Maintaining Forests in Stream Corridor Restoration and Sharing Lessons Learned

URBAN STORMWATER WORKGROUP MEETING

7/19/2022

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Agenda

1. Project Overview
2. Summary of Best Practices
3. Programmatic and Research Recommendations
4. Next Steps

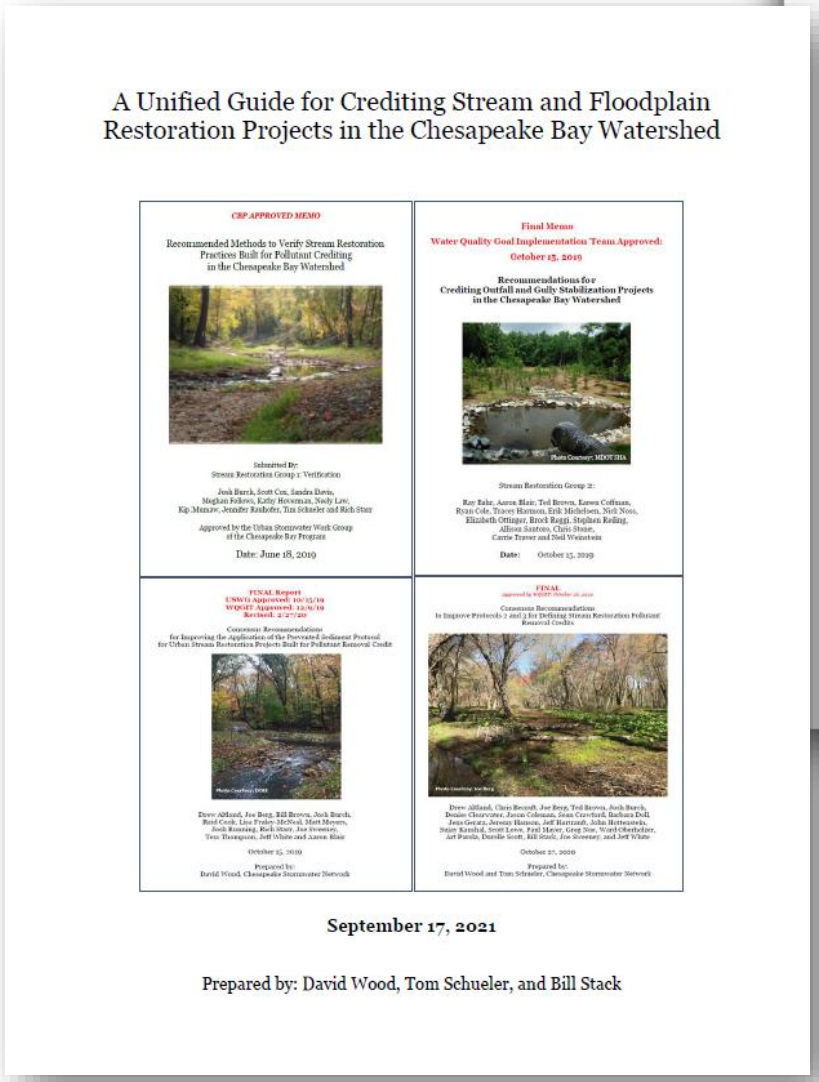
Project Overview

CBP Stream Restoration Crediting Protocols

- Credits contributed as a driver for implementation of stream restoration projects.
- Often, other benefits and consideration of projects beyond nutrient and sediment load reduction were lost.
- The updated protocols help to address stream health more comprehensively.

266 miles implemented since 2010.

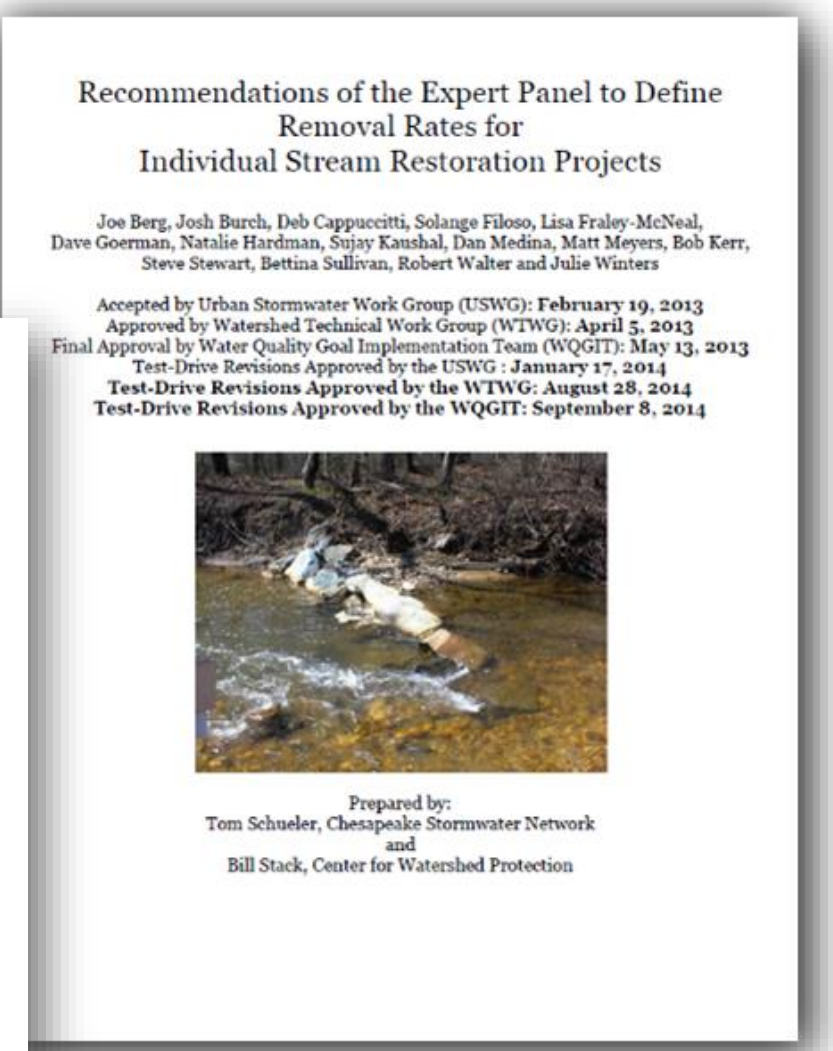
84 additional miles planned as reported in the Phase 3 WIPs.



A Unified Guide for Crediting Stream and Floodplain Restoration Projects in the Chesapeake Bay Watershed

September 17, 2021

Prepared by: David Wood, Tom Schueler, and Bill Stack



Recommendations of the Expert Panel to Define Removal Rates for Individual Stream Restoration Projects

Joe Berg, Josh Burch, Deb Cappuccitti, Solange Filoso, Lisa Fraley-McNeal, Dave Goerman, Natalie Hardman, Sujay Kaushal, Dan Medina, Matt Meyers, Bob Kerr, Steve Stewart, Bettina Sullivan, Robert Walter and Julie Winters

Accepted by Urban Stormwater Work Group (USWG): **February 19, 2013**
Approved by Watershed Technical Work Group (WTWG): **April 5, 2013**
Final Approval by Water Quality Goal Implementation Team (WQGIT): **May 13, 2013**
Test-Drive Revisions Approved by the USWG : **January 17, 2014**
Test-Drive Revisions Approved by the WTWG: August 28, 2014
Test-Drive Revisions Approved by the WQGIT: September 8, 2014

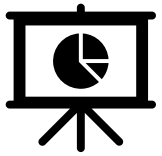
Prepared by:
Tom Schueler, Chesapeake Stormwater Network
and
Bill Stack, Center for Watershed Protection

Project Overview

- **FUNDING & GOALS**
  - Project funded by the Chesapeake Bay Trust to evaluate processes and protocols in the Chesapeake Bay watershed that minimize potential unintended adverse outcomes of stream restoration projects on the adjacent riparian area, including forest buffers and identify opportunities to minimize these adverse outcomes and improve riparian and stream habitat quality.
  - Includes a comprehensive assessment of how forests are accounted for at multiple stages of stream restoration, including planning, permitting, implementation, and post restoration.

- **PARTNERS**
  - Collaboration between the Center for Watershed Protection, Chesapeake Bay Program, and stakeholders.

- **GEOGRAPHY**
  - Both urban and rural areas of PA, MD, and VA.



- **RESULTS**
  - Results will help CBP partnership to improve the selection, permitting, and funding processes for stream restoration projects and provide guidance to local governments for best practices.

Stakeholder Team

Name	CBP Group	Affiliation
Katie Brownson	Forestry Workgroup	USFS/ Technical lead
Sally Claggett	Forestry Workgroup	USFS/ Technical lead
Rebecca Hanmer	Forestry Workgroup	Retired EPA
Anne Hairston-Strang	Forestry Workgroup	MD Forest Service
Judy Okay	Forestry Workgroup	Okay Consulting
Frank Rodgers	Forestry Workgroup	Cacapon Institute
Pam Mason	Wetland Workgroup	VIMS
Denise Clearwater	Wetland Workgroup	MDE
Norm Goulet	Urban Stormwater Workgroup	Northern VA Regional Commission
David Wood	Urban Stormwater Workgroup	Chesapeake Stormwater Network
Renee Thompson	Healthy Watersheds	USGS
Suzanne Trevena	WQ GIT	EPA
Megan Fitzgerald	WQ GIT	EPA
Brock Reggi	Stream Health Workgroup	VA DEQ
Chris Spaur	Stream Health Workgroup	USACE
Dave Goerman		PA DEP
Christin Jolicoeur		Arlington County
Sara Weglein		MD DNR
Elmer Weibley, CPESC		Washington County SCD
Justin Williams		VA DEQ

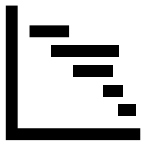
Project Tasks and Timeline

Task	Timeline	Deliverable(s)
Project Planning and Preparation	Complete	Project Plan Draft of Best Practices Guidance Document
QAPP	Complete	EPA-approved QAPP
Policy/Document Review and Interviews	Complete	Spreadsheet of documents and policies reviewed Technical memo summarizing the policy/document review and interviews
Case Study Analysis	Complete	Summary document including maps and details on selected projects
Webcasts	Complete	3 half day webcasts (one each in PA, MD, VA) Summary to include recordings, meeting notes, key findings, etc.
Synthesize Results	In Progress	Final Project Report Final Best Practices Guidance Document
Follow-up	8/9/2022 – 9/1/2022	Next Steps Document

Project Planning and Preparation

- Established Stakeholder Team

- Conducted an informal online survey of regulators, practitioners, and local governments



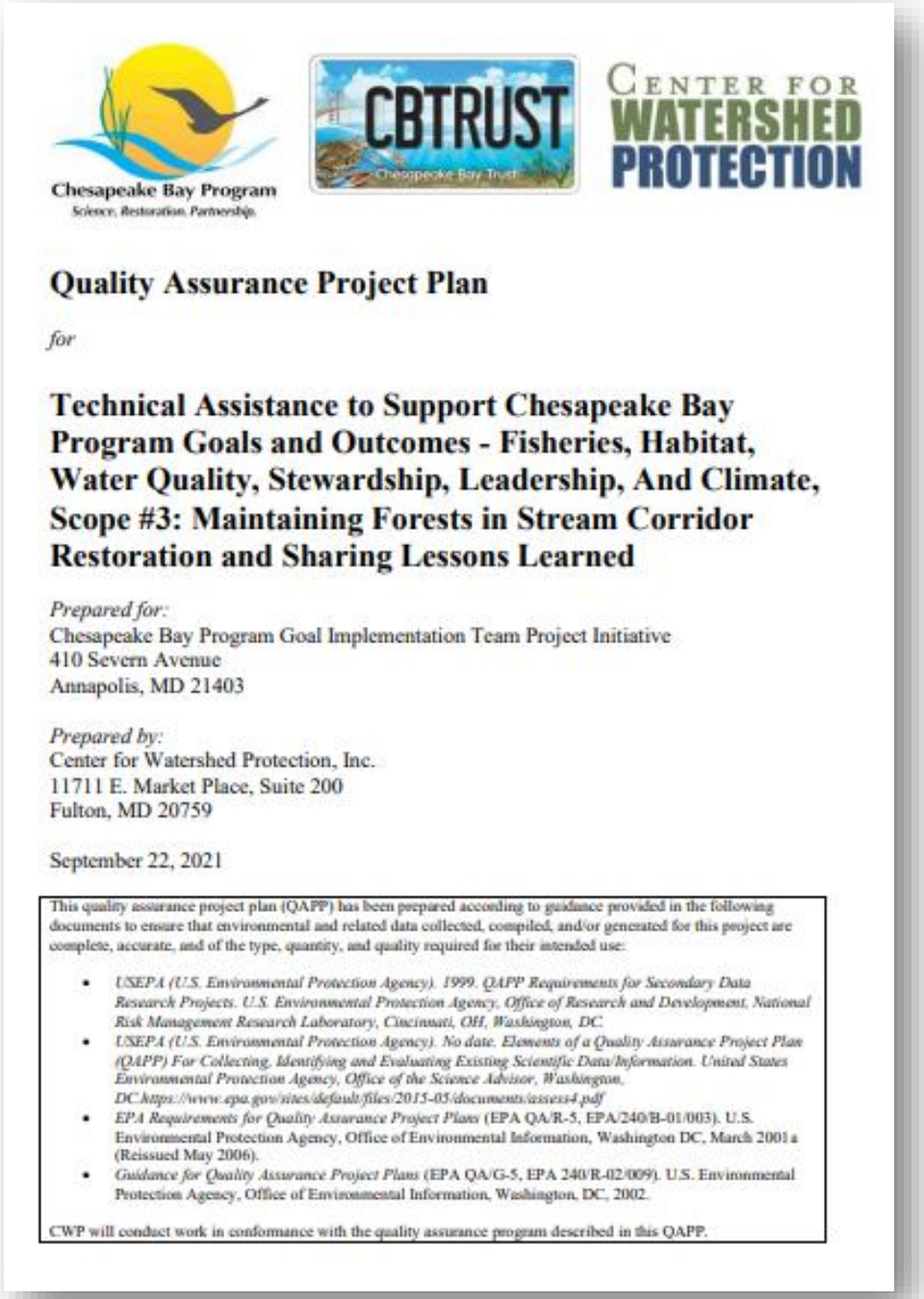
- Developed a project plan

- Developed a draft best practices guidance document

Quality Assurance Project Plan (QAPP)

- Developed in accordance with EPA's "Elements of a Quality Assurance Project Plan for Collecting, Identifying, and Evaluating Existing Scientific Data/Information"

- Aligned with the EPA Region 3 Quality Management Plan



Chesapeake Bay Program
Science, Restoration, Partnership.

CBTRUST
Chesapeake Bay Trust

CENTER FOR WATERSHED PROTECTION

Quality Assurance Project Plan

for

Technical Assistance to Support Chesapeake Bay Program Goals and Outcomes - Fisheries, Habitat, Water Quality, Stewardship, Leadership, And Climate, Scope #3: Maintaining Forests in Stream Corridor Restoration and Sharing Lessons Learned

Prepared for:
Chesapeake Bay Program Goal Implementation Team Project Initiative
410 Severn Avenue
Annapolis, MD 21403

Prepared by:
Center for Watershed Protection, Inc.
11711 E. Market Place, Suite 200
Fulton, MD 20759

September 22, 2021

This quality assurance project plan (QAPP) has been prepared according to guidance provided in the following documents to ensure that environmental and related data collected, compiled, and/or generated for this project are complete, accurate, and of the type, quantity, and quality required for their intended use:

- *USEPA (U.S. Environmental Protection Agency). 1999. QAPP Requirements for Secondary Data Research Projects. U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory, Cincinnati, OH, Washington, DC.*
- *USEPA (U.S. Environmental Protection Agency). No date. Elements of a Quality Assurance Project Plan (QAPP) For Collecting, Identifying and Evaluating Existing Scientific Data/Information. United States Environmental Protection Agency, Office of the Science Advisor, Washington, DC.https://www.epa.gov/sites/default/files/2015-05/documents/assess4.pdf*
- *EPA Requirements for Quality Assurance Project Plans* (EPA QA/R-5, EPA/240/B-01/003). U.S. Environmental Protection Agency, Office of Environmental Information, Washington DC, March 2001a (Reissued May 2006).
- *Guidance for Quality Assurance Project Plans* (EPA QA/G-5, EPA 240/R-02/009). U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC, 2002.

CWP will conduct work in conformance with the quality assurance program described in this QAPP.

Policy/Document Review and Interviews

- POLICY/DOCUMENT REVIEW
  - Reviewed key policies and documents identified in the Project Plan
  - Goal: to better understand what each state (MD, PA, VA) requires and what is required by the 3 selected counties
- INTERVIEWS
  - Interviewed 19 individuals
  - State governments, local governments, and practitioners
- DELIVERABLE
  - Results were summarized in a technical memo.

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MEMORANDUM

To: Chesapeake Bay Trust

From: Center for Watershed Protection, Inc.

Date: February 28, 2022

Re: Summary of Task 3 Policy/Document Review and Interview Results

This technical memorandum was developed to support the "Scope of Work 3: Maintaining Forests in Stream Corridor Restoration and Sharing Lessons Learned" project identified in the 2020 Chesapeake Bay Trust-Technical Assistance - Chesapeake Bay Program Goals and Outcomes request for proposals. It summarizes key insights from the Task 3 policy/document review and interviews from project planning through permitting, implementation, and post restoration.

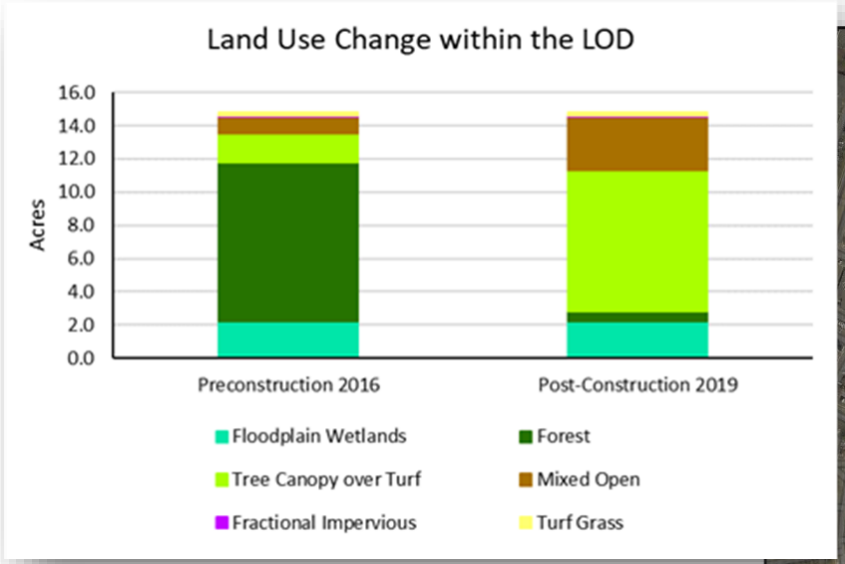
This memorandum is organized into the following sections:

- Introduction
- Methodology
- Policy and Document Review
- Interviews
- Discussion and Conclusion

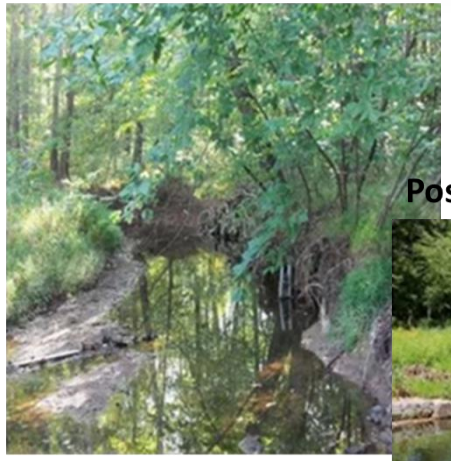
To assist with navigation of this document, below is a table of contents.

Case Study Analysis

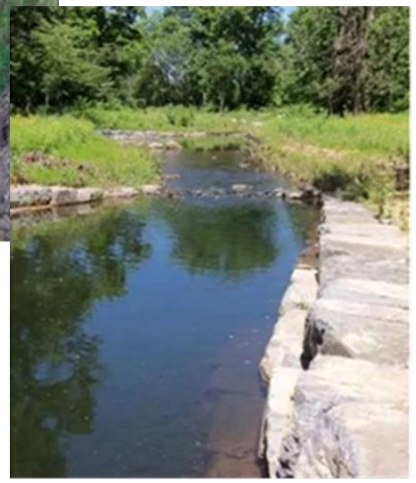
- Reviewed 10 stream restoration projects in Lancaster County, PA, Anne Arundel County, MD, and Fairfax County, VA to determine the extent to which requirements are implemented and quantify the impacts stream restoration has on riparian vegetation.
- Utilized loading rates from CAST to determine changes in nutrient and sediment loading from the stream restoration projects and impact to the riparian vegetation due to project implementation.
- Results were summarized in 3- to 5-page summaries for each site.

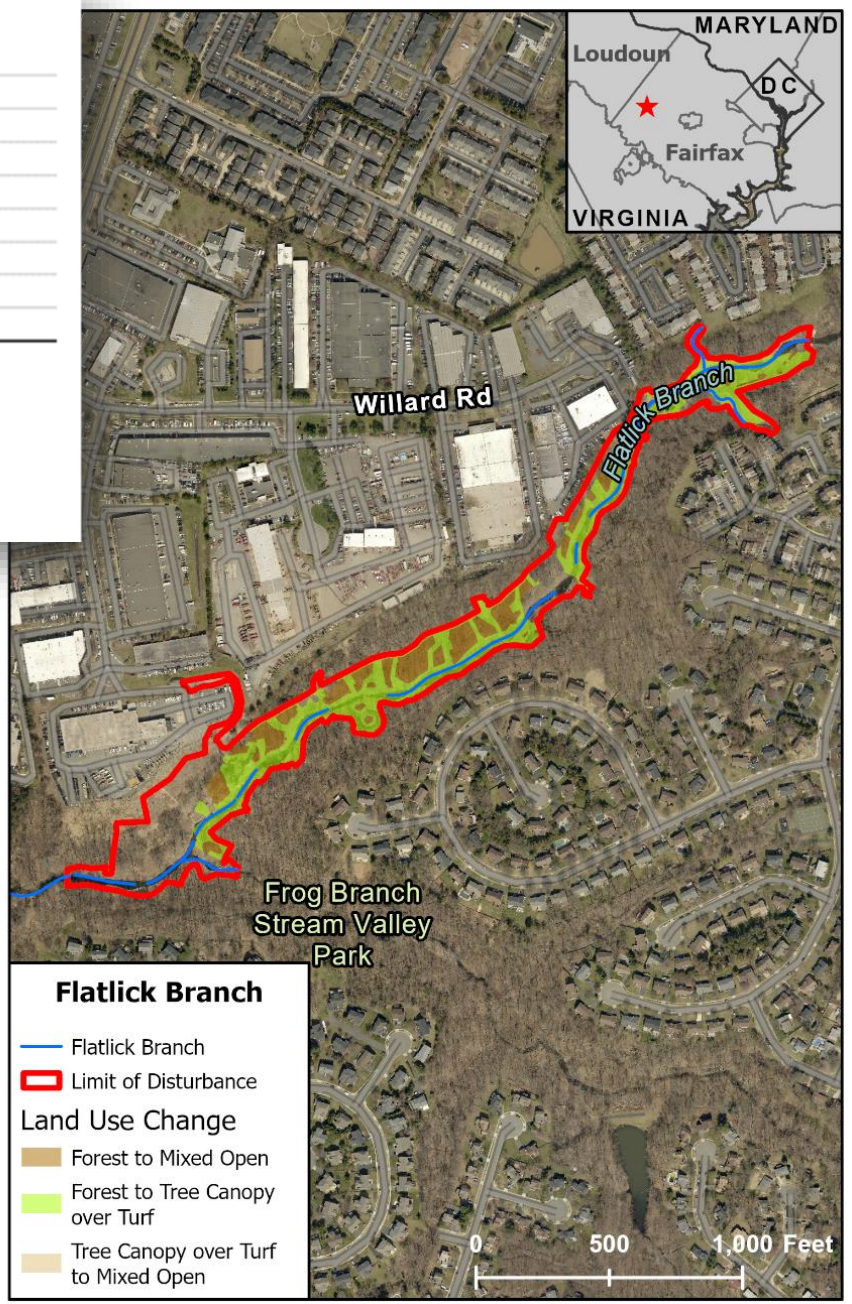


Preconstruction

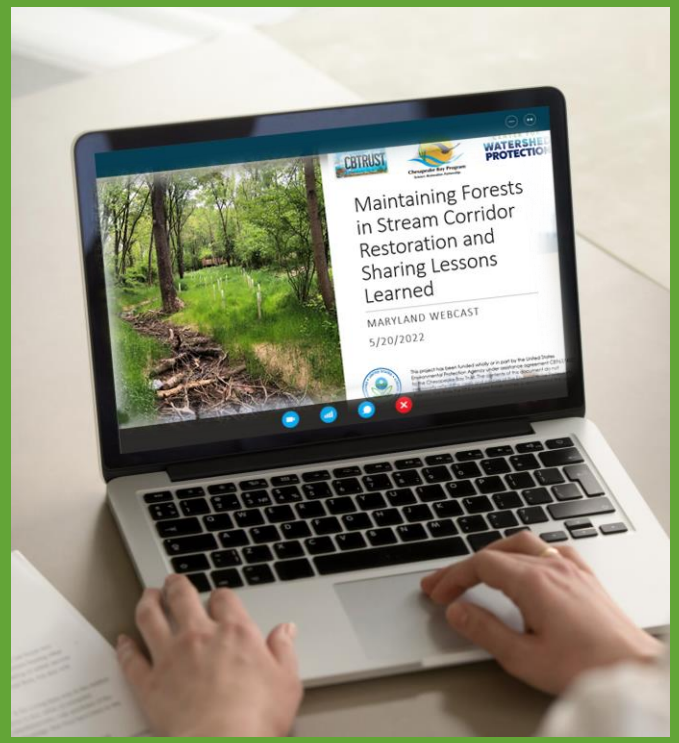


Post -Construction





Webcasts and Follow-Up



- **WEBCAST LOGISTICS**
  - Three half-day webcasts
  - One each in MD, PA, and VA
- **KEY STAKEHOLDERS**
  - Bay partners, stream restoration practitioners, and local officials involved with stream restoration
- **DELIVERABLES**
  - Webcast summaries were developed to include lessons learned, meeting notes, and webcast recordings that helped inform development of the final report and best practices guidance document.

Synthesize Results

- A Final Project Report was developed that incorporates results from all the project tasks and includes recommendations on opportunities to improve consideration of riparian forests in stream corridor restoration projects to minimize unintended consequences.
- Recommendations from the Project Report were used to update the Best Practices Guidance Document for local governments.
- The Best Practices Guidance Document will be distributed to key stakeholders in the Chesapeake Bay region.

Summary of Best Practices

Site Selection

- Follow a watershed-based approach for screening and prioritizing stream restoration projects that target restoration to areas in need instead of existing high-quality areas.
- Evaluate options for combining stream restoration with stormwater, forestry and agricultural BMPs in the contributing watershed.

Establishing Goals and Objectives

- Develop stream restoration projects through a functional assessment process.
- Review the project goals with all stakeholders to determine if forested riparian conditions are appropriate and achievable within the current, historic, and projected future conditions of a project site.

Stream Functional Pyramid (Harman et al., 2012)

Design and Permitting

- Configure the restoration design to unique site conditions instead of the site to a specific type of practice.
- Conduct a comparative analysis of different restoration approaches to evaluate the impacts of temporary construction landscaping relative to the creation of a long-term, sustainable system.
- Rank on-site trees during the planning process based on factors such as tree health, location, size, value, bank proximity, root mass erosion status, and amount of shade cast.
- Develop (and implement) planting plans that prioritize native species and consider impacts of invasive species.
- Consider planting techniques to provide higher degrees of canopy coverage in shorter amounts of time.
- Conduct pre-application meetings with state and federal permitting agencies.

Stakeholder Engagement

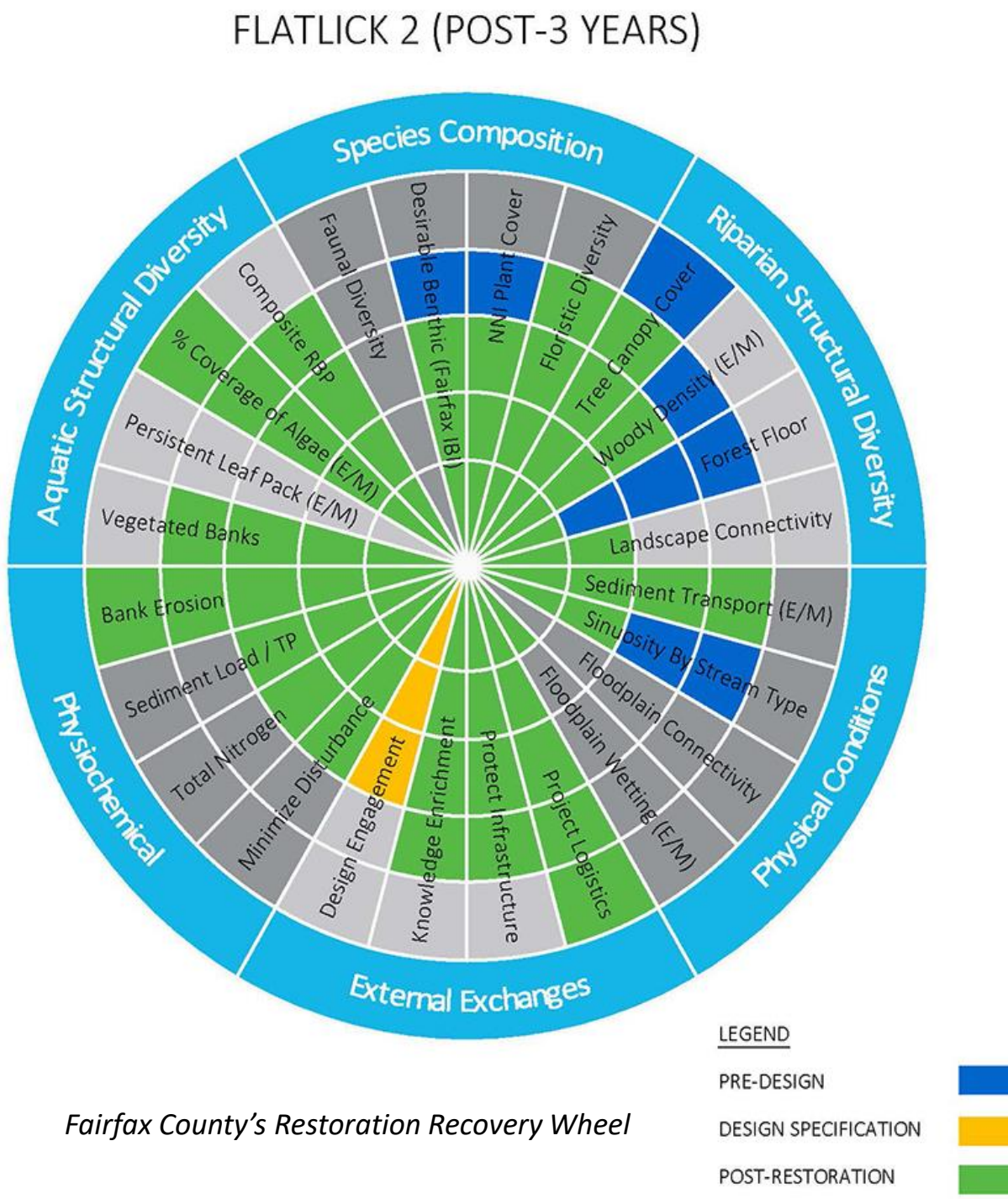
- Pre-restoration community engagement, including getting local stakeholders involved, communication about the project, setting expectations, and gathering consensus on the project's goals and objectives.
- Coordinate with federal, state, and local governments, as well as practitioners, forest agencies, contractors, landowners, and local community stakeholders to come to consensus on the preferred design approach and project goals/objectives.

Construction

- Numerous practices recommended such as avoiding mature and specimen trees, minimizing compaction, keeping the LOD as small as possible, etc.

Monitoring and Maintenance

- Set aside a minimum of 10% of total project costs for post-construction monitoring and maintenance.
- Utilize performance-based contracting and warranty monitoring for plant survival and contractual requirements.
- Monitor beyond the LOD, and include a site's undisturbed areas, and adjacent upstream and downstream areas.
- Develop clear monitoring metrics as a way of evaluating goals and the degree of project success.
- Implement both a short and long-term vegetation management plan to maintain the post-restoration vegetation target for the banks and floodplain.
- Maintain a designated maintenance trail on projects to allow practitioners to monitor and maintain constructed projects without contributing additional disturbance.



Fairfax County's Restoration Recovery Wheel

Programmatic and Research Recommendations

Site Selection

- State agencies should develop guidance that defines "high-quality" existing areas that should be avoided.
- Conduct a comprehensive review of the scientific and grey literature related to stream restoration and upland stormwater controls.

Establishing Goals and Objectives

- Define and test new metrics that can effectively predict and rapidly measure the degree of functional uplift and/or functional losses achieved by floodplain restoration projects over short- and longer time frames.
- State agencies should consider integrating CBP riparian buffer goals as part of the review process for stream restoration projects.

Design and Permitting

- State agencies should clearly define stream restoration and use consistent terminology for permit processing.
- A comprehensive review of county-level regulations should be conducted to determine how well they incorporate state-level requirements such as the MD Forest Conservation Act, and the extent to which they include enforceability measures.
- State agencies should encourage and coordinate collaboration between forest agencies and local governments to ensure they are involved with project design. Forest agency participation during the pre-application meetings should also be encouraged or required.
- State agencies should develop checklists based on the best practices recommended in this report.

Stakeholder Engagement

- State agencies and local governments should consider developing outreach materials to help the public and landowners better understand the stream restoration process.

Monitoring and Maintenance

- Long-term monitoring of riparian benefits and total ecosystem benefits done by professionals/scientists with consideration of a pooled monitoring approach.
- Local governments and funding agencies should allow for a percentage of funds to be allocated for post-construction monitoring and maintenance.
- Develop an agreed upon functional metric to define a healthy forest and regionally specific riparian monitoring protocols and forest quality indices.
- Develop a training program to provide professional certification for vegetative community classification and condition assessments.

Stakeholder Team Feedback on Draft Report and Best Practices Guide

- Expand on and provide additional programmatic recommendations.
- It is desirable going forward that forest professionals and stream restoration professionals agree in principle on when removal of trees might be "required." Clarify the main reasons (specific conditions) why installing stream restoration projects may require removal of existing mature riparian buffer trees.
- Articulate a stronger goal to minimize the loss of healthy, mature trees that are within the stream restoration project area.
- Emphasize the need for development of better pre-project analysis tools, including evaluation of current forest buffers and their ecosystems, to support holistic stream ecosystem recovery and sustainability and protect mature buffers.

Next Steps

- Revise the draft final report and best practices guide.
- Next project task is to develop a next steps document that identifies follow-up steps for partners, including state and local governments, researchers, and other partners.

Questions?

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lfm@cwp.org