

# **Components of a Compensatory Mitigation Plan - Guidance for Developing Wetland and Waterway Mitigation in Maryland**

*This is intended to be a living document. Revisions may occur frequently, as mitigation policies (including decisions made as part of the Interagency Review Team) evolve.*

Developed by  
Maryland Department of the Environment

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This document contains guidance on developing a wetland or waterway mitigation plan that meets Code of Maryland Regulations (COMAR), Maryland Department of the Environment (MDE) policy, and the Components of a Compensatory Mitigation Plan 33 CFR 332.4(c)(2)-(14) for aquatic resource mitigation in accordance with the Federal Mitigation Rule adopted April 10, 2008 by the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) (33 CFR Part 332 and 40 CFR Part 230). MDE has developed this document to encourage consistency, equivalency, and predictability in the development and review of compensatory mitigation sites, including mitigation banks and permittee-responsible mitigation (PRM). **This document should not be interpreted as a guarantee that a mitigation site meeting these guidelines will be approved by MDE, USACE, and the Interagency Review Team (IRT), as MDE, the USACE, and the IRT must consider projects on a case-by-case basis. Additionally, this guidance may not reflect the policies of the USACE or the rest of the IRT.**

This document is applicable to the development of mitigation sites designed to provide compensatory mitigation in accordance with the Federal Mitigation Rule and COMAR for unavoidable impacts to Waters of the U.S. and Waters of the State, including streams, wetlands, and their functions, as a result of activities authorized under Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, Maryland Nontidal Wetlands Protection Act, Maryland Tidal Wetland Act, and Maryland Waterway Construction Act. It applies to mitigation banks and permittee-responsible mitigation.

All projects where mitigation is required by the USACE are required to meet the Federal Mitigation Rule standards. Projects where mitigation is not required by the USACE (e.g., some types of wetland conversion impacts) are not required to meet the Federal Mitigation Rule standards but must still meet COMAR and MDE policy.

The elements in this document are generally required as part of a complete mitigation plan.

## **1. Introduction/mitigation objectives**

A brief description of the location (Lat/Long), resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), amount of stream and/or wetland credits to be generated and how the anticipated functions of the mitigation project will address watershed needs.

What are the goals of the mitigation project? For PRM sites, mitigation goals should consider the replacement or improvement of the acreage and functions of the resources to be impacted by the permit. For all types of mitigation, the goals should also be based on a broader landscape perspective, addressing watershed needs. For example, if wetland impacts occur in a watershed that has a high need for water quality improvements, the wetland may be designed with the goal of providing nutrient and sediment reductions to the receiving waters. The goals and objectives of the mitigation project should be realistic.

## 2. Site selection

A description of the factors considered during the site selection process. This should include consideration of watershed needs, onsite alternatives where applicable, and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the mitigation project site. Please include any pertinent historical site information.

### Site Selection Requirements

Proper site selection is critical to mitigation success and may reduce the time required for mitigation approval. Selecting wetland mitigation sites using a watershed approach will improve mitigation success and site sustainability and better address opportunities for improving ecological functions in a watershed. The compensatory mitigation project site must be ecologically suitable for providing the desired aquatic resource functions. These recommendations do not replace permitting requirements for avoidance and minimization of adverse impacts to aquatic resources prior to considering compensatory mitigation. Please refer to [Appendix A](#)<sup>1</sup>: Site Selection Criteria of Wetland and Waterway Mitigation Sites.

The selected mitigation option should be based on what is environmentally preferable. According to the Federal Mitigation Rule, the environmentally preferable mitigation option should be based on “the likelihood of ecological success and sustainability, the location of the compensation site relative to the impact site and their significance within the watershed, and the costs of the compensatory mitigation project.”

### **2.1 Watershed approach for replacement of lost acreage and functions**

The watershed approach should be considered when evaluating mitigation options to ensure that the mitigation replaces lost acreage and functions. Banks are required to provide ecological justification for their service areas during the bank review process. Therefore, for projects proposing to use mitigation credits from a bank, when impacts are within a bank service area, it is assumed that a watershed-based justification has been provided.

Having onsite mitigation or a mitigation site within the same 8-digit state watershed<sup>2</sup> as the impact is generally preferable. Therefore, bank sponsors should evaluate which watersheds will have the most impacts, based on historic and predicted impacts, and strive to locate their proposed mitigation sites in these watersheds. For PRM, if there are no mitigation banks options<sup>3</sup>, the applicant should look for mitigation options onsite or within the same 8-digit state

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<sup>1</sup> Appendix A is located on the MDE Wetland and Waterway Program website at: <https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/Site-Select-Criteria-Mit.pdf>

<sup>2</sup> MDE tracks impacts and gains data by 8-digit state watershed and 8-digit Federal Hydrologic Unit Code.

<sup>3</sup> MD Statute requires a Permittee to consider environmentally preferable on-site mitigation options before considering a mitigation bank.

watershed. As demonstrated through a documented site search acceptable to the regulatory agencies, if no mitigation is feasible within this 8-digit state watershed, adjacent watersheds within the same major drainage area and physiographic province may be considered. However, use of mitigation outside of the watershed should only be considered when there is ecological justification that it will replace the lost acreage and function of the impacts. Additionally, mitigation further from the watershed of impact may require higher mitigation ratios. For example, mitigation in an adjacent 8-digit Hydrologic Unit Code (HUC) may require a higher mitigation to credit ratio. Consideration of mitigation sites should also include habitat connectivity, watershed needs, and compatibility with approved watershed plans/prioritizations (e.g., Watershed Resources Registry<sup>4</sup>).

For PRM, if there are no feasible mitigation options onsite or within the same 8-digit state watershed, as demonstrated through a documented site search acceptable to the regulatory agencies, the applicant may expand their site search to include the larger 8-digit HUC. Only when documentation is provided that indicates that no suitable mitigation banks/sites are available within the primary 8-digit HUC should mitigation be considered in an adjacent 8-digit HUC in the same river basin and physiographic region (e.g., coastal plain, piedmont, etc.).

Watershed-scale features and development trends should be considered in siting a mitigation project. Mitigation goals should address watershed needs for habitat protection, flood management, or water quality improvements as identified in the State Wildlife Action Plan<sup>5</sup>, Habitat Conservation Plan<sup>6</sup>, Watershed Resources Registry<sup>7</sup>, etc. The applicant should also consider environmental justice issues, including how the site selection may positively or negatively impact communities with a high percentage minority or lower income. An explanation of how the site selection addresses these watershed needs should be included with the bank prospectus or phase I mitigation plan.

As part of a Joint Federal/State Application for the Alteration of Any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland (JPA) for impacts to wetlands and waterways regulated by USACE and/or MDE, the applicant should determine the acreage and functions that will be lost from the proposed impacts. Mitigation should be in-kind to the maximum extent possible (e.g., palustrine forested wetland (PFO) impacts should be replaced with palustrine forested wetland mitigation). Proposed mitigation should replace the lost acreage and function. When evaluating a mitigation option, there should be consideration of whether the impacts will result in the loss of unique functions and resources that will not be replaced by using the top priority according to the standard mitigation order of preference. For example, if a project proposes to impact high quality trout habitat and the bank does not provide this function, it may be more desirable to do a PRM project that does replace this unique resource.

The site should be in a setting of comparable landscape position, hydrogeomorphic regime and climate, and physiographic province of the impacted wetlands and waterways to increase the potential that the mitigation site mimics the functions lost. For a mitigation bank, this should

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<sup>4</sup> [www.watershedresourcesregistry.com](http://www.watershedresourcesregistry.com)

<sup>5</sup> [https://dnr.maryland.gov/wildlife/Pages/plants\\_wildlife/SWAP\\_home.aspx](https://dnr.maryland.gov/wildlife/Pages/plants_wildlife/SWAP_home.aspx)

<sup>6</sup> <https://www.fws.gov/endangered/what-we-do/hcp-overview.html>

<sup>7</sup> [www.watershedresourcesregistry.com](http://www.watershedresourcesregistry.com)

include consideration of potential future impacts within the proposed service area and selecting a site that can replace those impacts. Mitigation should be in-kind (e.g., PFO mitigation for PFO impacts, tidal high marsh mitigation for tidal high marsh impacts, etc.). Wetland mitigation should not be used to compensate for stream and open water impacts and vice versa. The applicant or sponsor should consider what resources are being impacted, and mitigation should replace these functions. Some examples of resources that have unique functions that would need to be considered include vernal pools, Wetlands of Special State Concern, Tier II watersheds, Maryland Scenic and Wild Rivers, Important Bird Areas, Forest Interior Dwelling Species habitat, Green Infrastructure, SAV, Oysters, and anadromous fish migration routes and spawning tributaries. Restoration, enhancement, or preservation of streams should be of an order that is commensurate with that which is being impacted (as determined in the field). For example, if a first or second order stream is impacted, compensation should be located on a first or second order stream, where practicable.

## **2.2. Site connectivity**

The site should be well connected with the landscape to provide maximum function. Mitigation sites are ideally located adjacent to existing wetlands, streams, or 100-year floodplains whenever possible. Mitigation sites should also be located within or adjacent to existing higher quality natural resources (e.g., Green Infrastructure, Targeted Ecological Areas, Tier II, etc.) whenever possible to increase landscape connectivity and contribute to Maryland's conservation goals. These conservation areas are identified in the Watershed Resources Registry. Presence within or adjacent to existing protected lands, especially parkland, and/or providing public access/recreation/education opportunity are also encouraged. The site should contribute to the needs of the watershed. Compensation sites should be proposed adjacent to existing aquatic resources or where aquatic resources previously existed. Isolated or fragmented wetland mitigation areas are unlikely to be approved.

## **2.3. Mitigation type selection**

Some types of mitigation are preferable to others. To meet Maryland's goal of "no-net-loss" of wetland acreage and function, and strive for a net resource gain, the applicant should exhaust all options for restoration/creation or farmed wetland enhancement within the watershed before considering other types of wetland mitigation. When watershed-based mitigation is possible, but there is not enough acreage available to meet the required replacement ratios, for nontidal wetland impacts, the applicant may propose to replace lost wetland functions through a minimum 1:1 restoration/creation acreage replacement plus enhancement activities. For impacts to tidal wetlands, the applicant should follow requirements in COMAR 26.24.05.01. Bank sponsors should also consider mitigation type when selecting a mitigation project, as some mitigation types are more likely to be approved by the IRT and receive higher credit.

Each mitigation type option should be explored in the order shown below, and generally the first feasible option should be chosen (with the exception of stream establishment). *When there are multiple terms used, the terminology from the Federal Mitigation Rule is listed first, followed in parenthesis by terminology used in Code of Maryland Regulations. In cases where the federal and State terminology is the same, only one term is listed below.*

- Re-establishment (restoration). Returning areas that are not currently stream/wetland back to their natural/historic condition resulting in a gain in aquatic resource area and function. This is the preferred type of mitigation, as these projects often have the highest success rates and may result in the highest gains in aquatic acreage and function.

Example: WETLANDS: Area that was previously wetland is no longer a wetland but is being returned to wetland. For example, effectively drained wetlands in agriculture with tile drains/drainage ditches, having hydric soils, but not delineated as wetland. Applicant proposes to break tile drains, plug ditches, excavate micro-topography, and plant hydrophytic vegetation. STREAMS: Removing fill material to completely re-establish a stream channel.

- Establishment (creation). Converting areas that were never stream/wetland into stream/wetland, resulting in a gain in aquatic resource area and function. Stream establishment is generally not supported by the resource agencies or IRT. Wetland establishment is generally higher risk than re-establishment so should only be proposed where there is adequate hydrology.

Example: WETLANDS: Wetland constructed within upland that was never previously wetland.

- Rehabilitation (enhancement). Mitigation in areas that are currently stream/wetland, but where multiple major functions have been lost and are being restored. This results in a large gain of natural/historic aquatic resource function, but no gain in aquatic resource area or linear footage. Converting farmed wetlands back to natural wetlands, while considered rehabilitation, is one of the most desirable types of enhancement due to the high potential functional uplift and likelihood of success and is often more desirable than establishment.

Example: WETLANDS: Area that is currently delineated wetland, is only providing a few functions and restoration will restore overall functioning. For example, wetlands being intensively farmed, where applicant proposes to break tile drains, plug ditches, excavate micro-topography, add woody debris, and plant hydrophytic vegetation. For tidal wetlands, areas that have been severely degraded and are now mud flats/open water pockets, where the applicant proposes thin layer application of sediment and planting may be considered as rehabilitation. STREAMS: Area that is existing stream and applicant is proposing to restore four major stream functions: Floodplain connectivity, riparian buffer, in-stream habitat (installation of stream structures), and bank stabilization. For example, applicant proposes to remove legacy sediment to reconnect

the floodplain, exclude cattle and plant trees within riparian buffer, install structures to improve flow regime and stabilize eroded banks through bioengineering.

- **Enhancement.** Mitigation in areas that are currently stream or wetland and one or more existing major functions are being improved. This results in improvement in selected aquatic resource functions but may result in the decline of other aquatic resource functions. It does not result in gained aquatic resource area or linear footage. *Enhancement projects that are determined by MDE to have a low likelihood of long-term success will not be accepted as mitigation (e.g., removing certain types of invasive species).*

**Example:** WETLANDS: Existing wetlands dominated by *Phragmites* where applicant is proposing to eradicate invasive species and plant trees. STREAMS: Applicant excludes cattle and plants trees in the riparian buffer.

- **Preservation:** Protecting high quality streams or wetlands under threat of development.
  - Preservation of aquatic resources may only be used to provide compensatory mitigation pursuant with the Federal Mitigation Rule, 33 CFR 332.3(h). Preservation should only be given mitigation credit when: 1) the proposed site provides important environmental functions for the watershed, 2) the proposed site contributes significantly to the ecological sustainability of the watershed, 3) the regulatory agencies determine preservation to be appropriate and feasible, and 4) the site is under threat of destruction or degradation.
  - Preservation is generally a less desirable form of mitigation than restoration, creation, or enhancement since in the mitigation context, it results in overall loss of acre and function. It should only be used in conjunction with aquatic resource restoration, establishment, and/or enhancement activities and should only contribute a small percentage of total mitigation credits. For PRM, preservation should not be considered unless acreage replacement has been met through 1:1 mitigation and there are no other desirable mitigation options. Preservation may be considered more favorably for systems that support highly unique resources, as determined by the regulatory agencies, but these sites must still meet the Federal Mitigation Rule requirements for preservation. Preservation generally receives much less mitigation credit than restoration or creation and should be limited to less than 10% of the total mitigation credits for the project.
- **Out-of-kind:** When the above options are not feasible, the applicant may propose out-of-kind mitigation<sup>8</sup>. An example includes storm water management in older developments pre-dating the stormwater requirements (must be in addition to any stormwater management requirements) to satisfy stream mitigation requirements. These will be considered on a case-by-case basis and consideration will be given to how the proposed mitigation replaces the lost wetland functions and the needs of the impacted watershed.

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<sup>8</sup> The Federal Mitigation Rule discourages out-of-kind mitigation.

Ratios will consider functional uplift of the proposed project. Ratios for out-of-kind mitigation to compensate for tidal wetlands impacts may be increased by a factor of two<sup>9</sup>.

Mitigation should replace lost acreage and function of the impacted aquatic system. For example: forested nontidal wetland loss should generally be replaced by mitigating forested nontidal wetland. When impacts are proposed to unique resources (e.g., cold water species, vernal pools, Tier II, anadromous fish, etc.), the permittee should evaluate mitigation options that would replace these resources. For example, if a project proposes to impact vernal pools, the permittee should evaluate mitigation options that would restore, create, or enhance vernal pools. The bank sponsor should also consider the impacts expected to be lost in a certain service area and select/design their mitigation site to replace those resources. If the bank does not replace the lost resources, the bank may not be considered as mitigation for certain impacts. However, mitigation goals should also consider the broader landscape perspective. For example, if wetland impacts occur in a watershed that has a high need for water quality improvements, the wetland may be designed with the goal of providing nutrient and sediment reductions to the receiving waters.

Proposed mitigation sites will be evaluated based on the conditions currently present. For example, projects that are proposed on land that was recently withdrawn from Natural Resources Conservation Service Wetland Reserve Program (WRP) or Conservation Reserve Enhancement Program (CREP) will be considered as what they are currently, not what they were prior to the program enrollment. An exception may include projects that were approved and completed for the purpose of mitigation but were not originally reviewed as mitigation banks. If the regulatory agencies were involved in the review of the original project for the purpose of mitigation, this project may be evaluated based on the functional/acreage gain from what was originally present. For example, if an applicant got approval from the regulatory agencies to construct a large wetland mitigation site to satisfy compensatory mitigation for proposed impacts, but the mitigation was larger than was required for the original permit, they may propose the “extra” mitigation as a bank. Please note that even if a mitigation site was approved in the past as PRM, when the mitigation site is reviewed as a bank, it will still need to meet all the current banking requirements and follow the current IRT templates/standards. Approval of these projects may be considered at the discretion of the IRT. Therefore, the sponsor should understand that designing and constructing a mitigation project before coming through the official mitigation bank review process is taking a risk that it will not be approved by the IRT, or that significant remediation will need to be made to the project. Projects that are reviewed for purposes other than mitigation (e.g., Total Maximum Daily Load (TMDL), voluntary restoration, etc.) cannot later be brought in as mitigation projects. If an applicant is considering requesting mitigation credit for a project in the future, the project must be reviewed by MDE and the USACE as mitigation, and a mitigation plan needs to be approved before the site is constructed.

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<sup>9</sup> Based on COMAR 26.24.05.01.

## **2.4. Satisfying requirements of multiple programs**

The same credit of mitigation cannot be used to satisfy a state/federal wetland or waterway mitigation requirement and another program requirement (e.g., Forest Conservation, TMDL, etc.). The USACE and MDE, in consultation with the IRT when applicable, will consider projects where different program requirements are separated by: 1) location (e.g., stream and small riparian buffer are being used for TMDL while floodplain wetlands are being used for wetland mitigation), and 2) ledger accounting for mitigation banks (e.g., a 10-acre wetland site may be used to satisfy Forest Conservation and Maryland Nontidal Wetland requirements). However, once it is used/sold for one credit type, the same credit cannot be used/resold for another credit type. An exception may be considered when there are two program replacement requirements for the same impact. For example, when impacts are to a forested wetland impact within the Chesapeake Bay Critical Area, multiple programs may require mitigation for the same resource.

Credits may be used to compensate for environmental impacts under other programs (e.g., forest conservation, civil works, Superfund removal and remedial actions, supplemental environmental projects for state and federal enforcement actions, etc.). However, the same credits may not be used for more than one activity. For example, if a credit is used to offset impacts pursuant to a Department of the Army permit (DA permit) or State of Maryland Wetlands and Waterways Permit, that same credit may not also be used to confer any type of compensation for other purposes in relation to other programs, such as environmental enforcement, TMDL, etc. The intent to use the mitigation site for multiple programs must be clearly discussed in the concept and detailed mitigation submittals. Credit transactions must be clearly documented in the specific mitigation bank site ledger.

Mitigation projects cannot be completed on areas currently enrolled in a federal conservation funded programs (e.g., CREP, WRP). Areas that are currently enrolled in certain state or locally funded programs may also be problematic for mitigation (e.g., state BMPs) and eligibility for mitigation credit will be determined on a case-by-case basis. In most cases, before these areas could be considered for mitigation, they would need to be taken out of the other program.

## **2.5. Potential impacts to other resources**

Concerns about other relevant resources (e.g., historic properties and cultural resources, federal and state-listed rare threatened and endangered species and their habitats) proposed to be impacted by the mitigation project need to be identified and resolved. Avoid/minimize impacts to rare, threatened, and endangered species, historic resources, and other resources during site selection. While these issues may not be resolved during the initial stages of review, it is important to identify what the concerns may be and contact the applicable agencies early in the process, as these issues could significantly limit or kill the project. Prior to approval of the

mitigation site location, the MDE mitigation manager will request that the proposed mitigation site be screened by MDE's Regulatory Service Division, to confirm there are no existing resource "hits."

The establishment of this mitigation site should not have a significant impact to other ecologically important aquatic or terrestrial natural resources (e.g., upland forest, subtidal habitat, shallow water habitat, wetlands, waterways). Mitigation sites proposed in areas identified as important habitat for rare, threatened, and endangered plant and wildlife species may require more detailed review to reduce or eliminate impacts to these sensitive resources (although enlarging or enhancing these habitats may be encouraged). The higher the quality of the existing resource, the more important it will be to avoid the impacts. Mitigation projects that propose to clear or convert large areas of forest or fill in open water habitat are discouraged and may be denied, since it replaces one valuable habitat with another. Establishment of living shorelines should not be considered as mitigation.

Locating compensatory mitigation projects near airports is likely to attract wildlife species and pose hazards to aviation. All activities that may attract hazardous wildlife shall be consistent with the siting criteria and land use practice recommendations stated in Section 1-3 of the Federal Aviation Administration Advisory Circular 150/5200-33<sup>10</sup>.

## **2.6. Likelihood of success**

The proposed mitigation project should be likely to succeed in the near and long-terms, given the current and future site conditions. The project should be based on reference sites and what is appropriate for the proposed location. Restoration of wetlands is generally considered to be more feasible and sustainable than creation of wetlands. Enhancement of wetlands that are being actively farmed may also result in higher success. Sites that require large amounts of excavation are discouraged. Mitigation built on highly disturbed sites (e.g., old sand/gravel quarries) will require additional considerations to achieve success. For example, since soils may be completely depleted, large amounts of topsoil may need to be imported. Use of degraded or disturbed sites, surrounded by an extensively developed landscape, may only function as an impaired system requiring active management to support natural processes and native species. Consideration should be given to the existing invasive species on the site, including relevance to short and long-term success of the site. Wetland enhancement through control of invasive species should only be considered when it has a high likelihood of the long-term success, without long-term use of herbicides. If it is likely the invasive species will persist or re-establish after a couple years of invasive species control, the enhancement may not be sustainable and will not be given mitigation credit for the reduction of invasive species. There may be instances where some functional uplift can still be provided at the site, even without being able to control the invasive species. It is desirable to have realistic goals for the project, related to invasive species. For example, if a site is dominated by *Phalaris*, while it may be unlikely that this species can be

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<sup>10</sup> Document can be found at:  
[https://www.faa.gov/regulations\\_policies/advisory\\_circulars/index.cfm/go/document.information/documentID/22820](https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/22820)

eradicated, the design may include other elements that provide functional uplift (e.g., planting trees at a high density, adding microtopography, adding woody debris/logs, improving hydrology, etc.). While the site will not achieve the full function due to the persistence of *Phalaris*, it should still receive some mitigation credit for the functional uplift that is being provided. The project should be self-sustaining in the long-term and the goals of the project should be realistic.

The site should be positioned to have sufficient hydrology in the near and long term to support the proposed aquatic system. The system should be self-sustaining - avoid designing a system dependent upon water-control structures or other artificial infrastructure that must be maintained in perpetuity. For example, projects dependent upon artificial clay liners or flashboard risers are unlikely to be approved. However, the design may include structures that allow for hydrologic modification, if necessary (e.g., stable riprap outfall). The size and location of the compensatory mitigation site relative to hydrologic sources is inherent to wetland sustainability. A water budget verifying that there will be sufficient water available to sustain long-term hydrology should be provided. The water budget should include all applicable inputs (precipitation, surface-water, overbank flow, groundwater) and outputs (evapotranspiration, surface-water, groundwater) based on the landscape position. Calculations for how all inputs and outputs were determined should be included. The water budget should help estimate the depth, duration, and timing of water in the proposed wetland – the hydrograph. The wetland should be designed to have a similar hydrograph as your reference wetland. In absence of a good reference, the site should be designed to have saturation of the major part of the root zone (in the upper 12 inches of the soil profile) or ponding upon the soil surface for at least 12.5% of the growing season measured in consecutive days. Inundation greater than six inches in depth during the growing season should be less than 14 consecutive days<sup>11</sup>. For tidal wetlands, elevations are designed to be within range of reference elevations for proposed community (e.g., low marsh, high marsh, etc.). Designs should consider climate resiliency, including how sea level rise may convert aquatic communities. Consideration should be given to the effects of future development on the hydrology (e.g., will development of the surrounding area divert surface flow into stormwater management facilities, will new impervious surface increase storm flows through the stream). Natural hydrology is the most important factor in the development of successful mitigation. Sites with re-establishment of natural hydrology are more likely to succeed. Pay attention to soil characteristics to ensure they are appropriate to support hydrology and plant goals.

Applicants proposing nontidal wetland sites adjacent to streams should consider the effects of the stream on the long-term sustainability of the mitigation site. The applicant should consider if the stream will: 1) laterally migrate and cut into the wetland, 2) vertically down-cut, and reduce wetland hydrology and stream connectivity, or 3) deposit high amounts of sediment to the wetland during flooding. If the stream may negatively affect the mitigation site in the long-term, the applicant should propose how they will deal with these concerns. For example, if there is concern that the stream has a high sediment load that will drop a lot of coarse sediment into the floodplain wetland, the applicant may design an area upstream of the wetland to act as a sediment collection area. The long-term management plan would then need to discuss

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<sup>11</sup> An exception may be made for sites with hummocky microtopography, where hollows between hummocks may have more inundation. These sites will still need to meet performance standards, including for vegetation.

periodically dredging out this material.

If beaver activity is likely at the mitigation site, the design should account for this. For example, if there is beaver activity that may lead to stream lateral migration, you may want to include valley-wide grade control structures. The design should include back-up structures for if/when the beaver are no longer present. For example, if a beaver is currently providing in-stream grade control through a beaver dam, the design may also consider installing permanent grade control structures to prepare for a time when the beaver dam blows out or is abandoned.

There should not be concerns that surrounding land use or future plans will limit long-term success (e.g., pollutant sources, invasive species, future development, consistency with local planning documents, future upstream activities would cause increased channel forming discharge characteristics that cannot be addressed appropriately). For example, areas surrounded by *Phragmites* will likely require extensive invasive species management in perpetuity, which is not sustainable. Stream restoration within watersheds of high impervious cover are less likely to achieve fully-functioning biology. Ensure there are good buffers at the site. There should not be any known contaminants at or adjacent to the mitigation site that will limit the success of the project.

Mitigation sites should not be located over existing or proposed utility easements since the utility easement generally allows for vegetative maintenance/clearing/spraying in support of the utility. Mitigation sites should not be located within existing or proposed stormwater management facilities, since the maintenance requirements of the stormwater management facility (e.g., dredging to increase capacity) is not compatible with a self-sustaining mitigation site.

Surface drain plugs installed in the primary drainage path are likely to become unstable, even in low-velocity systems. Instead, consider using a weir spillway to elevate water levels. Alternatively, installing a shallow flow path in existing soil will generally be more stable than the ditch plugs, and will reduce flow to the ditch plug.

## **2.7. Buffers**

In general, nontidal wetland mitigation projects require protected buffers to provide sustainability and prevent degradation of the wetland. A minimum 25-foot nontidal wetland buffer width must be included, although a variable width buffer (i.e., 15 feet on one side and 35 on the other) may be allowed on a case-by-case basis due to physical constraints. Minimum buffer width for which mitigation credit may be earned is 25 feet from the wetland credit edge. The 25-foot wetland buffer will often receive additional credit, as assessed on a case-by-case basis based on the net benefit to the wetland ecological function. Considerations include the type of buffer establishment implemented (e.g., fencing out cattle, planting trees, regeneration, restoration, enhancement, preservation, etc.). The IRT or agencies may require buffer widths greater than 25-feet on a case-by-case basis (e.g., areas of steep slopes or highly erodible soil, Wetlands of Special State Concern, etc.), with additional mitigation credit provided. Proposed

wetland buffers on existing protected land (e.g., protected through forest conservation) may count toward the 25-foot wetland buffer requirement but will not get wetland buffer credit.

For tidal wetland mitigation banks and larger tidal wetland mitigation sites, a 25-foot wetland buffer will generally be required<sup>12</sup>. If the project is receiving critical area credit, it cannot also receive tidal wetland credit. For tidal wetland projects, if adequate justification is provided, mitigation credit may be proposed for buffer areas where wetland migration will occur.

All stream mitigation projects require protective riparian buffers. The minimum riparian buffer width that must be provided as part of the overall stream mitigation project is a 35-foot riparian buffer, although this buffer may be variable width (i.e., 25 feet on one side and 45 on the other to account for stream meandering). The first 35-foot buffer on both sides is considered an integral part of the stream mitigation work. Credit will be considered for additional proposed riparian buffer widths on a case-by-case basis for a maximum of 200 feet on either side of the stream. Areas cannot get both stream and wetland/wetland buffer mitigation credit. For example, if you are proposing to restore wetland adjacent to the stream, this area may get wetland credit or stream buffer credit, but not both. Stream buffers greater than 35 feet may be required in some cases.

The buffer may be used to meet other requirements (e.g., forest conservation, critical area, etc.) if it meets all requirements for those programs. However, if the buffer will be used for another program, no wetland or waterway mitigation credit will be associated with the buffer.

## **2.8. Site access**

There should be sufficient access for construction equipment. For example, steep slopes or surrounding forest may limit access by equipment and cause the mitigation project to be infeasible. Access paths should be designed to minimize tree removal. Areas disturbed due to access should be restored at the end of construction (e.g., trees cleared in the upland should be replanted, soils should be de-compacted to restore bulk density, etc.).

## **2.9. Potential for long-term protection**

The compensatory mitigation site must be protected in perpetuity through a real estate instrument or other available mechanism, as appropriate<sup>13</sup>. Site protection instruments (Section 3) must allow for periodic access by the bank sponsor/permittee, long-term steward, easement holder (if applicable), USACE, MDE, and IRT (for mitigation banks). A preliminary title report indicating any easements or other encumbrances and a title insurance policy insuring clear title to the bank

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<sup>12</sup> For tidal wetland mitigation that is not required by the USACE, a tidal wetland buffer may not be required.

<sup>13</sup> For tidal wetland mitigation that is not required by the USACE, a site protection mechanism may not be required.

lands must be provided with the phase I mitigation plan or bank prospectus review phase. A copy of the deed evidencing ownership and property assessment and warranty shall be provided at the phase II mitigation plan or draft mitigation banking instrument. A copy of the updated title report is required with the final phase II mitigation plan or mitigation banking instrument. Expand existing protected land where possible. Please consider allowing for public access to the mitigation site, especially if the resource provides recreational or educational opportunities.

All existing or planned easements/site protection mechanisms within or adjacent to the proposed mitigation sites should be identified and should be compatible with the mitigation site (e.g., utility easements, Forest Conservation Easements, etc.). It is generally not possible to get adequate site protection mechanisms over utility easements or stormwater management facilities. To protect additional land in Maryland, ideally the mitigation site would not already be protected. However, mitigation sites proposed on land with compatible existing site protection mechanisms may be considered, but an additional site protection mechanism containing language required by the USACE and MDE, in consultation with the IRT (for mitigation banks) may also be required (e.g., on land with existing agricultural easements).

### **3. Site protection instrument**

A description of the legal arrangements and instrument including site ownership, which will be used to ensure the long-term protection of the mitigation site. The order of preference for site protection is as follows: 1<sup>st</sup> Priority: Land owned or purchased then donated to third-party long-term land conservation steward (government agency or non-profit organization). 2<sup>nd</sup> Priority: Conservation easement placed on landowner's property with non-profit organization as easement holder. 3<sup>rd</sup> Priority: Deed restriction placed on landowner's property.

Site protection instruments<sup>14</sup> must include restrictive language found within the conservation easement template ([Appendix B](#)<sup>15</sup>) or Declaration of Restrictive Covenants (“DRC”) template for mitigation banks ([Appendix C](#)<sup>16</sup>) or PRM sites ([Appendix D](#)<sup>17</sup>). Proposed conservation easement holders must meet the criteria developed by the IRT ([Appendix E](#)<sup>18</sup>). While not required, it is desirable that the conservation easement holders have accreditation or are pursuing accreditation

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<sup>14</sup> For tidal wetland mitigation that is not required by the USACE, a site protection mechanism may not be required.

<sup>15</sup> Appendix B is located on the MDE Wetlands and Waterways Program website at:  
[https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/Corps\\_MDE\\_ConservationEasementTemplate.docx](https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/Corps_MDE_ConservationEasementTemplate.docx)

<sup>16</sup> Appendix C is located on the MDE Wetlands and Waterways Program website at:  
<https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/MBI-Corps-MDE-DRC-Template.docx>

<sup>17</sup> Appendix D is located on the MDE Wetlands and Waterways Program website at:  
<https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/PRM-Corps-MDE-DRC-Template.docx>

<sup>18</sup> Appendix E is located on the MDE Wetlands and Waterways Program website at:  
<https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/Stds-for-Conservation-Easement-Holders.pdf>

by the Land Trust Alliance<sup>19</sup>. The easement holder must be a tax-exempt qualified organization under Section 501(c)(3) of the Internal Revenue Code, must have executed a cooperative agreement with Maryland Environmental Trust (MET), and must provide experience/qualifications including incorporation history and information on past and present conservation easement activities. The MET web site also has a general environmental model conservation easement that can be referenced as needed by land trusts<sup>20</sup>. All site protection mechanisms must be approved by the regulatory agencies prior to recording.

Mitigation sites that are protected through a DRC are not as desirable, and as such may receive less credit. All long-term land stewards must provide the USACE, MDE, and the IRT<sup>21</sup> with 60 days advanced notice of any action by the agency or non-profit that might affect the bank.

The site protection instrument must be approved and recorded before any mitigation credit can be released for mitigation banks. The site protection instrument for a PRM site must be approved and recorded in advance of, or concurrent with, the activity causing the authorized impacts.

If the applicant is unable to secure a site protection mechanism over the project, the project cannot be used as mitigation. For example, an applicant may propose scrub-shrub wetland in an area under power lines. However, they are unable to get a site protection mechanism since the utility company has the right to manage the area for the utility line. This area cannot be used as mitigation.

#### Site protection requirements for government property

For mitigation proposed on government land, the site should be protected through a conservation easement or DRC, as discussed above. However, if this is not possible, the requirement may be met through alternative site protection mechanisms, including through a Conservation Land Use Agreement in coordination with revisions to the park Master Plan, Management Plans, etc. These agreements/revisions must include language identifying the site that is being used for mitigation and a statement that the site will be conserved and maintained to benefit the aquatic resources established as part of the mitigation project and specified in the MBI or phase II mitigation plan. The site protection mechanism must also ensure that the regulatory agencies have access to the site for compliance and enforcement of the site protection instrument, that all incompatible uses are prohibited, and that the site protection instrument includes a clause requiring 60 day notification to the USACE and MDE when there is a proposal to amend the site protection mechanism.

## **4. Baseline information**

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<sup>19</sup> For mitigation projects that propose to protect a site through an exceptional easement holder (e.g., meets all requirements of Appendix D including being accredited through the Land Trust Alliance), may receive up to a 5% bump in mitigation credits.

<sup>20</sup> [https://dnr.maryland.gov/met/Documents/PDFs/MET\\_ModelEasement.pdf](https://dnr.maryland.gov/met/Documents/PDFs/MET_ModelEasement.pdf)

<sup>21</sup> The IRT must be included in language within the site protection mechanism for mitigation banks.

A description of the ecological characteristics of the proposed mitigation project site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other characteristics appropriate to the type of resource proposed as compensation. The baseline information must include a delineation of waters of the United States on the proposed mitigation project site. Also include brief descriptions of existing and/or historical aquatic ecological communities.

Provide a map(s) labeled “existing conditions map” and include the following items:

- a) A vicinity map showing the mitigation project location, existing land use and zoning
- b) All existing streams, wetlands, 25-foot wetland buffers, and 100-year floodplains. *Delineate all streams and wetlands (include wetland data sheets) and obtain a delineation verification from USACE and MDE. For each stream, provide a name, linear footage and stream type (ephemeral, intermittent, perennial). For each wetland, provide a name, existing acreage and wetland type (e.g., PEM, PSS, PFO).*
- c) Existing contours.
- d) Property lines.
- e) Existing or planned easements within or adjacent to the proposed mitigation sites (e.g. utility easements, Forest Conservation Easements, etc).
- f) Locations of monitoring wells, piezometers, soil boring and tables/graphs with associated data.
- g) Forest boundary, specimen trees, relevant structures, fence lines, etc.
- h) A narrative discussing the current quality and proposed impacts for each aquatic resource (e.g., stream, wetland, 25-foot wetland buffer, and floodplain).

## 5. Determination of credits

Include a description of the number of credits to be provided including a brief explanation of the rationale for this determination. Nontidal wetland credit is currently based on standard mitigation ratios for nontidal wetlands ([Appendix F](#)<sup>22</sup>). However, an interagency workgroup, led by USACE, is developing a wetland functional assessment that may be used in the future to determine impact debits and mitigation credits. This effort is expected to be in effect around 2023, after a public notice period. Tidal wetland credits are generally determined on a case-by-

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<sup>22</sup> Appendix F can be found on the Wetlands and Waterways Program website at: <https://mde.maryland.gov/programs/Water/WetlandsandWaterways/Documents/Mitigation-Ratios-Nontidal-Wetlands.pdf>

case basis. However, mitigation ratios ([Appendix G](#)<sup>23</sup>) may be based on habitat type (e.g., PFO, PSS, PEM), with bank credit ledgers split accordingly. For this reason, when selecting and designing a project, it is important to consider the main types of impacts the mitigation site will be replacing. For example, if a mitigation bank is being proposed with a service area having high amounts of proposed forested wetland impacts, the mitigation bank should include mostly forested wetland. *Inclusion of some open water within a nontidal wetland restoration/creation may result in a more diverse system but will only get wetland credit if is less than 10% of the total site restoration/creation and is interspersed with the wetland as habitat pockets (e.g., not open water ponds). Berms should not be counted as wetland restoration/creation/enhancement credit. Credits may be reduced for systems that are unlikely to meet full performance standards (e.g., for invasive species). For these types of systems, management should still include methods to control the invasive species (heavy initial seeding, treat invasives, high tree density of larger material).*

Stream credits will generally be based on proposed functional uplift of the mitigation project. A Maryland interagency stream mitigation workgroup, led by USACE, developed Version 1 of a stream calculator to aid in the determination of stream debits and credits. Version 1 was put on a 30-day public notice starting February 28, 2022 and is currently in use for most stream mitigation projects. Based on feedback on Version 1 and ongoing stream mitigation workgroup discussion, the stream calculator may be adjusted in the future.

## **6. Mitigation work plan**

The mitigation work plan should include detailed written specifications and work descriptions for the mitigation project, including: the geographic boundaries of the project; construction methods, timing and sequence; source(s) of water, including connections to existing waters and uplands; methods for establishing the desired plant community; plans to control invasive plant species; proposed grading plan, including elevations and slopes of the substrate; soil management; and erosion control measures. For stream mitigation projects, the mitigation work plan may also include other relevant information, such as planform geometry, channel form (e.g., typical channel cross-sections), watershed size, design discharge, and riparian area plantings.

The mitigation design should be based on appropriate reference sites. The Mitigation Work Plan for nontidal wetland mitigation projects should include all elements of the Final Mitigation Plan Checklist (Phase II) [Appendix H](#)<sup>24</sup>.

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<sup>23</sup> Appendix G can be found on the Wetlands and Waterways Program website at: <https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/Mitigation-Ratios-Tidal-Wetlands.pdf>

<sup>24</sup> Appendix H can be found on the Wetlands and Waterways Program website at: [https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/PHASE-II\\_MITIGATION\\_PLAN\\_checklist.pdf](https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/PHASE-II_MITIGATION_PLAN_checklist.pdf)

## 7. Maintenance plan

A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

For tidal wetland mitigation, a Marsh Maintenance Plan should be provided that includes the following information, at a minimum:

- State Agency Interest number, Tidal Wetlands License number, and site address
- Date of inspections
- Project completion date. If the project has not yet been completed, please indicate the current status of the project and disregard the remaining requirements.
- Estimation of percent plant coverage by the dominant species. *This should show the percent coverage of native and non-native wetland plant species. If 85% coverage by native species is not obtained, please indicate the limiting factors to plant growth, and what steps will be taken to meet the 85% coverage requirement.*
- Identification of factors limiting establishment or maintenance of a healthy stand of wetland vegetation and identify the maintenance activities necessary to mitigate the resulting stress. *For example, if non-native, invasive species (such as Phragmites) have emerged and begun to crowd out the planted or volunteer native species, the invasive species should be physically removed or chemically controlled. If geese are preying on the plants, goose exclusion fence should be erected.*
- Photographs showing the current condition of the project

## 8. Performance standards

Ecologically based standards will be used to determine whether the mitigation project is achieving its objectives. Detailed performance standards typically required for nontidal wetland mitigation banks are included in [Appendix I](#)<sup>25</sup> and for PRM sites in [Appendix J](#)<sup>26</sup>. Performance standards for tidal<sup>27</sup> wetland banks are included in [Appendix K](#)<sup>28</sup>. Performance standards should be based on the goals of the mitigation site (e.g., fish passage). For aquatic systems that provide

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<sup>25</sup> Appendix I can be found on the Wetlands and Waterways Program website at: <https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/IRT-NT-Wetland-Buffer-Monitoring-Protocol-Bank.pdf>

<sup>26</sup> Appendix J can be found on the Wetlands and Waterways Program website at: <https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/IRT-NT-Wetland-Buffer-Monitoring-Protocol-PRM.pdf>

<sup>27</sup> For tidal wetland mitigation not required by the USACE, alternate performance standards may be required by MDE and Maryland Board of Public Works.

<sup>28</sup> Appendix K can be found on the Wetlands and Waterways Program website at: [https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/IRT-Tidal-Wetland-Buffer-Monitoring-Protocol-Bank-10\\_28\\_16.pdf](https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/IRT-Tidal-Wetland-Buffer-Monitoring-Protocol-Bank-10_28_16.pdf)

unique resources, different performance standards may be proposed as part of the MBI, or phase II mitigation plan review. For example, if the project proposes to decrease water temperature, water loggers should be utilized to monitor stream temperatures. If the site is designed to include vernal pools, monitoring may include: 1) verification that the pools are deep enough and inundated long enough to support desired species and 2) confirm presence of specific species. Reference sites may be considered as justification for alternative performance standards.

Remediation should be completed within a year of identifying the deficiency. Remediation measures (e.g., invasive species management, replanting, controlling encroachment, etc.), if required, should have been completed at least two full growing seasons prior to termination of monitoring to ensure the site is self-sustaining.

## 9. Monitoring requirements

A description of parameters monitored to determine whether the mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting monitoring results to the regulatory agencies must be included.

Mitigation monitoring reports must be submitted to the regulatory agencies following the schedule approved in the MBI, phase II mitigation plan, or tidal wetland permit/license. For banks, an electronic version of this report shall be submitted to the IRT co-chair(s) and uploaded to RIBITS<sup>29</sup> concurrently with this submittal. Monitoring of nontidal wetland and waterway mitigation sites will generally be required for a ten year period<sup>30</sup>, with monitoring reports due in years 2, 3, 5, 7 and 10. Starting at the end of the fifth year of monitoring, if the mitigation site meets all final year performance standards for two consecutive monitoring years, the sponsor or permittee may propose to terminate the active monitoring period and have all bank credits released (if applicable). The regulatory agencies and/or the IRT will use the submitted documentation, site visits, and best professional judgement to determine if this proposal is acceptable. Monitoring for tidal wetland mitigation sites will generally be for five years, with monitoring reports required annually.

Monitoring should follow all requirements in the applicable monitoring protocol ([Appendix I](#), [Appendix J](#), [Appendix K](#)), including for monitoring timeframes and monitoring reports. For nontidal wetland mitigation sites, a table summarizing all monitoring and performance standard requirements must accompany each monitoring report for banks ([Appendix L](#)<sup>31</sup>) and PRM sites

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<sup>29</sup> USACE's Regulatory In-Lieu Fee and Bank Information Tracking System website: [ribits.usace.army.mil/](http://ribits.usace.army.mil/)

<sup>30</sup> For nontidal wetland and waterway mitigation not required by USACE, the permittee may be required to submit annual monitoring reports to MDE for five years from the completion of construction of the mitigation site.

<sup>31</sup> Appendix L can be found on the Wetlands and Waterways Program website at:

<https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/Mit-Bank-Monit-and-Perf-Stand-Summary-Table.doc>

([Appendix M](#)<sup>32</sup>). If a monitoring report does not include a summary table with this information, it will be considered incomplete.

The sponsor or permittee is required to submit an as-built report/survey to the regulatory agencies within 60 days<sup>33</sup> following completion of the construction and planting for each mitigation site. The as-built report/survey will depict the completed portions of the mitigation site including a plan view of the constructed/restored wetlands/streams and adjacent buffers with locations of all permanent sampling stations, photo stations, and monitoring wells. In addition, the as-built report will include a survey showing finished grades, and, for stream projects – cross sections and longitudinal profile, including elevation of constructed structures (e.g., berms, weirs, etc.), planting zones, phases, and densities. The report will include a figure that provides a surface-to-surface comparison between the as-built elevation and the proposed (design) elevation. The report will describe, in detail, substantial deviations from the requirements described in the mitigation site plan and any revised credit breakdown requiring approval. The report will include photographs of the completed mitigation site taken from permanent photo stations. The wetland and/or stream as-built information, where applicable, will be used as a baseline measure for deviations from the approved mitigation plan, revised credit breakdown, and stream and wetland performance monitoring (e.g., channel stability). As-built information will be utilized as a reference in subsequent monitoring.

## **10. Long-term management plan**

A description of how the mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management. *For mitigation not required by USACE, long term management, other than site protection, is not required.* The detail and requirements of the long-term management plan may be dependent upon the size of the project, with larger mitigation sites requiring more extensive long-term management.

A template long-term management plan (LTM Plan) must be approved as part of the approval for the MBI, or phase II mitigation plan. Long-term maintenance requirements will be determined on a site-specific basis and will begin upon mitigation site closure. The long-term management will be the responsibility of the long-term steward, preferably a third-party nonprofit organization (NGO) or a governmental agency with a conservation mission. The long-term steward must be approved by MDE. If no alternative long-term steward is willing to accept responsibility for the mitigation site, then the sponsor or permittee (for PRM) will be the long-term steward. The long-term steward, as beneficiary of the long-term management fund (LTM Fund), will use the LTM Fund to finance the work required under the approved LTM Plan.

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<sup>32</sup> Appendix M can be found on the Wetlands and Waterways Program website at: <https://mde.maryland.gov/programs/Water/WetlandsandWaterways/AboutWetlands/Documents/Mit-PRM-Monit-and-Perf-Stand-Summary-Table.doc>

<sup>33</sup> For tidal wetland mitigation not required by USACE, the as-built plan should be included in the first annual monitoring report.

The MBI, or phase II mitigation plan should include realistic detailed cost estimates for long-term management. Estimates from two separate contractors may be required. The Nature Conservancy’s long-term stewardship calculator and handbook, located on the Nature Conservancy’s website<sup>34</sup>, should be considered to provide additional detailed cost estimates for the LTM Plan.

The MBI, or phase II mitigation plan must specify how the long-term management funds will be deposited and maintained (e.g., endowment, escrow, etc.), the estimated target rate of return (e.g., annual 4%), the inflation/administrative fee cost assumptions, etc. For the LTM Fund to have time to mature prior to being utilized after bank closure, the LTM Fund should be fully funded at least three years prior to bank closure (and the first withdrawal of funds for LTM). The LTM Fund must be fully funded at initial credit release or incrementally funded over the first five years (15%, 40%, 70%, and 100%).

## **11. Adaptive management plan**

A management strategy to address unforeseen changes in site conditions or other components of the mitigation project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan should tie the specific performance standards to actions (e.g., the site does not meet the hydrology requirement so should be re-graded, etc.). It is meant to guide decisions for revising mitigation plans and implementing measures to address foreseeable and unforeseeable circumstances that adversely affect mitigation success. The adaptive management plan may specify “trigger levels” and associated “potential management response”. It should be re-evaluated every couple of years.

## **12. Financial assurances**

A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with the performance standards.

For nontidal wetland mitigation not regulated by the USACE, the permittee will be required to meet COMAR 26.23.04.04(B), including providing a financial assurance conditioned upon the successful completion of construction<sup>35</sup> of the mitigation project according to the approved mitigation plan. For tidal wetland mitigation not required by USACE, according to COMAR 26.24.05.01(D), a bond shall be recommended to ensure that the mitigation is completed. The remainder of this section only applies to mitigation banks and for PRM also regulated by the USACE.

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<sup>34</sup> <https://www.conservationgateway.org/ConservationPlanning/ToolsData/Pages/stewardshipcalculator.aspx>

<sup>35</sup> Release of the financial assurance is dependent upon: 1) submittal of an as-built showing the site was built as depicted in the approved phase II mitigation plan, 2) a site visit by MDE to verify the site was successfully completed, and 3) revised GIS layer(s) showing the boundary of the constructed mitigation area (if this GIS layer differs from what was originally submitted).

The bank sponsor or permittee (for PRM projects) will use an acceptable funding mechanism (e.g., bond, escrow, endowment, etc.) to provide three separate financial assurances to ensure the overall success of the mitigation project: 1) construction fund, 2) maintenance and monitoring fund, and 3) long-term management and catastrophic event fund. All funds shall be placed in separate interest-bearing accounts at a federally insured financial institution. Proposed funding mechanism and rate of funding may differ but should be described clearly. Proposed funding mechanism should ensure at least a 4% return. An estimate stating the itemized tasks and associated dollar amounts required for each fund should be included in the MBI or phase II mitigation plan. For banks, these itemized analyses shall be based upon the MBI, the mitigation bank site plan, all anticipated tasks using approved methodology and must be approved by the chair(s), in consultation with the IRT, prior to approval of the MBI. For PRM projects, these itemized analyses shall be based upon the phase II mitigation plan, all anticipated tasks using approved methodology and they must be approved by the regulatory agencies prior to approval of the phase II mitigation plan. A third-party estimate may be required. *For PRM, the construction, maintenance and monitoring, and catastrophic event fund financial assurances must be in place prior to commencing impacts. The LTM Fund does not need to be fully funded until later (see Section 10. Long-term management).*

1) Construction fund. This financial assurance should account for all costs associated with providing replacement mitigation, including land acquisition, design, engineering, permitting, legal fees, mobilization, and construction. For banks, the construction financial assurance should be fully funded prior to commencement of construction and as a requirement of initial credit release. If no bank credits are requested prior to mitigation construction or if PRM is completed prior to impacts commencing, this financial assurance may not be required.

2) Maintenance and monitoring fund (MM Fund). This financial assurance should account for all costs associated with the required period of maintenance and monitoring (e.g., site inspections, installing/monitoring wells, installing/monitoring IRIS tubes, preparing monitoring reports, replanting, treating invasive species, repairing minor erosion, etc.). The cost-estimates need to have verification from an independent 3rd party estimate, for similar project costs in the area. The monitoring and maintenance/catastrophic event (inclusive of interim monitoring) financial assurance should not be funded through credit sales and must be fully funded upon construction completion and request for further credit releases.

3) Long-term management fund and catastrophic event fund (CE Fund).

a. Long-term management - The USACE, MDE, and IRT intends that mitigation sites and their functions and values be self-sustaining and not require any more long-term maintenance and monitoring than similar areas occurring naturally. A sufficient amount based on an itemized analysis of the funds necessary for long-term management shall be placed within a separate account to be called the long-term management fund. The itemized analysis of the necessary funds may include, but is not limited to, expected long-term management costs that are required after the initial monitoring period and mitigation site closure, such as posting, fencing, maintenance of structures, control of invasive species, and legal defense of any easements or restrictive covenants recorded to protect

the mitigation site. The long-term management endowment funding needed may be estimated using the calculator and handbook located on the Nature Conservancy's website. The fund must be fully funded prior to mitigation site closure. The MBI should detail how funding will occur (e.g., lump payments, etc.). To allow for earnings to accrue to increase the likelihood that the accounts will be sufficiently funded, the LTM Fund should be fully funded for at least three years prior to mitigation site closure. Additionally, the IRT may require an additional contingency amount (e.g., 10%). All LTM Funds must be used in accordance with the approved LTM Plan. The maximum amount of funds released annually shall not exceed 4% of the fund's value unless there is prior approval by the regulatory agencies.

b. Catastrophic events. The USACE and MDE intends that mitigation sites and their functions and values be self-sustaining and not incur any more catastrophic events than similar acreages, functions and values that exist naturally. This fund is intended to provide money to remediate damage caused by catastrophic events to systems that are not self-sustaining and that are likely more vulnerable to such damage because of their location, design and/or construction to ensure that they continue to provide adequate compensatory mitigation. This fund should be fully funded upon construction completion and request for further credit release. The MBI should detail how funding will occur (e.g., lump payments, etc.). No CE Fund monies shall be used to finance work or activities other than those repairs to the mitigation site necessitated by catastrophic events as defined in the MBI or phase II mitigation plan unless approved by the regulatory agencies. The CE Fund may be rolled into the MM Fund or the LTM Fund to allow more flexibility. However, use of the money would still need to be approved by regulatory agencies (for PRM) or IRT (for banks).

The LTM Fund and CE Fund will be transferred to the designated long-term steward of the land for use in addressing future land management requirements and catastrophic events once all monitoring has been completed, and all credits have been debited in the case of banks.

It is important that these accounts are adequately funded, through realistic estimates, to maintain the site in the future. The long-term steward shall get approval from the regulatory agencies prior to utilizing these funds other than for basic monitoring and maintenance, as described in the LTM Plan. Once these funds have been depleted, the long-term steward no longer has a financial obligation under the MBI or phase II mitigation plan to maintain the site, unless alternate arrangements have been made and agreed upon by the regulatory agencies and long-term steward (e.g., an easement holder managing the land through other funds).

The bank sponsor or permittee (for PRM) shall submit to the regulatory agencies a financial report by January 30th<sup>36</sup> of each monitoring year and every subsequent year until mitigation site closure. For banks, an electronic version of this report shall be submitted to the IRT co-chair(s) and uploaded to RIBITS concurrently with this submittal. The report shall contain information

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<sup>36</sup> An alternate deadline (e.g., December 31) may be proposed and approved as part of the MBI or phase II mitigation plan.

on the balances and yearly fees for the MM Fund, LTM Fund and CE Fund. After mitigation site closure, the long-term steward is responsible for submitting annual financial reports related to the LTM Fund and CE Fund.

### Financial assurance requirements for government bank sponsors and permittees

Government bank sponsors and permittees may propose to meet the financial assurance requirement through alternative measures<sup>37</sup>. These financial assurances should still provide fiscal resources necessary for site development, acquisition, construction, monitoring, maintenance, remedial measures, long-term management and catastrophic events. This may include a letter of commitment from high-level decision makers within the organization (e.g., the Secretary of a state agency or the County Commissioners) stating the sponsor's commitment to satisfy the mitigation requirements for mitigation obligations that have been accepted as part of the bank. The government entity should also discuss how they will ensure adequate funding will be provided in the future. This may be through establishing a realistic budget and setting aside contingency funds or establishing a dedicated funding stream.

## **13. Other information, as determined necessary by the USACE, MDE, or the IRT**

The regulatory agencies for the proposed mitigation project may require additional information to aid in their review of the mitigation proposal.

### **13.1. Coordination with other agencies**

Early in the approval process, the bank sponsor or permittee (for PRM projects) should contact Maryland Department of Natural Resources (DNR) Wildlife and Heritage Service, U.S. Fish and Wildlife Service (USFWS), and Maryland Historical Trust (MHT) to determine if sensitive resources (e.g., RTE species or historical artifacts) may be present at the proposed mitigation site. For mitigation proposed on agricultural land, the bank sponsor or permittee should also contact the local Soil Conservation District to identify any existing constraints on the property. It may also be appropriate to contact the county government early in the process. Results of these initial reviews (e.g., scoping letters by the agencies, iPAC report) should be included in the early submittals to the regulatory agencies/IRT (e.g., phase I mitigation plan, draft prospectus). If the sponsor or permittee is aware of other issues, they should also contact the applicable agencies to screen the project. For example, if a project is near an airport, they should contact the representative from that airport. *PRM mitigation that is on-site may not need to contact these agencies separately if the site was already screened during the JPA process.*

Contact information:

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<sup>37</sup> For nontidal wetland mitigation not required by USACE, government entities are not required to provide financial assurances according to COMAR 26.23.04.04(B).

**DNR Wildlife and Heritage Service:**

The sponsor or permittee should contact DNR for environmental review. Information is listed at: [https://dnr.maryland.gov/wildlife/Pages/plants\\_wildlife/er.aspx](https://dnr.maryland.gov/wildlife/Pages/plants_wildlife/er.aspx). DNR can then determine if more extensive environmental review is appropriate.

*Contact:* Lori Byrne  
Department of Natural Resources  
Wildlife and Heritage Service  
Tawes State Office Building, E-1  
580 Taylor Avenue  
Annapolis, Maryland 21401  
410-260-8573

**USFWS:**

The sponsor or permittee should utilize the IPaC website to do project review at: <https://www.fws.gov/chesapeakebay/EndSppWeb/ProjectReview/Index.html>.

**MHT:**

The sponsor or permittee should refer to the MHT Project Review Fact Sheet and use the Project Review Form located on the MHT website (<https://mht.maryland.gov/projectreview.shtml>). This will help the sponsor or permittee to send a complete package, allowing MHT to provide faster feedback.

*Contact:* Beth Cole  
Maryland Historical Trust  
Project Review and Compliance  
100 Community Place  
Crownsville, Maryland 21032

**Maryland Critical Area Commission:**

Mitigation projects proposed within the Chesapeake Bay or Atlantic Coastal Bays Critical Area should contact the Critical Area commission.

*Contact:* Claudia Jones  
Maryland Critical Area Commission  
1804 West Street, Suite 100  
Annapolis, Maryland 21401  
[claudia.jones@maryland.gov](mailto:claudia.jones@maryland.gov)  
410-260-3482

**13.2. Permits required for a mitigation site**

It is the responsibility of the entity constructing the mitigation site (e.g., sponsor for bank or permittee for PRM) to get any applicable permits or licenses for their proposed site. Most

mitigation projects require MDE and/or USACE authorization for impacts to wetlands, 25-foot wetland buffers, floodplains, and waterways. During a pre-application meeting with MDE and the USACE, the agency reviewers will determine if an authorization is required for the impacts to the mitigation site and will specify the process. For a bank, this may mean that the sponsor should submit the JPA to MDE Regulatory Services Division, usually at the same time as the draft mitigation banking instrument. For PRM projects, the authorization for the impacts at the mitigation site may be approved as part of the original permit or as a modification to the original authorization. Detailed instructions for submitting a JPA are included on the MDE Wetlands and Waterways Program website<sup>38</sup>. If the project requires USACE authorization, MDE will forward the JPA to the USACE. If an MDE or USACE authorization is required for the wetland and waterway impacts, this authorization must be issued prior to signing of the final MBI. Most projects also require additional permits (e.g., grading, erosion and sediment control, stormwater management, Notice of Intent, etc.). All required permits/licenses for the mitigation project, including any applicable federal, state, or local permits, must be acquired prior to construction of the mitigation site and release of mitigation bank credits.

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<sup>38</sup> <https://mde.maryland.gov/programs/Water/WetlandsandWaterways/PermitsandApplications/Pages/index.aspx>