



MARYLAND DEPARTMENT OF NATURAL RESOURCES

Chesapeake and Atlantic Coastal Bays Trust Fund



Physical and Nutrient Monitoring Training

2015

Introduction

- The Chesapeake and Atlantic Coastal Bays Trust Fund
- Started in 2007
- Goal - Accelerate restoration of the Chesapeake Bay
- Focuses financial resources on the most effective non-point source pollution control projects.



Urban, Flashy Streams

At Baseflow



29.84 inHg - 54 F 05/14/2014 09:44AM CAMERA 1

During Rain Event



29.40 inHg - 55 F 05/16/2014 06:10AM CAMERA 1

Urban, Flashy Streams

At Baseflow



29.40 inHg | 55°F | 04/15/2014 07:57AM CAMERA1

During Rain Event



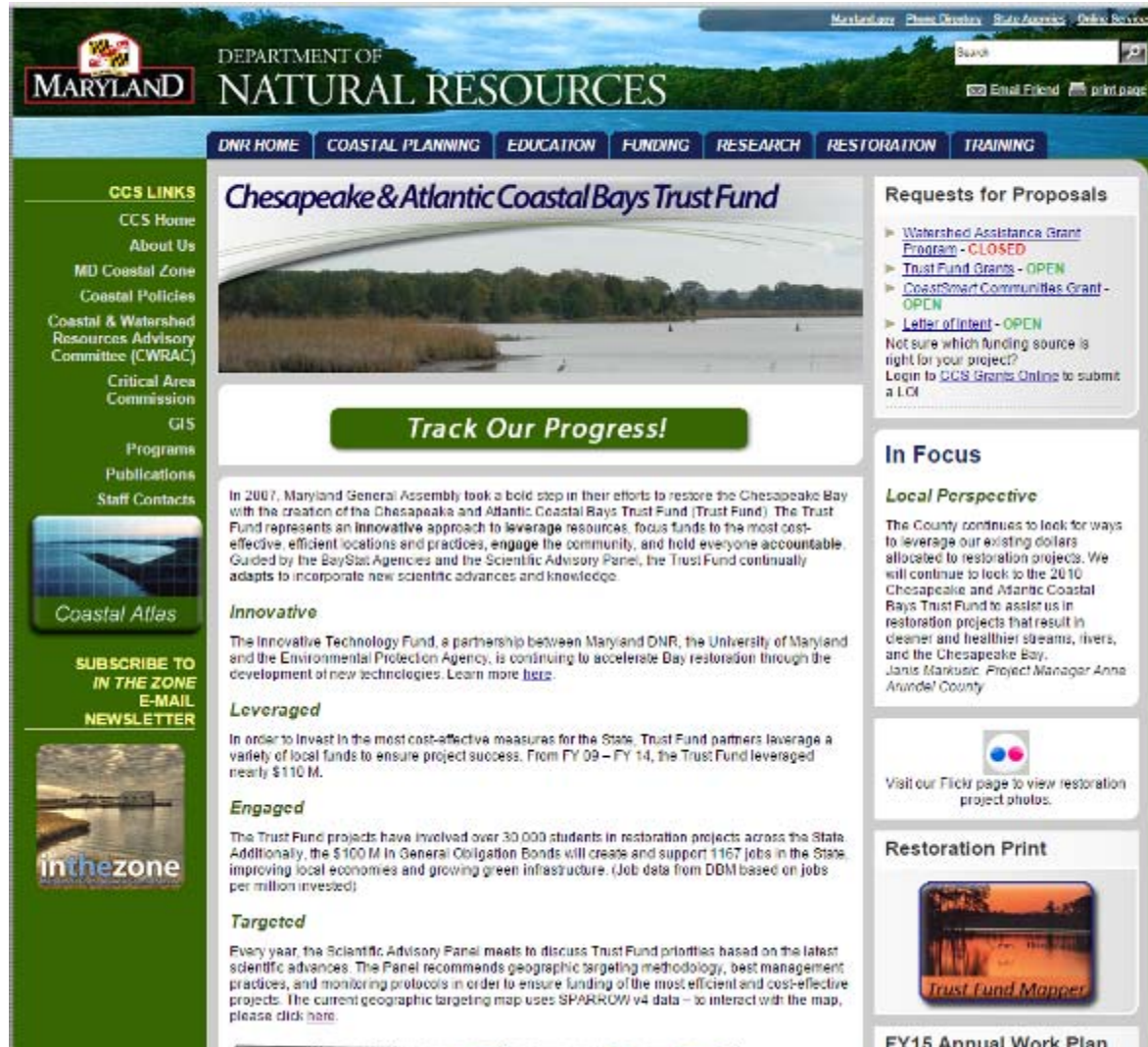
29.36 inHg | 55°F | 04/15/2014 02:29PM CAMERA1



Source of Funding

Money for the Trust Fund (TF) is generated through motor fuel and rental car taxes. When fully-funded, the TF was to generate approximately 50M annually.

FY15 – 61M for Special and Capital Funds combined, FY16 – 39.4M, SF only



DEPARTMENT OF NATURAL RESOURCES

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DNR HOME COASTAL PLANNING EDUCATION FUNDING RESEARCH RESTORATION TRAINING

Chesapeake & Atlantic Coastal Bays Trust Fund

Track Our Progress!

In 2007, Maryland General Assembly took a bold step in their efforts to restore the Chesapeake Bay with the creation of the Chesapeake and Atlantic Coastal Bays Trust Fund (Trust Fund). The Trust Fund represents an **innovative** approach to **leverage** resources, **engage** the community, and **hold** everyone accountable. Guided by the BayStat Agencies and the Scientific Advisory Panel, the Trust Fund continually adapts to incorporate new scientific advances and knowledge.

Innovative
The **Innovative Technology Fund**, a partnership between Maryland DNR, the University of Maryland and the Environmental Protection Agency, is continuing to accelerate Bay restoration through the development of new technologies. [Learn more here.](#)

Leveraged
In order to invest in the most cost-effective measures for the State, Trust Fund partners leverage a variety of local funds to ensure project success. From FY 09 – FY 14, the Trust Fund leveraged nearly \$110 M.

Engaged
The Trust Fund projects have involved over 30,000 students in restoration projects across the State. Additionally, the \$100 M in General Obligation Bonds will create and support 1167 jobs in the State improving local economies and growing green infrastructure. (Job data from DDM based on jobs per million invested.)

Targeted
Every year, the Scientific Advisory Panel meets to discuss Trust Fund priorities based on the latest scientific advances. The Panel recommends geographic targeting methodology, best management practices, and monitoring protocols in order to ensure funding of the most efficient and cost-effective projects. The current geographic targeting map uses SPARROW v4 data – to interact with the map, please [click here.](#)

Requests for Proposals

- ▶ [Watershed Assistance Grant Program - CLOSED](#)
- ▶ [Trust Fund Grants - OPEN](#)
- ▶ [CoastSmart Communities Grant - OPEN](#)
- ▶ [Letter of Intent - OPEN](#)

Not sure which funding source is right for your project?
Login to [CCS Grants Online](#) to submit a LOI

In Focus

Local Perspective

The County continues to look for ways to leverage our existing dollars allocated to restoration projects. We will continue to look to the 2010 Chesapeake and Atlantic Coastal Bays Trust Fund to assist us in restoration projects that result in cleaner and healthier streams, rivers, and the Chesapeake Bay.
Janis Mankovic, Project Manager Anne Arundel County

Visit our Flickr page to view restoration project photos.

Restoration Print

[Trust fund Mapper](#)

FY15 Annual Work Plan

CCS LINKS

- CCS Home
- About Us
- MD Coastal Zone
- Coastal Policies
- Coastal & Watershed Resources Advisory Committee (CWRAC)
- Critical Area Commission
- GIS
- Programs
- Publications
- Staff Contacts

Coastal Atlas

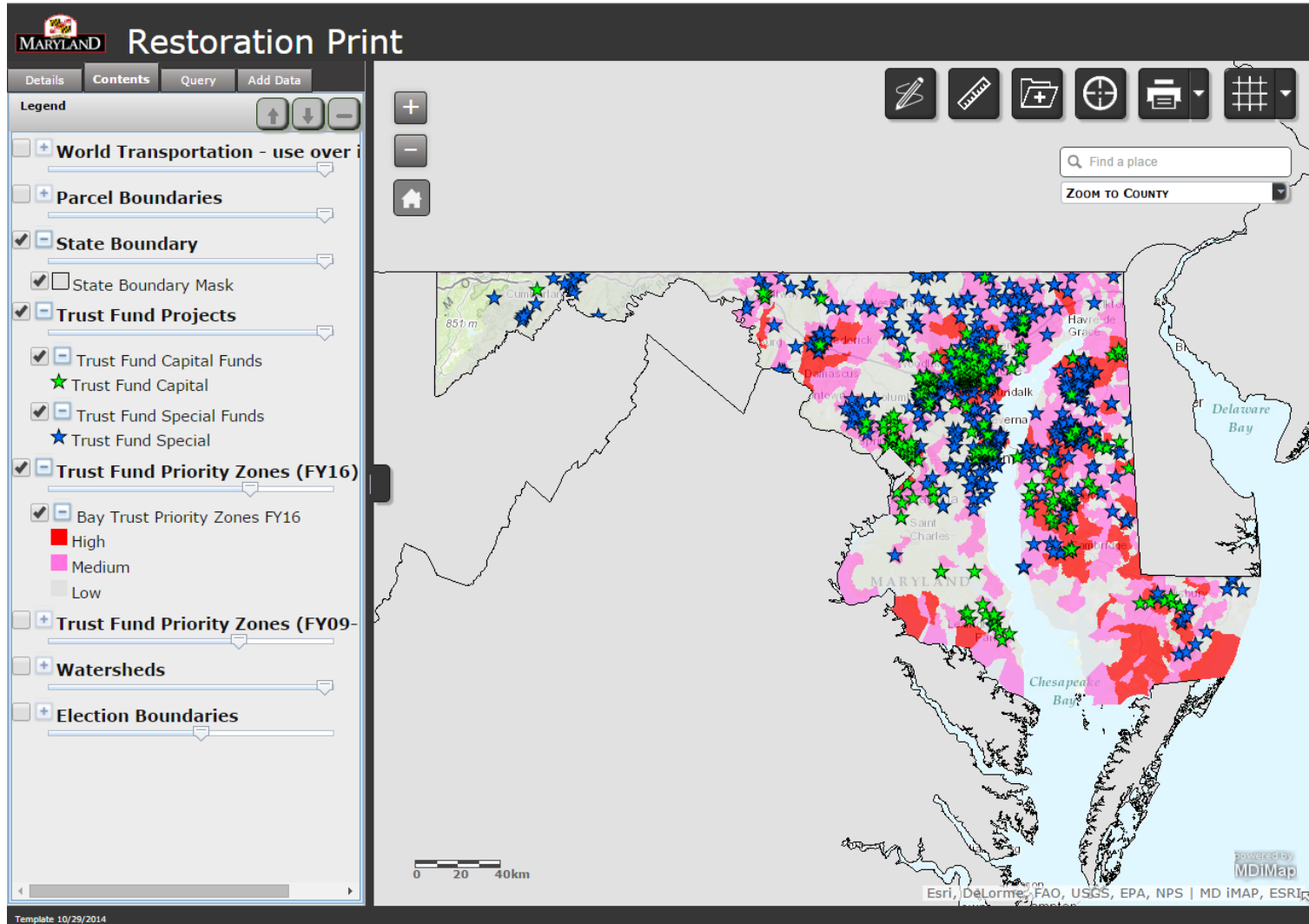
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inthezone



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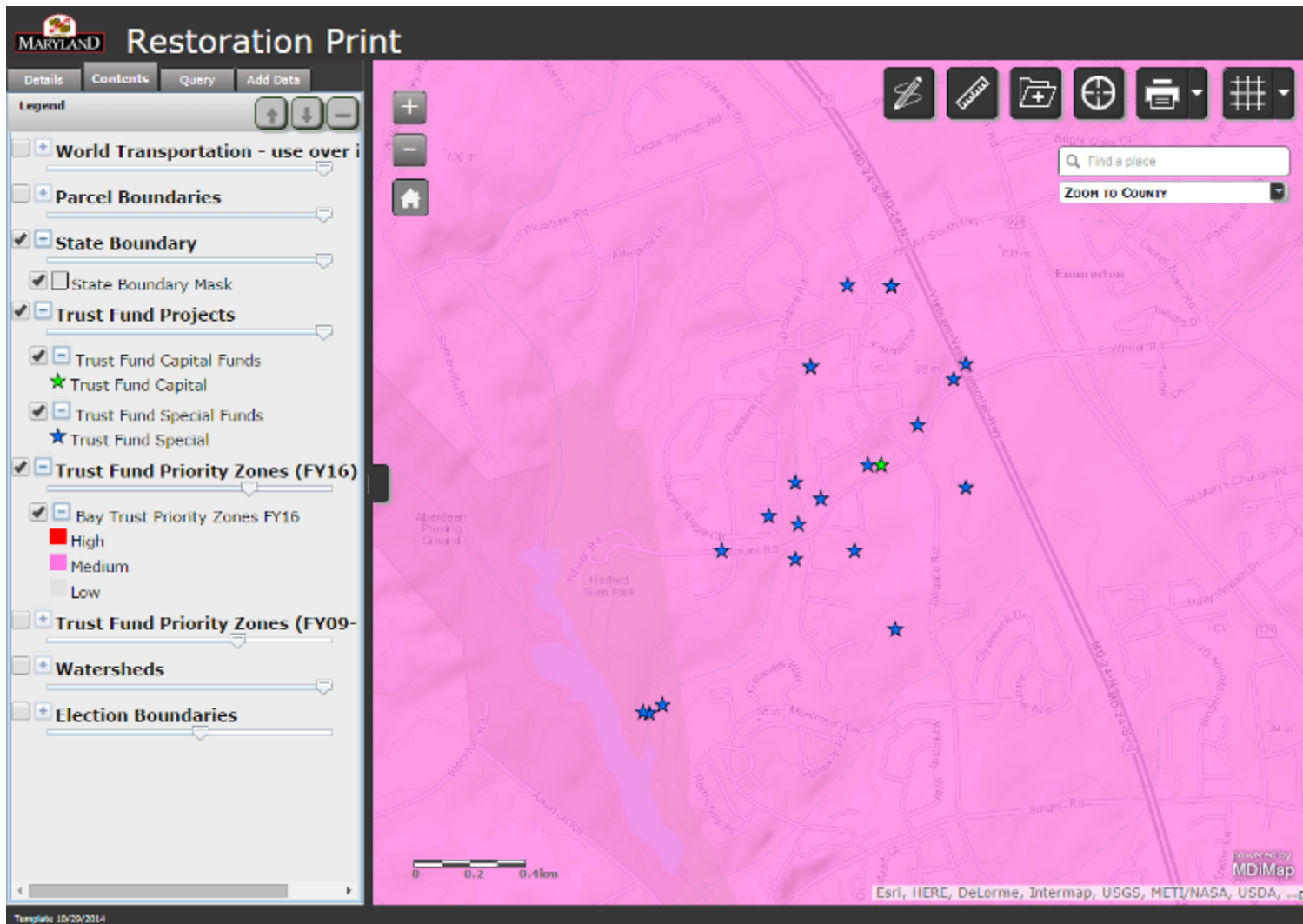
Chesapeake and Atlantic Coastal Bays Trust Fund





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Chesapeake and Atlantic Coastal Bays Trust Fund





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Chesapeake and Atlantic Coastal Bays Trust Fund

Restoration Print

Details Contents Query Add Data

Legend

- World Transportation - use over i
- Parcel Boundaries
- State Boundary
 - State Boundary Mask
- Trust Fund Projects
 - Trust Fund Capital Funds
 - ★ Trust Fund Capital
 - Trust Fund Special Funds
 - ★ Trust Fund Special
- Trust Fund Priority Zones (FY16)
 - Bay Trust Priority Zones FY16
 - High
 - Medium
 - Low
- Trust Fund Priority Zones (FY09-
- Watersheds
- Election Boundaries

Map features: Scale bar (0 to 0.4 km), Home button, Zoom in (+), Zoom out (-), Full screen, Print, Grid, Search (Find a place), Zoom to County.

Trust Fund: (1 of 3)


Project	Wheel Creek Water Quality Monitoring WC0001
Contract	
FY	FY10
County	Harford
Trust Fund Dollars	3,286.73
Watershed	02100703
Latitude	39.48
Longitude	-76.34
Election District	7
Status	Complete
Annual lb Nitrogen	0.00
Zoom to	

powered by MDIMap


Map data: Delorme, Intermap, USGS, MFT/NASA, USDA, ...

Timestamp: 10/29/2014


Committee (CWRAC)
Critical Area Commission
GIS
Programs
Publications
Staff Contacts



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search / Harford County's reports/projects: Search



Harford County

Bel Air, MD

Total Reports: 11

View all reports by Harford County →


View all reports by Wheel Creek Water Quality Monitoring →

Wheel Creek Water Quality Monitoring

Posted on October 31, 2011

<p>Project Name: Wheel Creek Water Quality Monitoring</p> <p>Watershed: Wheel Creek</p> <p>Restoration Practice: Monitoring</p> <p>Status: Complete</p>	<p>State Funds: \$13,148</p> <p>Match Funds: \$34,020</p> <p>Fiscal Year: SFY 10</p> <p>Funding Source: Trust Fund</p>
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100% Complete




Harford County constructed a continuous-record streamflow gaging station on Wheel Creek, approximately 250 feet upstream of the confluence with Akkisson Reservoir at Harford Glen Environmental Education Center. They also established an instream monitoring station on Wheel Creek at Wheel Road and an outfall monitoring station on Wheel Creek at the outfall of a pond. Samples are taken and analyzed for nutrients and E. coli. Velocity measurements are made at the time each sample is collected.



Tags: district 7, Harford County, local implementation grant, special funds


39°28'54.0"...

[View larger map](#)



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MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



The screenshot shows the website interface for the Trust Fund Tracker. At the top, there is a navigation bar with links for 'MARYLAND', 'DEPARTMENT OF NATURAL RESOURCES', and a search box. Below this is a menu with categories: DNR HOME, COASTAL PLANNING, EDUCATION, FUNDING, RESEARCH, RESTORATION, and TRAINING. The main content area is titled 'Trust Fund Tracker' and includes a 'Welcome to the Trust Fund Tracker!' message. A table titled 'Fiscal Year 2014 Trust Fund Budget' is displayed, showing project leads and funding amounts for various categories. On the right side, there are sections for 'Requests for Proposals' and 'Restoration Print'. The left sidebar contains links for 'CCS LINKS' and 'SUBSCRIBE TO IN THE ZONE E-MAIL NEWSLETTER'.

Trust Fund Tracker

Welcome to the Trust Fund Tracker!

The Trust Fund Tracker shares project and budget information for the Chesapeake & Atlantic Coastal Bays Trust Fund, one of the region's most important funding tools targeting water quality and watershed restoration and protection projects to reduce non-point source pollution. View the annual budgets by searching by state fiscal year, and learn more about the projects funded in each funding area. The specific project details are linked to [Maryland's Restoration Report](#) and updates are made monthly. For comments or questions, please email gcobee@dnr.state.md.us or call 410.260.8753.

-- Select the Fiscal Year -- Find Projects by Fiscal Year

Fiscal Year 2014 Trust Fund Budget

	Project Lead	FY 14 Special Fund Actual	FY 14 Capital Fund Actual
Accountability, Verification and Management			
1. Strategic Monitoring	DNR/UMD	\$400,000	-
2. Targeted Monitoring of Out of State Sources	DNR/USGS	\$300,000	-
3. Implementation Tracking	DoIT	\$200,000	-
4. Administration and Management (1.5%)	DNR	\$414,000	-
Accelerating Restoration through Research and Development			
5. Manure to Energy Projects with Proven Technology	MDA/Interagency	-	\$2,500,000
6. Maryland's Innovative Technology Partnership	UMD/DNR	\$750,000	-
Implementation of Local WIPs			

Requests for Proposals

- Watershed Assistance Grant Program - CLOSED
- Trust Fund Grants - OPEN
- CoastSmart Communities Grant - OPEN
- Letter of Intent - OPEN

Not sure which funding source is right for your project? Login to [CCS Grants Online](#) to submit a LOI

Restoration Print

[Trust Fund Mapper](#)

Contact Information

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Annapolis, Maryland 21401
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Why Monitor BMPs?

- Assess efficiency of installed BMPs to evaluate monetary investment
- Compare BMPs and how well they work in different installations
- Compare BMP nutrient and sediment measured/expected reduction values
- Use results to improve future project selection



Monitoring has Provided Good Data, but...

- Improvements to comparability:
 - Consistent protocols
 - List of Water Quality parameters
 - Minimum detection limits
- As the Trust Fund has grown, more people collecting more data, using different methods

Evaluating the Trust Fund



The screenshot shows the website for the Environmental Finance Center (EFC). The header includes a search bar, a message from the director, and a navigation menu with links to 'Who We Are', 'Current Projects', 'Focus Areas', 'Publications', and 'News & Events'. The main content area features a banner for 'Sustainable Maryland Certified' with a background of yellow flowers. Below the banner, there are sections for 'EFC Jobs', 'Announcements', and 'Highlighted Projects'. The 'Highlighted Projects' section includes two columns of text: 'Agriculture Finance Unit' and 'Stormwater Financing and Outreach'.

Who We Are
Current Projects
Focus Areas
Publications
News & Events

EFC
Environmental Finance Center

SUSTAINABLE MARYLAND
+CERTIFIED+

EFC Jobs
Announcements
Highlighted Projects

Agriculture Finance Unit:
The Agriculture Finance Unit of the Environmental Finance Center provides innovative and effective finance expertise to rural communities and farm operations to improve their understanding, development and implementation of strategies to resolve problems and issues of environmental protection and restoration. Specific areas of focus includes nutrient and sediment management, water quality, sustainability, and renewable energy demonstration projects.

Stormwater Financing and Outreach
Like all infrastructure systems, stormwater management systems require long-term care and maintenance. The Stormwater Financing and Outreach Unit was created to address a community's stormwater financing questions and help craft a strategy that best meets local needs.

MORE >

- Dan Nees
(Environmental Finance Center, UMD)
- Recommendations
 - Use monitoring to establish a pay for performance model
 - More resources to establish baselines
 - Accurate comparable data allow prioritization of cost effective projects



Trust Fund Monitoring Strategy

- You don't need to monitor everything
- Sampling on a larger scale should only be done when estimates suggest more than a 30% reduction in nutrient or sediment loads will be achieved in a basin due to BMP installation.
- BMPs and their estimated nutrient and sediment reduction efficiencies.
- Helps applicants decide whether or not to monitor, and this training describes how to accomplish monitoring goals through standardized techniques.



Goals of Physical/Nutrient Training

- To provide specific guidance for monitoring techniques with a focus on nutrients and sediments, but not enough time for all the details
- To educate monitoring personnel on a standard protocol for WQ, geomorphology, and stream discharge data collection
- Accomplishes goals set in the Monitoring Strategy Document
- Although the manuals provide details, this training will be more of an overview of three monitoring protocols

The Big Four

- Stream Discharge (Flow)
- Water Quality
- Geomorphology
- Biology (not covered here)
- Minimum Level of Monitoring





Water Quality

- Provides concentrations
 - Combined with discharge to calculate loads
- Designed with small, flashy urban streams in mind
- Required parameters are set by the protocol, as well as recommended minimum detection limits for Total Nitrogen and Total Phosphorus concentration
 - Recommended minimum detection limits set at values determined by Ray Morgan (UMCES)
 - Set using data collected at MBSS reference sites
 - Total Nitrogen – 1.6 mg/L
 - Total Phosphorus – 0.010 mg/L

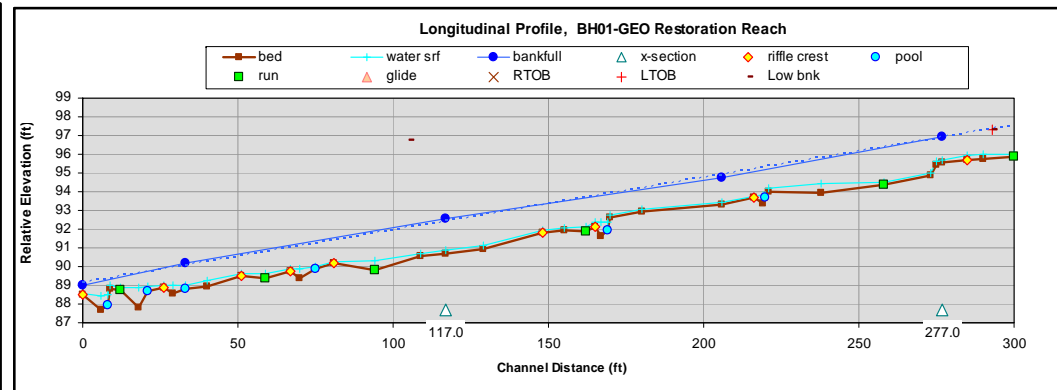
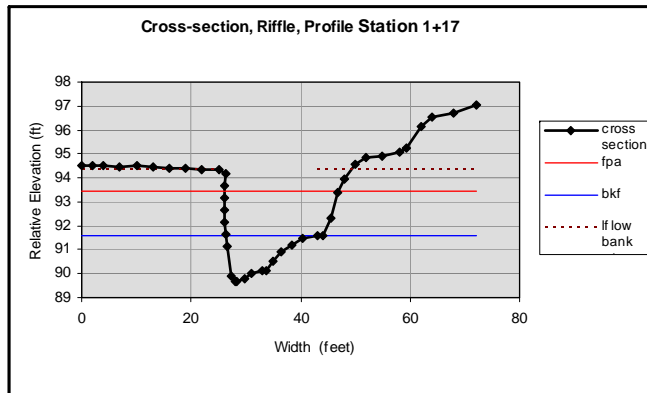
Stream Discharge

- Essential to calculate nutrient and sediment loading, a primary goal of the TF
- Consistent, accurate protocols are mandatory in order to collect usable data



Geomorphology

- Provides additional data on sediment inputs via erosion
- Provides an assessment of physical stream restoration effectiveness



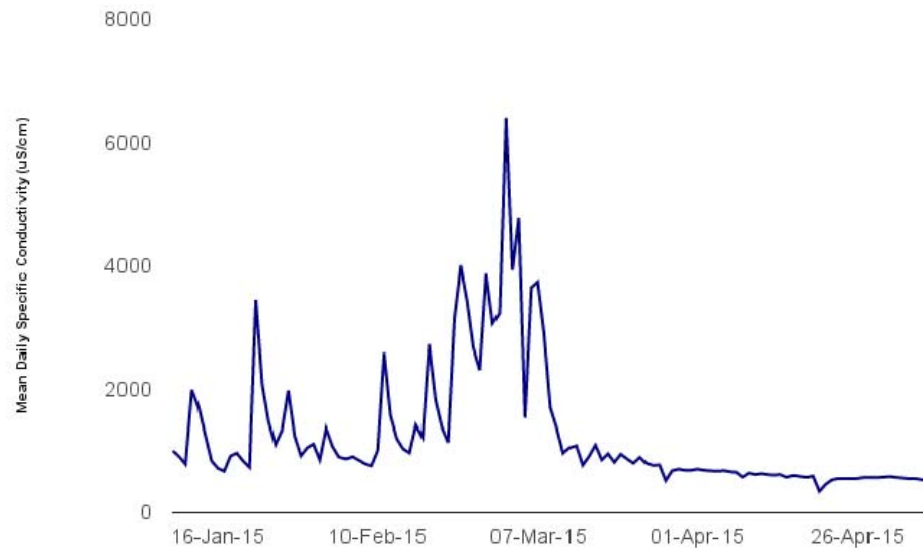
Biology

- Establishes connection between living resources in stream restoration
- Inverse relationship between nutrient levels and certain benthic macroinvertebrate health (Matt Ashton's work)
- MBSS data provide comparison to reference (sentinel site network) sites



Other Data?

- If the project has additional restoration goals, please include data that would be interesting for the health of the watershed.

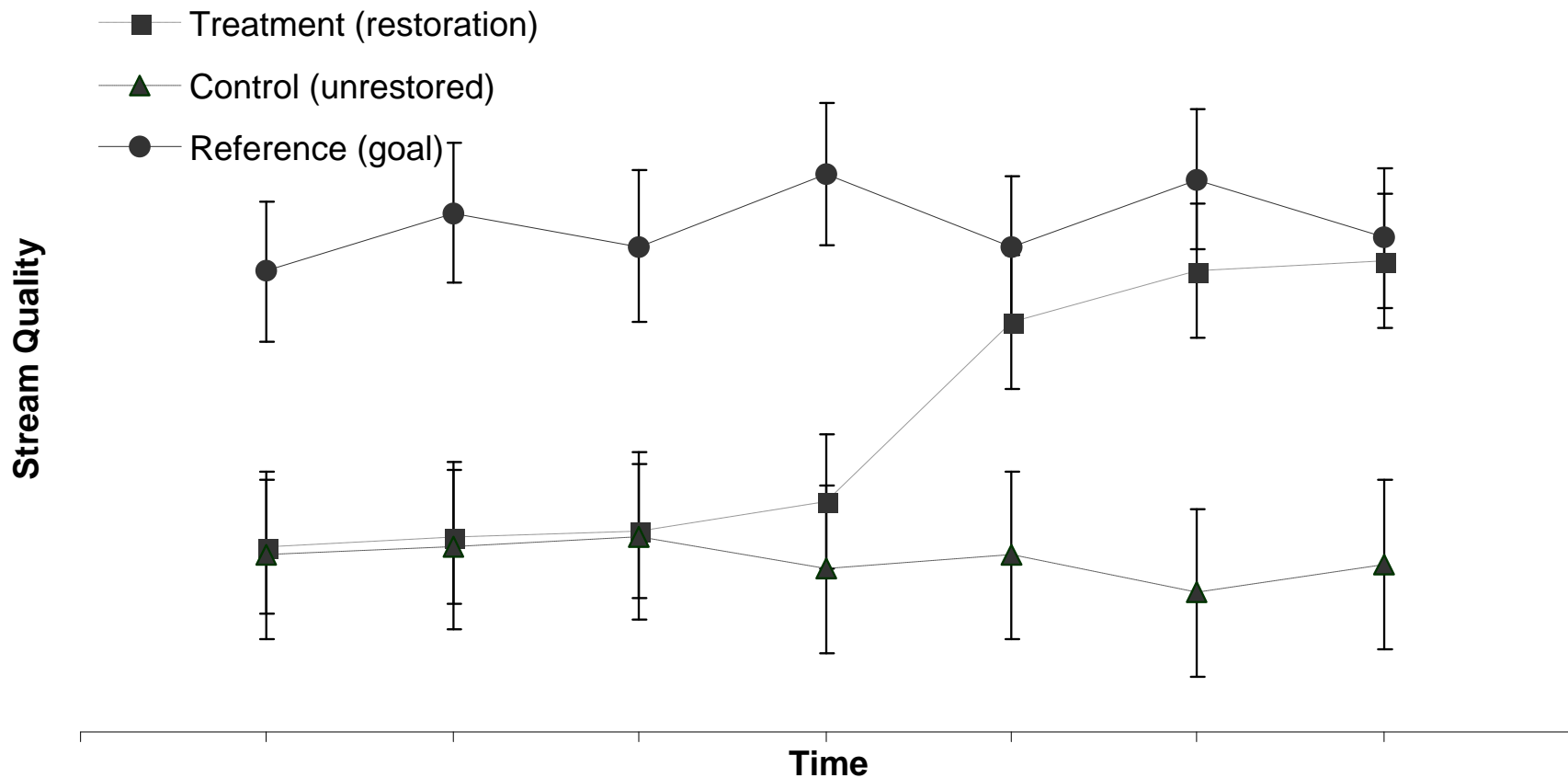




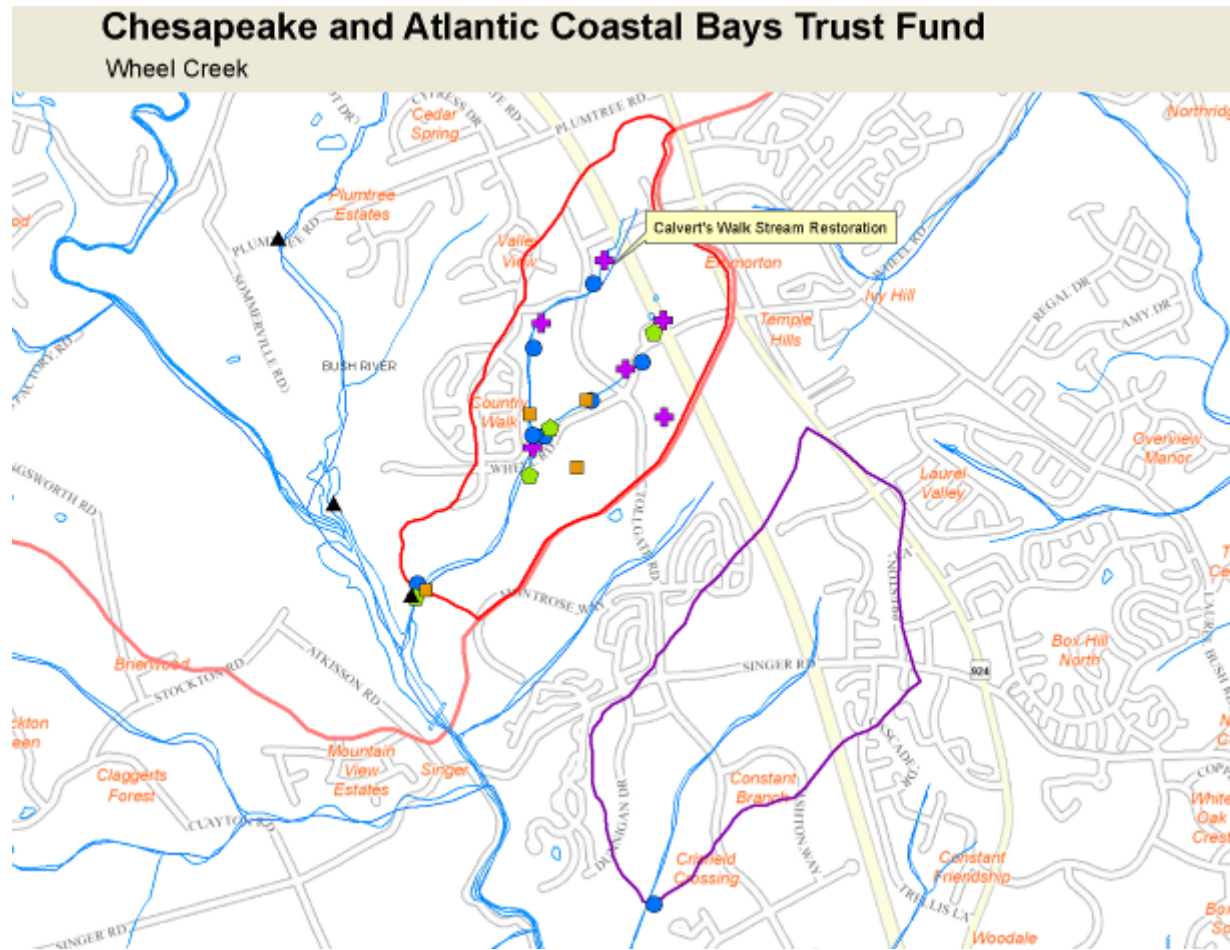
BACI Study Design

- Before – collection of baseline data assesses variability
 - How much time for pre and post monitoring?
 - Baseline data are important
 - After construction data important
- 10 years recommended (Kondolf, 2006)
- We recommend 5 years as a compromise
- Control sites

Looking for This...



Survey Design Example





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Chesapeake and Atlantic Coastal Bays Trust Fund Maryland's House of Data

- Tasked with compiling and comparing data from TF projects
- New RFP
REQUIRES
Monitoring Data
Reports





MARYLAND DEPARTMENT OF NATURAL RESOURCES

Chesapeake and Atlantic Coastal Bays Trust Fund

Remember...

- The focus of the Trust Fund is reducing **NUTRIENT AND SEDIMENT LOADS** to the Chesapeake Bay
- All protocols are **STRONGLY RECOMMENDED** by the RFP
- Data Submission is **REQUIRED** by the RFP
- Follow the Monitoring Strategy Document to decide when/where to sample, use the protocols when you do



MARYLAND DEPARTMENT OF NATURAL RESOURCES

Chesapeake and Atlantic Coastal Bays Trust Fund

Thanks to our Contributors

- Scott Stranko (DNR)
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- Paul Kazyak (DNR)
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- Rich Starr (USFWS)