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

Presented to:

Chesapeake Bay Program Stream Health Work Group

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December 15, 2023

This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement CD 963623-01-3 to the Maryland Department of the Environment.

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

Background

- 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/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 That Can Be Adversely 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

New Tools

Assessment and guidance prepared by MDE and Department of Natural Resources Wildlife and Heritage Service.

Separate assessments tailored for Piedmont and Coastal Plain

Single guidance document

- **General standards**
- **Special regional recommendations and considerations**

Ecological Integrity Assessment for Key Wildlife Habitats (KWH)

- **Key Wildlife Habitats are described in the Maryland State Wildlife Action Plan.**

- **The habitats are based on vegetation communities that are associated with certain wildlife species. The habitats are characterized by factors such as physiography, geology, hydrology, climate, soil composition.**

- **The wildlife using these habitats are rare, in decline, or under threat of decline and are indicative of the diversity and health of the State's wildlife. These are considered to "Species of Greatest Conservation Need."**

Components of Assessment

Evaluated all nontidal KWH in physiographic region with streams and wetlands.

Areas included:

- **Streams with floodplains**
- **Groundwater-dominated wetlands with small channels**

Characterization is primarily by plant composition

Examples of Key Wildlife Habitat Types with Streams in Coastal Plain

Some Systems Are Dominated by Groundwater***
System Dominated by Precipitation and Perched**

<u>Nontidal Wetland Key Wildlife Habitats Associated with Headwater Streams:</u>

Vernal Pool, *****
Coastal Plain Seepage Bog and Fen***
Coastal Plain Flatwood and Depression Swamp**
Coastal Plain Seepage Swamp***
Spring***

<u>Key Wildlife Habitats Associated With Larger Rivers:</u>

Coastal Plain and Blackwater streams

<u>May be Primarily Upland or Wetland, and May Contain Vernal Pools:</u>

Coastal Plain Floodplain

Except for Coastal Plain Seepage Bog and Fen, Current Composition is Primarily Forested

Examples of Key Wildlife Habitat Types with Streams in Piedmont

Some Systems Are Dominated by Groundwater***
System Dominated by Precipitation and Perched**

<u>Nontidal Wetland Key Wildlife Habitats Associated with Headwater Streams:</u>

Vernal Pool, *****
Montane-Piedmont Acidic Seepage Swamp***
Piedmont Seepage Wetland***
Montane –Piedmont Basic Seepage Swamp***
Piedmont Seepage Swamp***
Spring***

<u>Key Wildlife Habitats Associated With Larger Rivers:</u>
<u>Montane-Piedmont Floodplain</u>

<u>May be Primarily Upland or Wetland, and May Contain Vernal Pools:</u>
Montane-Piedmont Floodplain

Except for Piedmont Seepage Wetland, Current Composition is Primarily Forested

Components of Assessment

Assessment includes manual describing:

- Key to KWH. Cross-walk to HGM wetland type

- Landscape office assessment and information sources, including Watershed Resources registry

- Proximity to stressors and designated high quality habitats.

- Bonus points added for high quality areas (e.g. rare species)

Components of Assessment

Field component

- **Wetland hydrology, soils, vegetation**
- **Maximizes use of information collected during wetland delineation**
- **Basic indicators of stream channel erosion and channel condition**
- **Allows for incorporation of more detailed channel metrics e.g. BEHI, NBS, FBRSA, connectivity to floodplain**

Components of Assessment

Field forms in various formats available by end of December 2023

- **Paper/digital**
- **Paper/digital with instructions from larger manual**
- **Excel-based forms which auto-populate fields from delineation into assessment, and do automated calculations**
- **Intent is to maximize use of information already collected**

Result is condition score for specific KWH

Guidance

- Background
- KWH Key
- Pre-construction Planning and Site Identification

  - Focus on degraded areas

  - If in high quality habitat, design and construct project to support high quality habitat

- Pre-design Assessment and Monitoring

  - Information sources

  - Stream and riparian assessment

Guidance

- **Pre-application**

- **Using Results of KWH Ecological Integrity Assessment**

  - Recommendations based on degree of channel and hydrology degradations and riparian wetland condition

  - Level of degradation in channel does not always degree of degradation in adjacent wetlands, particularly groundwater dominated wetlands

  - Recommendations limit alteration of higher quality adjacent wetland area

Guidance

Design Standards and Considerations

- **Special appendix for karst landscapes**
- **Fish passage**
- **Conversions of stream channels and adjacent wetlands**
- **Channel features**
- **Minimization**

Guidance

- **Construction:**
  - **Equipment**
  - **Access**
  - **Tree retention**
  - **Stabilization**
- **Performance Standards**
- **Vegetation Performance Standards**
- **Special Habitat Standards**

Guidance

- Post-construction
- Temporary impacts (wetlands)
- Monitoring
    - Structural
    - Biological
- Maintenance

Next Steps

- Posted on MDE web page
- Online training manuals. Narration to be added.
- Field training anticipated
- Test period over next year with revisions in 2024

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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