



CHIEF OF ENGINEERS
ENVIRONMENTAL ADVISORY BOARD
WASHINGTON, D.C. 20314-1000 (CECW-P)

Lieutenant General Todd T. Semonite
Commanding General and Chief of Engineers
U.S. Army Corps of Engineers
441 G Street NW
Washington, DC 20314-1000

21 Sept 2018

Subject: Monitoring and Adaptive Management of US Army Corps of Engineers Civil Works
Aquatic Ecosystem Restoration and Mitigation Projects

Dear LTG Semonite,

The U.S. Army Corps of Engineers' (Corps) Environmental Advisory Board (EAB) is undertaking the task of assessing the Corps' implementation of monitoring and adaptive management (M&AM) for aquatic ecosystem restoration and mitigation projects. For the initial phase of the EAB's assessment, we herein outline our recommendation and rationale for the Corps to revise, approve, publish and disseminate the December 2011 draft technical guide: *A Systems Approach to Ecosystem Adaptive Management, CP2A 11-X*.

Section 2039 of WRDA 2007 required ecosystem restoration projects to include plans for monitoring success as well as contingency (i.e. adaptive management or AM) plans. Section 2036(a) of WRDA 2007, which amended Section 906(d) of WRDA 1986, also required M&AM for civil works compensatory mitigation projects. Section 2039 of WRDA 2007 was amended by Section 1161 of WRDA 2016, and updated Implementation Guidance was issued by Corps Headquarters in October 2017. The Corps is also required to provide an annual report to Congress on the status of completion of compensatory mitigation, which is verified through a project's M&AM program. Incomplete mitigation can cause delays in project close-out with implications to Corps budgeting in all business lines.

Despite the requirement to implement M&AM for mitigation and restoration projects, the EAB has discovered that there is a great deal of misunderstanding and confusion about the need, definition, approach and implementation of M&AM plans. Most everyone appears to understand the need for monitoring, especially as a tool for evaluating the success of aquatic ecosystem restoration (AER) projects. However, few project managers, especially those with engineering backgrounds, understand the importance of adaptive management and how M&AM is needed to reduce environmental uncertainties, identify the need for design and operational adjustments, and significantly increase the likelihood of an effective and sustainable outcome of an AER project.

In our initial review of M&AM implementation in the Corps, we have found considerable inconsistency in how M&AM is executed through the Corps' planning process. For example, project managers often do not fully grasp the importance of developing conceptual models, identifying critical scientific and engineering uncertainties, and incorporating testable hypotheses as essential tools to adapt restoration designs, reduce costs and increase the likelihood of success. As a consequence, achieving an appropriate M&AM plan is often

confused and extremely inefficient, and frequently results in undue time, wasted resources, and loss of good will among cooperating federal agencies and non-federal partners. That is why the EAB believes it is time to review the consistency, effectiveness, training, expertise, tools and guidance for the implementation of M&AM under the Corps' ecosystem restoration and mitigation responsibilities at the programmatic and project levels. We propose to organize the EAB assessment and recommendations in two phases.

Phase 1 Recommendation: We recommend that the Corps disseminate a revised version of the draft technical guide: *A Systems Approach to Ecosystem Adaptive Management, CP2A 11-X*, by the Adaptive Management Product Delivery Team (AMPDT). Subsequent to our original approach to this task, we realized that the AMPDT had assembled in the technical guide a preliminary analysis of M&AM practiced by the Corps that encompassed much of our original objective. Our comprehensive review of the draft technical guide and exposure to two of the three M&AM workshops put on by the AMPDT from August to October 2017, prompted this recommendation to support completion of CP2A 11-X. The EAB is impressed with how far the Corps has progressed with the AMPDT's identification of the key information and strategies for M&AM to be implemented under Section 2039 and 2036 of WRDA 2007, as amended. Our review of the draft technical guide finds that it could, with relatively modest revision, provide essential background, definitions and pathways to guide unambiguous implementation of M&AM in ecosystem restoration and mitigation projects. To facilitate that effort, **the EAB is providing the attached version of the technical guide with recommended edits and comments for consideration.**

The EAB encourages you to support the revision and publication of the 2011 draft technical guide, with the following suggestions to focus that revision:

- a. **Need to shorten and consolidate the document:** The document is far too long to be an effective guidance document for Corps staff that are implementing M&AM on a project basis. Some of that length involves mixing somewhat subjective policy/procedural aspects into constructive technical guidance. There is also considerable wordiness and redundancy throughout. Chapter 4 is really the meat of the technical guide, and elements of Chapters 1-3 could be synthesized to provide a comprehensive introduction for the context to that primary body of material. Much of the other material in Chapters 2-3 and perhaps all of Chapter 5 would be more appropriate in either the appendices, a separate policy white paper, or supplemental material available on a Corps website.
- b. **Separate policy commentary from technical guidance:** While we agree with much of the narrative about the Corps capacity to embrace adaptive management, the challenges to do so, and other policy observations, the EAB believes that these detract from the technical potency of the document. We recommend gathering those points together in a letter of transmission, or a policy white paper, when the final draft is submitted to your HQ.
- c. **Explicitly distinguish different types of Adaptive Management and describe when and how they should be implemented:** There is ambiguity in the distinction between what you might call "technical" (both active and passive) AM and what many scientists and policy experts describe as *collaborative AM*. While the authors accurately

distinguish the differences between passive and active AM, this distinction is not really sustained through the description of AM design and implementation.

Phase 2 Approach: Contingent upon the completion of the revised AMPDT technical guide, the EAB will provide complementary recommendations about how the Corps could operationalize M&AM more consistently and integrate it more effectively into planning and policy. Presently, the EAB considers much of the inconsistency in the Corps application of M&AM to be due to confusion about both the concepts and applicability of generic AM guidance to very different Corps ecosystem restoration and mitigation situations. While much of that lack of clarity could be resolved with revision and publication of the technical guide, the EAB may also recommend approaches to improve the Corps implementation of that guidance in its operation and policy. At this time, we are considering the following:

- a. Identifying different levels of need for M&AM could be best addressed by differential use of adaptive, passive and collaborative AM;
- b. Advancing risk informed decision making to determine which level/type of M&AM is required, consistent with the May 2018 Director's Policy Memorandum, DPM CW 2018-05, RE: Improving Efficiency and Effectiveness in Civil Works Project Delivery;
- c. Recommending effective approaches to training and advising Corps staff in consistently and rigorously applying M&AM; and,
- d. Promoting informative opportunities for 'adaptive learning' by all levels of Corps staff, as well as collaborating federal and state agencies and stakeholders, by exposure to the process and findings from M&AM case studies.

The lead members on this task were Dr. Fred H. Sklar and Professor Charles ("Si") Simenstad. We look forward to working with your staff to implement our recommendations for improvements in the efficacy of the Corps implementation of mitigation and adaptive management.

Sincerely,



Rollin H. Hotchkiss
Chair, Environmental Advisory Board

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