**Principles for Verifying Wetland Restoration Projects**

Updated for July 1, 2013 due date

**Background**

Situated between the land and the water, wetlands act as buffers by slowing the flow of pollutants into the Bay and its tributaries. As polluted stormwater runs off the land and passes through wetlands, the trees and grasses in wetlands filter and absorb nutrients, suspended sediments and chemical contaminants before these pollutants can flow to nearby waterways.

Countless wildlife species that live in the Chesapeake Bay watershed depend on wetlands for their survival.

* + - * Tidal wetlands are a winter home for waterfowl that visit the Chesapeake Bay as they migrate along the Atlantic Flyway.
      * Muskrats, wading birds and other wildlife rely on wetlands for food and cover.
      * Many commercially valuable species of fish and shellfish use wetlands as spawning or nursery areas.
      * Thousands of aquatic species, including worms, snails, insects, mussels, tiny crustaceans and reptiles and amphibians, thrive in wetlands. In turn, larger animals depend on these small aquatic species for food.
      * Wetlands are economically valuable because they provide opportunities for fishing, crabbing and hunting. Since they are habitat for commercially important fish and shellfish, wetlands are vital to the health of the Chesapeake Bay's commercial fishing industries.
      * Additionally, many people visit wetlands for popular hobbies and family activities such as boating, bird watching, photography and wildlife study.

***Goals***

During the period 2011-2025, the goal is to restore 30,000 and enhance 150,000 acres of tidal and non-tidal wetlands across the Chesapeake Bay watershed. It should also be noted that the jurisdictions’ WIP goals for wetland restoration BMP implementation totals approximately 83,000 acres between 2012 and 2025 for the agricultural sector, which is more than double the 30,000-acre wetland restoration goal set forth in the Executive Order. In cooperation with other GIT Working Groups and Chesapeake Bay partners, another goal is to protect an additional 225,000 acres of wetlands within the entire Chesapeake Bay Watershed.

Both restoration and enhancement are intended to provide a range of living resource (including American black duck) and water quality benefits. Restoration and creation, which result in actual gain of wetland acreage, are tracked separately from enhancement, which results in functional gains of existing wetlands, for purposes of clarity and accuracy.

***Protocol development process***

The workgroup members received a draft background document and were asked to describe their monitoring efforts; what level of project verification would be reasonable given existing resources; and what could be accomplished if more resources were available. Personal solicitation was also made to certain practitioners. Responses were received from NRCS, USFWS, Ducks Unlimited, USEPA, and New York State Department of Environmental Conservation.

These draft protocols/principles were revised and further developed based on feedback received from the BMP Verification Review Panel on December 6, 2012 and the Comparison Matrix of source sector and habitat workgroup BMP verification protocols. The wetland protocols/principles have also been reformatted and enhanced based on comments received in May 2013 during the Habitat GIT’s review and comment process.

**Principles for Verifying Wetland Restoration Projects**

The following series of principles should guide the wetland restoration project verification process in each of the seven Chesapeake Bay watershed jurisdictions.

1. Protocols will be implemented to verify not only the wetlands physical extent (acreage) and efficiency (nutrient uptake/sediment deposition), but also the sustainability of the wetlands for the life of the practice, which indicates their ability to provide function as designed. A wetland restoration practice has a 15 year lifespan; however, projects enrolled in WRP must be maintained in perpetuity. Most projects are designed to minimize long-term maintenance and, therefore, should remain effective for longer than 15 years
2. *Proper Project Siting for Success*. Planning and site selection criteria have a great influence on the success of projects. Projects should be located in areas suitable for wetland creation or restoration and to meet clear project objectives. This includes siting projects at locations with suitable hydrology, hydrophytic vegetation, and hydric soils.
3. *Practicality and Rigor*. The verification process needs to be practical with regard to available staff, time, and resources while still maintaining a certain level of rigor and integrity. Responses from practitioners indicate that monitoring would continue as before, unless other resources are provided. Wetland practices reported by the various agencies and organizations are compiled by a state-designated data steward and cross-checked for duplication.
4. *Initial Verification of Wetland Restoration Installation.* Sites will be visited after construction and planting to ensure that the project was completed as designed. The installing agency will need to provide a post-construction certification that the wetland restoration project was installed properly, meets or exceeds its functional restoration objectives, and is hydraulically and vegetatively stable, prior to submitting the project for credit in the state tracking database. The installing agency will need to verify that the project meets the state’s legal definition of a wetland (e.g., hydrophytic vegetation, hydric soils).
5. *Structural Inspection and Controlling Invasives*. Structural features (e.g. berms, water control structures) will be inspected for operational integrity. Invasive species will be managed to maintain desired plant species composition and abundance.
6. *Maintenance and Monitoring in Performance.* Regular inspections and maintenance of wetland restoration projects are critical to ensure their pollutant removal performance is maintained and extended over time, as well as to maintain other local design objectives (e.g., habitat improvement and landscape amenity). Therefore, a core verification principle is to ensure that wetland restoration projects are installed and maintained properly over their design life to qualify for their pollutant removal rates. To ensure this, verification protocols are needed to define (1) the frequency for field verification of wetland restoration practices and (2) the process for downgrades if maintenance is not performed. All qualifying projects must have a designated authority responsible for development of a project maintenance program that includes routine maintenance and long-term repairs. Monitoring is the actual part of verification which can be used to determine if the project is functioning as designed. If the wetland project is not functioning as designed, then the monitoring data may be used to identify factors such as improper construction or the need for maintenance.
7. *Utilize Existing Maintenance and Inspection Frameworks.* The existing 404 Permit/401 Certification inspection and maintenance framework and maintenance and inspection performed as part of state and federal agricultural cost-share programs in the Bay watershed should be the foundation of any wetland restoration verification system for the Bay TMDL. Routine maintenance data collected under these frameworks will ultimately inform the verification process. The Habitat Goal Implementation Team (Habitat GIT) will work with the state and federal regulatory agencies to determine how their existing maintenance and inspection programs can support the Chesapeake Bay Program.
8. *Wetland Restoration Verification as Adaptive Management*. The purpose of verification is to credit appropriately the pollutant removal performance of existing wetland restoration projects. Field assessments are used to identify which projects are still in place and functioning as intended and which ones require preventative or corrective maintenance to maintain their functions. In addition, field verification enables local governments to analyze their historical inventory of private and public wetland restoration projects to identify which individual projects present the best opportunities to retrofit for additional sediment and nutrient reduction. The assessment tools used in verification may also be adapted to allow local governments to determine if other wetland restoration objectives (e.g., habitat) are being achieved.

Real world data collected on actual wetland restoration performance enables local and state agencies to improve the next generation of projects in an adaptive management process. This process can isolate the specific site conditions, design features and maintenance tasks that influence wetland restoration longevity and performance, and incorporate these into improved design specifications, review and inspection procedures and maintenance requirements. Future wetland restoration expert panels would review such data to determine if these improved projects would qualify for a higher removal rate, and refine restoration methods and practices that ultimately ensure greater project success. NRCS conservation practice standards are reviewed every 5 years and updated if necessary. Updates could include revised design techniques to address new scientific findings, as well as changes in certification (i.e. certified as implemented according to the standard) procedures if existing procedures were determined to be inadequate.

1. *Wetland Restoration Reporting Must Be Consistent with CBP Standards.*  Each state has a unique system to report wetland restoration projects as part of their 404/401 permits. In some cases, states are still developing and refining their reporting systems. Consequently, it may not be possible or even desirable to implement a Bay-wide wetland restoration reporting format. However, to get credit in the context of CBWM progress runs, wetland restoration implementation data using CBP-approved rates or methods, reporting units and geographic location (consistent with NEIEN standards), and periodically updated data based on the local verification of projects in the field is needed. The Habitat GIT again will initiate discussions with regulatory agencies to determine how their operations may support this data reporting, with a goal of not increasing the burden to regulatory agencies.
2. *Recommended Cycle for Field Verification of Wetland Restoration Projects.* [Text from last wetlands draft states: “USDA-NRCS Wetlands Reserve Program (WRP) easements are monitored annually for three years, followed by an ownership review in the fourth year, and then three years of remote sensing review. Onsite monitoring would occur every five years after that. Monitoring may be more frequent if there are violations or if compatible uses of the wetland (e.g. prescribed grazing, habitat management) have been approved. However, many WRP projects occur in existing wetlands and count as enhancement, which does not have a BMP efficiency for nutrient removal. Conservation Reserve Program and Conservation Reserve Enhancement Program (CRP/CREP) projects are verified for correct installation. Annual monitoring is required for 10% of contracts. A fully implemented project is not subject to further status reviews, but a project that is not successful or has a problem may be monitored for two more years. All of these projects are implemented on private lands where landowners typically inspect the sites a few times throughout the year. Landowners contact NRCS regarding any problems noted during these inspections (e.g., structural failure or invasive species).”]
3. *Suggested Process for Wetland Restoration Project Downgrades.* ]
4. *Special Procedures for Wetland Restoration Projects Used for Offsets, Mitigation and Trading.* [Text in streams principles for this one states: “Some stream restoration projects are built to offset, compensate or otherwise mitigate for impacts caused by development elsewhere in the watershed. In other cases, stream restoration projects may be built for purposes of trading nutrient credits within a community or a state. Special procedures need to be developed in both cases to prevent double counting of practices.”]
5. *State Oversight of Local Wetland Restoration Reporting.* The installing agency must submit basic documentation to the appropriate state agency for each individual wetland restoration project installed. Localities should check with their state agency on the specific data to report for individual projects. Some typical reporting information includes: project identifier, county, watershed, project partners, drainage area, wetland type(s) by acreage, practice type and duration of protection mechanism.

In addition, the installing agency should maintain an extensive project file for each wetland restoration project installed (i.e., construction drawings, as-build survey, digital photos, post construction monitoring, inspection records, and maintenance agreement). The file should be maintained for the lifetime for which the load reduction will be claimed.

1. *Review and Verification of CBP BMP Accounting.* [Text from streams protocols states: The accounting methods and verification procedures used by the Bay Program must be clear and transparent so that local governments and the states can readily understand how the stream restoration projects they report are being used to calculate pollutant reductions in the Bay Model. Better communication among the Bay Program and its state and local government partners will help to improve BMP reporting and ensure a fair representation of State and local program implementation.]
2. *Public Confidence.* The process for verification of wetland restoration projects needs to be transparent and publicly accessible for all stakeholders to ensure confidence that these projects are implemented and continue to function as reported by jurisdictions. The verification process for NRCS practices are included in the conservation practice standards, which are publicly available. However, due to Section 1619 of the Farm Bill and other privacy concerns, information on individual projects is not publicly available.

References: