

Characterization, Design, Construction, and Monitoring of Mitigation Wetlands

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**Prepared by
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Mitigation Wetlands Team**

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EXECUTIVE SUMMARY

Once considered wastelands, natural wetlands are now recognized as valuable ecosystems that provide wildlife habitat, enhance water quality, control floods and erosion, provide recharge to aquifers, and offer recreational areas. By the 1980s as much as 50% of the original wetland resources in the United States had been lost and was disappearing at a rate of 300,000–400,000 acres per year (NRC 2001). No-net-less policies enacted through the Clean Water Act (CWA) and state directives are designed to halt the nation's loss of wetlands. The purpose of this document is to provide a single comprehensive technical guide for regulators, environmental professionals, or permittees to use to appropriately characterize, design, construct, and monitor any compensatory mitigation wetlands as part of any federal, state, or local permitting requirement, regardless of type, size, or location.

The CWA, a 1977 amendment to the Federal Water Pollution Control Act of 1972, regulates discharges of pollutants into U.S. waters, including wetlands. Under Section 404, the CWA requires permits for actions that may negatively impact or degrade natural wetland functions. As part of the Section 404 permitting process, sequencing of mitigation is required to include avoidance, minimization, and compensatory actions.

While the rate of wetland loss has decreased over the past 20 years, only about 30%–50% of mitigation wetland projects are considered successful in replicating the values and functions of original wetlands. The Interstate Technology & Regulatory Council (ITRC) Mitigation Wetlands Team believes that mitigation wetland projects can be improved to help ensure their success. This guidance offers a unique flow diagram that illustrates the decision points in the overall mitigation process: assessing original wetland functions; defining goals and objectives based on mitigation option selections; and designing, constructing, and monitoring mitigation wetlands. To promote the long-term sustainability of mitigation wetlands, this guidance provides developers, consultants, regulators, and communities with example checklists for evaluating and documenting habitat health and measuring other performance criteria of mitigation wetlands. Through this guidance the team does not intend to affect policy, change regulations, or disregard past experience. This guidance is intended to identify and simplify the technical elements of sound characterizations, design, construction, and monitoring of wetlands mitigation projects.

Spurred by a National Research Council report on failed mitigation wetland projects, the U.S. Army Corps of Engineers and others have developed a National Mitigation Action Plan (MAP) to further achieve the no-net-loss goal by improving ecological performance of mitigation wetland projects. In accordance with the recommendations of the MAP, the ITRC Mitigation Wetlands Team supports increased use of functional assessments of original and mitigation wetlands relative to the complex interrelationships in a watershed. To lay the foundation for sound mitigation planning, the guidance argues for a thorough assessment of the wetlands being disturbed or impacted to understand the hydrology, soil, and plants and how they interact to affect the functions or values provided by the wetlands. A thorough assessment of the original wetland leads to the establishment of goals and objectives for the mitigation wetlands.

Another step in mitigation planning is identifying performance standards for the restored or created wetland. Performance standards are measurable metrics for determining whether the mitigation wetland is achieving its planned goals. Standards relate to measures of the three major

parameters of a wetland: water, soil, plants. Although this guidance document does not recommend specific performance standards, it does provide practical advice for designing, building, and monitoring a restored or newly created wetland.

One issue the guidance addresses is the siting of mitigation wetlands. The guidance prefers on-site, as opposed to off-site, mitigation, i.e., placing the mitigation wetlands adjacent or close to the original wetlands. However, the decision should be based on the best way to replicate the functions or values of the original wetland and an objective evaluation of the likelihood of success, ecological sustainability, practicality of long-term monitoring, overall benefits to the watershed, and relative costs of maintenance.

Mitigation banking as a method of achieving wetland mitigation is discussed. Mitigation banks are generally large wetlands that are restored, enhanced, or created to provide mitigation for smaller wetland impacts. Permittees can purchase wetland credits from an established bank in lieu of doing mitigation themselves. By purchasing existing credits, the permittee does not have any responsibility for the monitoring or maintenance of the wetland. Complicating the issue of achieving successful mitigation is the complexity of the regulatory climate. Regulatory authority is often divided among federal, state, and sometimes even local government. The guidance recognizes the benefit of federal authorities to oversee larger watersheds but also supports local protection in meeting the needs of local communities and environments. The ITRC Mitigation Wetlands Team recommends that where multiple agencies are involved, the guiding principle should be communication and coordination. Multiple authorities should work together in establishing mitigation requirements, instead of relying on applicants to coordinate among various authorized agencies.