



Restoration Guidance for Streams with Adjacent Wetlands in Piedmont and Coastal Plain Regions

Guidance

Wetlands and Waterways Protection Program

Maryland Department of the Environment

Wildlife and Heritage Service

Maryland Department of Natural Resources

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Training Modules for Guidance for Stream Restoration with Associated Wetlands

This training consists of the following modules:

Module 1: Background and General Standards

Module 2: Pre-application Planning and Site Identification

Module 3: Use of the Ecological Integrity Assessment for
Key Wildlife Habitats

Module 4: Design and Performance Standards

Module 5: Construction and Post-construction



Module 1:

Background and General Standards



Need for Additional Guidance

- **MD and Jurisdictions Must Meet Load Allocations to Reduce Sediments and Nutrients under Chesapeake Bay TMDL**
- **Stream Restoration is a Practice Eligible for Credit towards Reducing Sediments and Nutrients**
- **Guidance and Assessments Are Additional Tools to Be Used with Other Rules for Decision Making**



Observations

Most stream restoration projects are in highly degraded areas and authorized with short review time

Existing stream and adjacent wetland habitat condition has been a concern in some cases where stream restoration has been proposed

Review is extended if there is debate about degradation and potential loss of existing resource benefits



Background

- **The potential problems do NOT always occur in all cases.**
- **This effort is intended to address the unintended consequences of projects with a design or construction which may not be appropriate for a specific site.**
- **Expands and updates work under previous grant in Upper Coastal Plain/Western Shore, completed in 2021.**



Background

- **Stream restoration increases floodplain inundation, and potentially water quality improvement (According to data, not in all cases)**
- **Function most frequently and adversely affected is wildlife habitat**
- **Loss of riparian forest, increase in temperature, lowered DO, lowered pH**
- **Other goals which may be adversely affected:**
 - **Riparian forest, fish passage, stream health, wetlands**



Background

- **For successful stream/riparian corridor restoration, both a stable, connected stream channel and fully functioning riparian areas, including wetlands, are required**
- **Fully functioning stream/riparian corridors are dominated by appropriate native vegetation; natural patterns of surface and groundwater inundation and saturation, and intact, non-compacted soil profiles**



Background

- **Stream restoration projects are intended to improve water quality and increase floodplain inundation**
- **Focus then of this assessment and guidance is on habitat characteristics**



General Standard Recommendations

- **Design to support other Chesapeake Bay Agreement goals beyond nutrient and sediment reduction:**
 - **Stream health, improving IBI scores, riparian forest buffer, fish passage, and wetland acreage and functional gains.**
- **Do not increase flood levels on adjacent properties without permission of the affected landowners.**
- **Aquatic life should be able to pass through, over or around instream structures at base flow**



Flow around and over structures



Photo: MDE



Flow through structure – beaver dam analog



Photo courtesy Biohabitats



General Standard Recommendations cont. Climate Change

- Upland management for stormwater are recommended when discharges are degrading stream
- Designing for extra quantity control in uplands also helps with climate resiliency, water quality, and reducing flood hazards
- Use “cooling” BMPs where possible – riparian forest, infiltration
- Also may allow for watershed management credit under MS-4 permit
- Reducing discharges may allow for some natural recovery
- Reduce need for extensive alteration of floodplains



Next Steps

Recommendations Welcome for:

- **Additional Practices to Protect Wetland/Riparian Areas**
- **Format/Ease of Use of Forms**
- **Assessment**

Recommendations to be Considered for Future Revisions in 2024

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