding similar results at his sites, although they demonstrate a slight upward trend over time. He added that if sites have a natural carbon to nitrogen ratio, then theoretically over time the mitigation sites can look like natural sites; if the ratio is not right, the sites may never be able to fully develop (Rolband). Fennessy agreed, but suggested that the nutrient mean values are also important to the development of the mitigation site.

Spethmann asked if phosphorous, rather than nitrogen, could be a limiting factor. Fennessy responded that phosphorous was considered, but based on the current data, it looks like nitrogen is the limiting factor. A follow-up study will look more specifically at determining the limiting nutrient and identifying remediation methods (Fennessy). Rolband asked how adding organics to soil at mitigation sites would affect their development. Fennessy answered that this is something that warrants additional attention, particularly at agricultural sites that have been depleted of carbon. Some states, such as New Jersey, require the addition of organics (Rolband). Spethmann asked if the mitigation sites analyzed in the study had the hydrology to support the development of hydric soils. Fennessy responded that because the sites are ponded they should respond. The sites did not, however, have soil organic levels sufficient to fuel microbial-driven anaerobiosis (Martin, Fennessy). One participant was concerned that the mitigation sites in Fennessy’s study may not have had enough good top soil for the development of natural vegetation (Ryan). Howard asked if the sites examined in the study were on-site or off-site mitigation sites. Fennessy responded that they were a mix, but most of them were off-site mitigation areas.

⁵⁹ GAO Report (2001) Assessments needed to determine effectiveness of in-lieu-fee mitigation. Available at <<http://www.epa.gov/owow/wetlands/pdf/GAO.pdf>>.

Murin asked if there was any variation in the microtopography in the created wetlands. Fennessy responded that the study did not address microtopography systematically, but it is likely that a lot of the mitigation sites had lower variation in microtopography. Martin asked about the age and soil type of the communities in reference areas as opposed to mitigation sites. Fennessy responded that many of the reference sites were relatively stable, post-glacial sites with a mix of mineral and organic soils. Some of the reference sites were less stable riverine sites. Kelly asked if the study made any effort to compare impacted wetlands to restored wetlands (Kelly). Fennessy responded that such studies would be ideal, but those data are not currently available. One participant asked whether soil tests were difficult and time consuming, and who is qualified to do the studies (Elston). Fennessy responded that the tests are not that difficult or expensive (about \$10 a sample).

Howard expressed concern that the study described by Fennessy did not adequately discriminate creation sites from restoration sites or professional/entrepreneurial mitigation sites from other sites. His concern was that the conclusions of the study could cause the press and the public to misconstrue the failing sites as representative of the banking industry as a whole (Howard). Fennessy pointed out that the goal of the study was to evaluate the performance of the mitigation sites on the ground, which rely upon a mix of different mitigation methods (creation, restoration) and represent the mitigation being carried out in Ohio. The study did show that restored sites perform better than created sites, but, surprisingly, not significantly better. The banks (most of which were restoration projects) showed higher vegetation index measures than did the individual sites, which included some creation sites. The banks did not, however, show higher amphibian measurements than did the individual sites (Fennessy, Sibbing).

Two participants stressed that future mitigation studies should make a distinction between private/entrepreneurial and other types of mitigation providers. Standard terminology should be used for providers in these studies (Mogensen, Howard). Fennessy responded that many of the banks owners, either DOT or developers themselves, consider themselves professionals and see their sites as a success in terms of meeting the performance criteria.

Robertson asked about the types of performance criteria that banks in Ohio have to meet, and whether they seem adequate from a biological standpoint. Fennessy responded that banks currently have to meet standards related to vegetation cover, hydrology, non-native cover, and some others; but none of the new biological criteria or soils performance criteria that were proposed in the presentation were in place when these banks were started. The banks are meeting their original criteria, so they look successful on paper. Unfortunately, the criteria against which they are measured are not particularly ecologically relevant or meaningful in terms of evaluating how the sites compare to natural systems.

One participant expressed concern that setting the performance standards at the 25th percentile between the natural mean and the mitigation mean for certain ecological criteria is not high enough. Fennessy agreed that this was a conservative, yet attainable, goal, but there is some literature upon which performance standards could be based. There is one real mitigation/restoration site that sits on the 25 percentile line, and that is a good site (Fennessy). Martin added that there is some research on the percent of soil organic matter and soil organic carbon from creation sites in Virginia, which indicates that a 5 percent nutrient load is a threshold level.

There were several suggestions for future studies that would go beyond showing differences between mitigation and natural sites to examine how to improve the success and quality of wetland mitigation sites (Sibbing, Fennessy). For example, a scientific analysis comparing impacted sites with mitigated sites, with a consideration for the location of the site itself (Elston), would help highlight whether or not mitigated sites are an improvement over impact sites (Kelly). Other participants suggested studies on whether nitrogen and phosphorous levels (Rolband), soil bulk density (Martin), construction practices, or the addition of organic matter (Rolband) to a mitigation project will affect the likelihood of achieving performance standards. Examples of such studies may be found in the silviculture literature (Spethman). Howard asked whether the rest of the wetlands community would take studies funded by the banking industry seriously.

Howard suggested that a study be done to examine the performance of mitigation by type of mitigation provider. He added that the same types of studies should be applied to restoration projects supported by federal funding (e.g. Conservation Reserve Enhancement Program, Wetlands Reserve Program). Other participants suggested studies on stream analyses for stream mitigation (Mann), and whether using acreage or function as a measure for mitigation is more cost effective (Kelly). Howard suggested that because it is where most impacts occur, stream restoration may be the direction of mitigation in North Carolina in the future.

Several participants had concerns about the treatment of reference sites in mitigation studies. Reference sites and impact sites should be in the same successional states as the mitigation site (Martin, Elston). When selecting regional reference sites for these types of studies, there is a need to be careful about exceeding expectations of what to expect from a reference site and to be careful about the definition of “pristine.” Robertson added that studies should be careful about the range of reference wetlands that are used to set goals for restoration (Robertson). Kelly suggested that the banking/mitigation industry should focus more analysis and functional assessment on the impact side of compensatory mitigation.

There was a discussion of performance standards as they relate to the success of compensatory mitigation. Fennessy’s study affirms the work that banks are doing in meeting performance standards. It also highlights the importance of establishing clear mitigation goals in advance when designing mitigation projects and selecting performance standards (Gilinsky). The development of performance standards has to be an iterative process, because you have to be able to learn from what works and what does not (Martin). It is critical to have good, equivalent performance standards that are achievable and tied to ecological success in the proposed rule (Ryan). Gardner suggested that shifting from language about “success” to focusing on being clear about the measures (e.g. compliance with legal standards, meeting ecological standards) will lead to more productive conversations.

Durbin asked Martin to clarify whether all types of mitigation were around the 90th percentile in terms of ecological performance and how mitigation sites were selected for this analysis. Martin responded that the statistic included in the Corps’ report refers to the performance standards required by districts for each mitigation type; the districts required approximately 90 percent of the banks to comply with the performance standards outlined in the 1987 manual (Martin). Kelly asked Martin about the ratio of districts that gave estimates for data versus those that gave hard data for use in the IWR study. Martin responded that the

ratio was probably 50/50. For some districts it was clear the data were estimated because the survey response came back in a few days, while other districts gave specific numbers and/or supporting datasets. Wilkinson added that some districts (e.g., Norfolk) were able to provide data on the amount of mitigation as a percentage of total mitigation required and the amount of mitigation as a percentage of total impacts.

There was some discussion about trends in the type of mitigation providers over the past few years (Mogensen). Martin clarified that the Corps study reports data on the number of banks from 2005 and data on mitigation types from 2003. Trends in mitigation type from before 2003 were derived from other datasets including ELI's data, IWR publications, and thesis publications. Wilkinson added that the amount of permittee-responsible mitigation has decreased over time. The only significantly different finding between the recent IWR and ELI studies was that slightly more mitigation was shown to be satisfied through in-lieu fee mitigation in ELI's slightly more current study (Wilkinson, Martin, Brumbaugh).

Participants voiced several concerns about specific studies. Brumbaugh added a caveat to the citation of Brown (1999); saying that the study included many assumptions based on data from all sorts of unverified and extraneous sources. Rolband addressed the mitigation banking study, which appeared in the March/April 2006 issue of the *National Wetlands Newsletter*. He stated that much of the blame for the trend of wetlands migrating from urban areas to rural areas may not be attributed to the bankers, but instead, to the regulators who are pushing mitigation into rural areas because more area of wetland and streams can be restored in rural areas with money collected in urban areas. Martin responded that while in northern Virginia that may be true, in southeastern Virginia the bulk of the mitigation banks are in urban areas. The push to move mitigation into rural areas may depend on the functions for which the sites are designed to compensate (Martin).

Several participants commented on data dissemination and accessibility. Redmond suggested that the proposed rule should include training, data management, and data dissemination recommendations so that data collected in one district can be shared with other districts. Monitoring reports should have data requirements such that the information gathered would add to the national and regional knowledge base and identify areas of needed research (Rolband). Studies should be conducted on how to better manage data from grey literature (environmental impact statements, monitoring reports, mitigation plans, §7 consultations), so the data are accessible, useable, and that resources are not wasted on duplicative studies (Strand, Fennessy). In addition, mitigation providers could help to inform the scientific community about which mitigation practices are working (Fennessy).

WRAP UP/CLOSING STATEMENTS

Bob Brumbaugh, *Institute for Water Resources, U.S. Army Corps of Engineers*
Brian Frazer, *U.S. Environmental Protection Agency*

Brumbaugh and Frazer extended their thanks to the forum participants for their input. The information provided will help the agencies craft and finalize the rule. They also recognized Jessica Wilkinson and the Environmental Law Institute staff for organizing and facilitating the forum. Brumbaugh and Frazer also recognized George Washington University for providing the facility, and the other agency co-sponsors (FHWA, NMFS, and U.S. FWS) for their contributions.

Frazer and Brumbaugh outlined the major themes that emerged concerning the proposed rule, both positive feedback and constructive criticism. Participants offered positive feedback on the rule's affirmation of the sequencing provisions and provisions related to raising standards, increasing accountability, ensuring efficiency, and improving the success of compensatory mitigation. The agencies heard constructive criticism on the proposed rule's potential to ensure "equivalency" among mitigation types. The role of state programs was also a common theme throughout many of the discussions. Another common concern addressed by the participants was the scale of a watershed or service area as defined by the rule. Several participants suggested that the agencies should use the term "shall" rather than the term "should" in the rulemaking. The definitions included in the rule (e.g. "near," "on-site," "off-site," and "watershed") were the focus of many comments. The difficulty faced by the agencies is that of offering definitions that are clear, but that do not set policy. These, and other criticisms, were important to address in the communal format of the forum.

There was a passionate response to the proposed phase-out of traditional in-lieu fee programs. Some participants indicated that the phase-out of in-lieu fee as a mitigation tool is necessary in order to ensure equivalent and effective standards among mitigation types and secure compensation for lost wetland functions and values. Other participants suggested that the agencies should consider retaining in-lieu fee mitigation, but implement significant reforms to the program, including establishing hard preferences for compensation in advance of impacts, adopting fee schedules that are significantly higher than bank credit prices, and instituting a request for proposal process that incorporates private-sector efficiencies (e.g. NC EEP). These suggestions and comments will inform future agency discussions about the direction of the proposed rule.

The new deadline to submit comments on the proposed rule on compensatory mitigation is June 30, 2006. Instructions for submitting comments can be found in the March 28, 2006 Federal Register Notice of Proposed Rulemaking. The recommended method of submission is through www.Regulations.gov, but hard copies of comments can be also be submitted. All of the comments submitted can be reviewed by the public at the website: www.Regulations.gov. Brumbaugh suggested that it is critical to read the preamble to the proposed rule thoroughly prior to submitting comments. The questions that appear in the preamble were structured to elicit comments on most aspects of the specific issues.

Forum participants generally endorsed a watershed or systems approach to compensatory mitigation. However, there was concern regarding practical implementation of the watershed approach, which has also

been a concern of the MAP group in developing preliminary guidance. Participants questioned whether the availability, quality, and nature of existing plans are sufficient to appropriately site mitigation projects. There was some discussion about including other agencies in the watershed planning process. Zedler voiced very strong concerns about whether implementing a watershed approach without available watershed plans could be successful. Many questions remain about the quality and depth of existing assessments and the minimum information requirements that are necessary to implement a watershed approach without watershed plans. The proposed rule specifically requests the public to submit comments on these issues. There are areas of the country (e.g., the Southeast) where in-lieu fee programs are relatively important compared to mitigation banks. The participants voiced concerns associated with the creation of wetlands and identified a need for increased consideration of soil metrics in terms of improving wetland creation and restoration techniques.

Participants also expressed concern about the ability of compensatory mitigation projects to replace lost wetland functions. Brumbaugh and Frazer suggested that many issues, such as wetland creation, functional replacement, and mitigation siting, may be addressed as the watershed approach is implemented. Participants suggested a need for studies that look at the quality of wetlands at impact sites versus compensation sites, how the type of mitigation provider affects the success of mitigation projects, and the effects of soil organic matter and bulk density on mitigation success. Participants also suggested a need for better information dissemination, training, and management/use of the grey literature. There needs to be better information sharing among the scientists, the published literature, and the grey literature to help with the development of regional, iterative performance standards. Adaptive management is addressed in the rule, and the agencies are looking for comments on this provision. The development of performance standards is an adaptive management process.

Finally, Frazer credited Palmer Hough, and Morgan Robertson from EPA and Dave Olsen and others from the Corps of Engineers, for their contributions to the proposed rule.



**ENVIRONMENTAL
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**FIFTH STAKEHOLDER FORUM ON FEDERAL
WETLANDS MITIGATION**

MAY 10-11, 2006

The George Washington University Law School
Jacob Burns Moot Court Room
Lerner Hall
Washington, DC

Sponsored by:

**Federal Highway Administration
NOAA Fisheries
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service**

OBJECTIVES:

1. Review and solicit input on recent developments in federal mitigation regulations and policy;
2. Discuss recent findings on the character and performance of mitigation; and
3. Discuss future research priorities for the direction of federal aquatic resource mitigation.

DAY 1 Wednesday, May 10, 2006

| | |
|----------------|--|
| 8:15 – 8:45 am | REGISTRATION & CONTINENTAL BREAKFAST (provided) |
| 8:45 – 9:15 | WELCOME <ul style="list-style-type: none">• Benjamin H. Grumbles, Assistant Administrator for Water, U.S. Environmental Protection Agency |
| 9:15 – 9:45 | INTRODUCTIONS, OBJECTIVES, & AGENDA <ul style="list-style-type: none">• Jessica Wilkinson, Environmental Law Institute (Facilitator) |
| 9:45 – 10:00 | BREAK |
| 10:00 – 10:45 | RECENT DEVELOPMENTS IN FEDERAL MITIGATION REGULATIONS & POLICY PRESENTATION: Mitigation Rulemaking and National Mitigation Action Plan <ul style="list-style-type: none">• Palmer Hough, Wetlands Division, U.S. Environmental Protection Agency |
| 10:45 – 11:00 | Questions & Answers |
| 11:00 – 12:00 | Mitigation Rulemaking: Facilitated Discussion Session I: General Considerations and Requirements |
| 12:00 – 12:45 | LUNCH (provided) |
| 12:45 – 1:45pm | Mitigation Rulemaking: Facilitated Discussion Session II: Administrative Requirements and Performance Standards |
| 1:45 – 2:00 | BREAK |
| 2:00 – 3:00 | Mitigation Rulemaking: Facilitated Discussion Session III: Third Party Mitigation |
| 3:00 – 3:15 | BREAK |

| | |
|----------------|---|
| 3:15 – 4:15 | COMPENSATORY MITIGATION AND THE WATERSHED APPROACH PRESENTATION: Progress to Date on Compensatory Mitigation and the Watershed Approach <ul style="list-style-type: none">• Susan-Marie Stedman, NOAA National Marine Fisheries Service PRESENTATION: Taking a Watershed Approach in the Absence of a Watershed Plan <ul style="list-style-type: none">• Joy Zedler, Ph.D., University of Wisconsin-Madison |
| 4:15 – 5:15 | Questions & Facilitated Discussion |
| 5:15 pm | ADJOURN |
| 6:00 – 8:00 pm | Capitol Hill Reception: 2006 National Wetlands Awards Program |

DAY 2 Thursday, May 11, 2006

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| 8:30 – 9:00 am | CONTINENTAL BREAKFAST (provided) |
| 9:00 – 9:15 | Review of Agenda <ul style="list-style-type: none">• Jessica Wilkinson, Environmental Law Institute |
| 9:15 – 9:45 | THE NEXT GENERATION OF ORM PRESENTATION: Innovations in S404 Data Management <ul style="list-style-type: none">• Bob Brumbaugh, Institute for Water Resources, U.S. Army Corps of Engineers |
| 9:45 – 10:30 | Questions & Facilitated Discussion |
| 10:30 – 10:45 | BREAK |
| 10:45 – 11:25 | RECENT GAO STUDY ON COMPENSATORY MITIGATION PRESENTATION: September 2005 GAO Report <ul style="list-style-type: none">• Sherry McDonald, Natural Resources and Environment, U.S. Government Accountability Office |

| | |
|-----------------|---|
| | PRESENTATION: U.S. Army Corps of Engineers Response |
| | <ul style="list-style-type: none">• Bob Brumbaugh, Institute for Water Resources, U.S. Army Corps of Engineers |
| 11:25 - 11:40 | Questions & Answers |
| 11:40 – 12:40 | LUNCH (provided) |
| 12:40 – 1:40 pm | CURRENT AND FUTURE STUDIES ON THE CHARACTER & PERFORMANCE OF MITIGATION |
| | PRESENTATION: Mitigation Practices on the Ground |
| | <ul style="list-style-type: none">• Steve Martin, U.S. Army Corps of Engineers, Norfolk District |
| | PRESENTATION: Performance of Mitigation on the Ground |
| | <ul style="list-style-type: none">• M. Siobhan Fennessy, Ph.D., Kenyon College |
| 1:40 – 2:40 | Questions & Facilitated Discussion |
| 2:40 – 3:00 | WRAP UP/CLOSING STATEMENTS |
| | <ul style="list-style-type: none">• Bob Brumbaugh, Institute for Water Resources, U.S. Army Corps of Engineers• Brian Frazer, Chief, Wetlands & Aquatic Resources Regulatory Branch, Wetlands Division, U.S. Environmental Protection Agency |
| 3:00 pm | ADJOURN |

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