

# Chesapeake Bay Program Watershed Technical Workgroup Welcome and Introduction Training



***Developed by the Watershed Technical Workgroup (WTWG)  
November 2021***

# Overview

- Chesapeake Bay Program Background
  - Watershed
  - Water Quality Issues and Responses Timeline
  - Guiding Principles of the CBP
  - Partners
- WTWG Position in CBP
- Other GITs / WGs related to the WTWG
- WTWG Membership
- WTWG Roles and Responsibilities
- CAST/Chesapeake Bay Modeling
  - Chesapeake Bay Model Inputs and Outputs
  - CAST Reports
  - Resources available on CAST website
  - NEIEN
- Annual Progress Submission
- BMP Verification
- Examples of Recent Discussions/Decisions
- Contacts
- Acknowledgements

# The Chesapeake Bay Program (CBP)

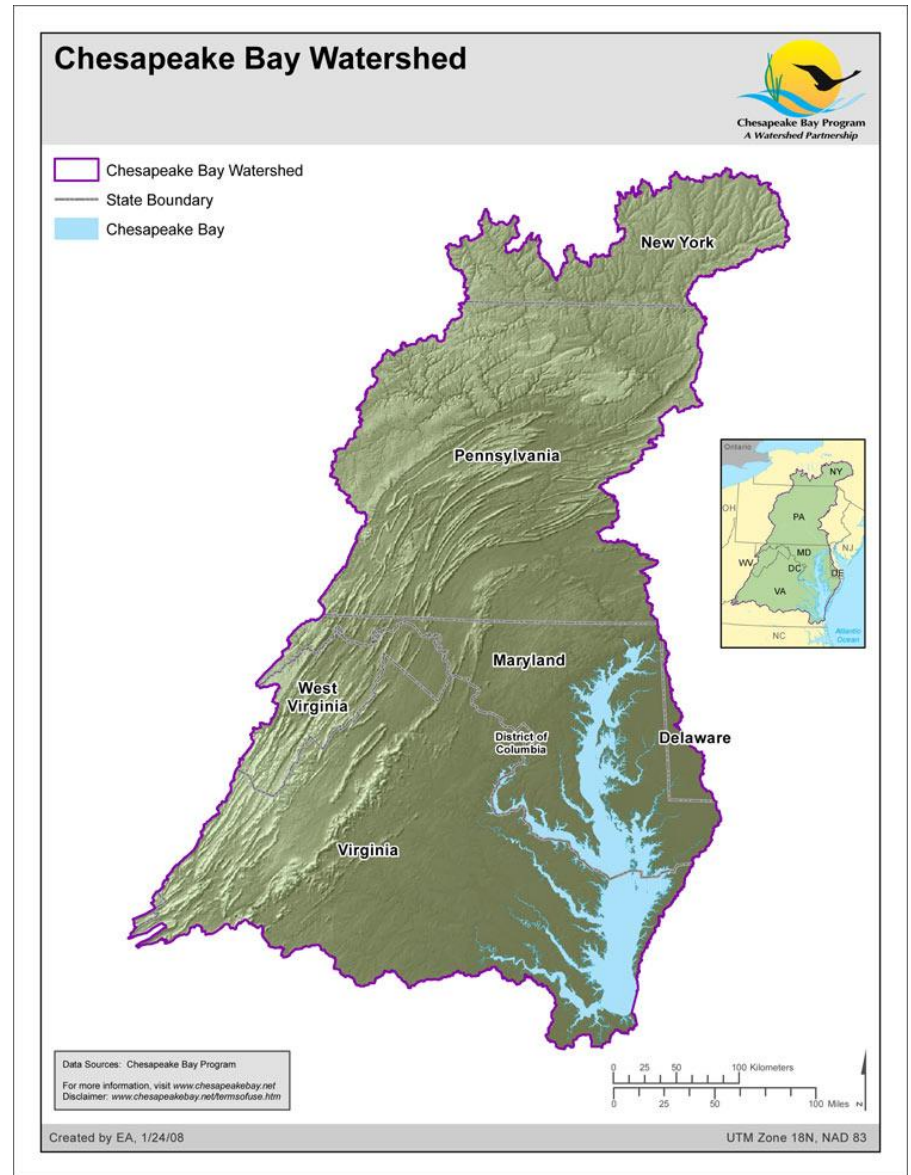


- *Simply put:*  
We are a regional partnership **working together to meet the goals of the Chesapeake Bay Watershed Agreement.**

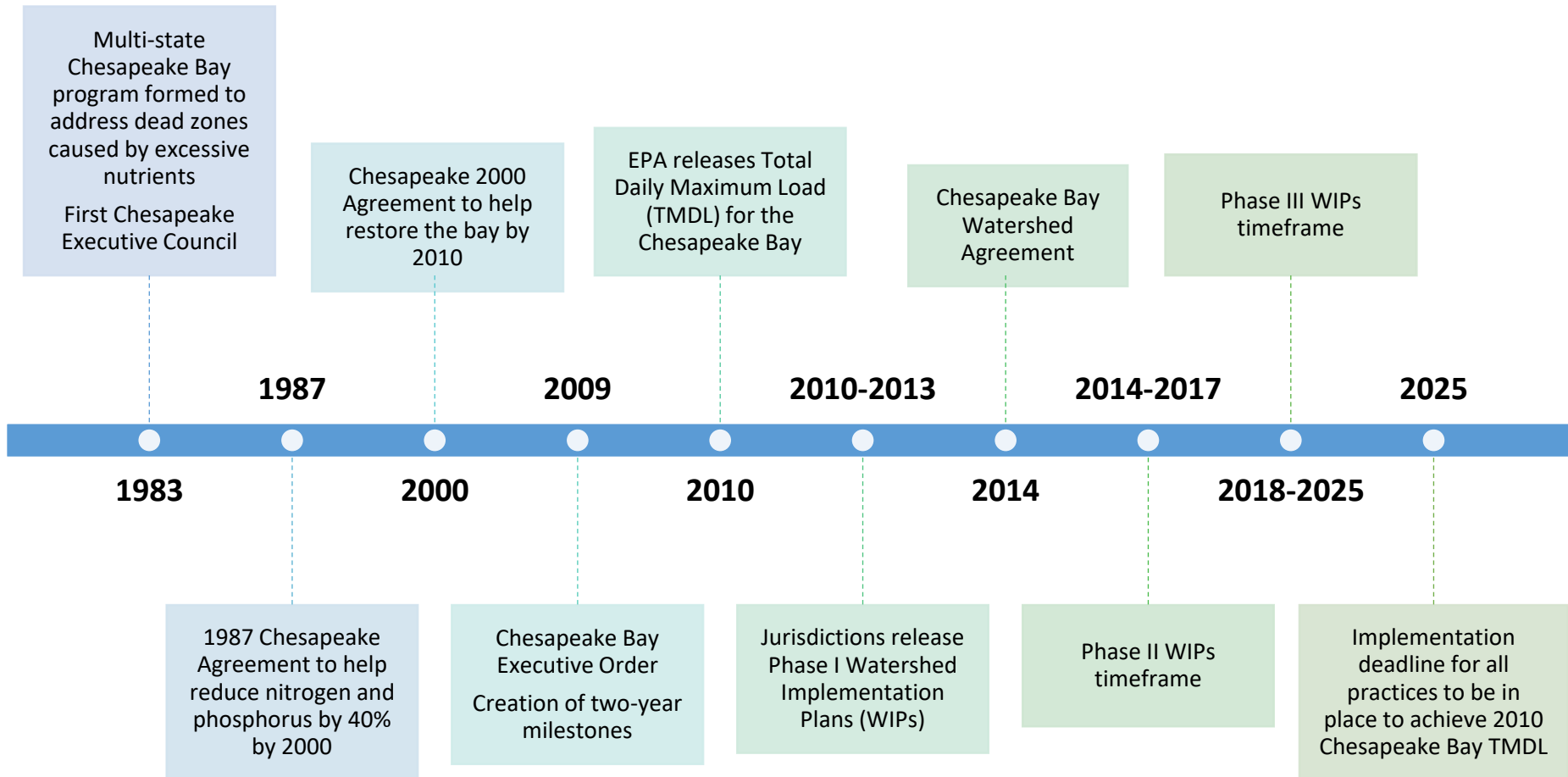


# Chesapeake Bay Watershed

- The watershed is 64,000 square miles and includes 7 jurisdictions:
  - Delaware
  - District of Columbia
  - Maryland
  - New York
  - Pennsylvania
  - Virginia
  - West Virginia
- Chesapeake Bay Program was formed in 1983 due to rapid loss of aquatic life and wildlife due to excess nitrogen and phosphorus



# Timeline of Chesapeake Bay Water Quality Issues and Responses



[Additional Bay Program History](#)

# Guiding Principles of the Chesapeake Bay Program and Water Quality Goal Implementation Team

[CBP Governance Protocols](#)

[WQGIT Governance Protocols](#)

[2014 Chesapeake Watershed Agreement](#) (*amended January 24, 2020*)

- Established goals and outcomes for the restoration of the Bay

[Clean Water Act \(CWA\)](#)

[Executive Order 13508](#)

[Chesapeake Bay Total Maximum Daily Load \(TMDL\)](#)

- “Pollution diet” established by EPA in 2010 for nitrogen, phosphorus, and sediment

[Watershed Implementation Plans \(WIPs\)](#)

- Jurisdictions developed plans to reduce specific sources (i.e. wastewater treatment plants, urban stormwater, agriculture)

# Chesapeake Bay Program Partners

EPA (Represents U.S. Government)

Jurisdictions (DE, D.C., MD, NY, PA, VA, WV)

Chesapeake Bay Commission

Federal agencies

Academic institutions

Non-governmental organizations

- Chesapeake Bay Foundation, Nature Conservancy

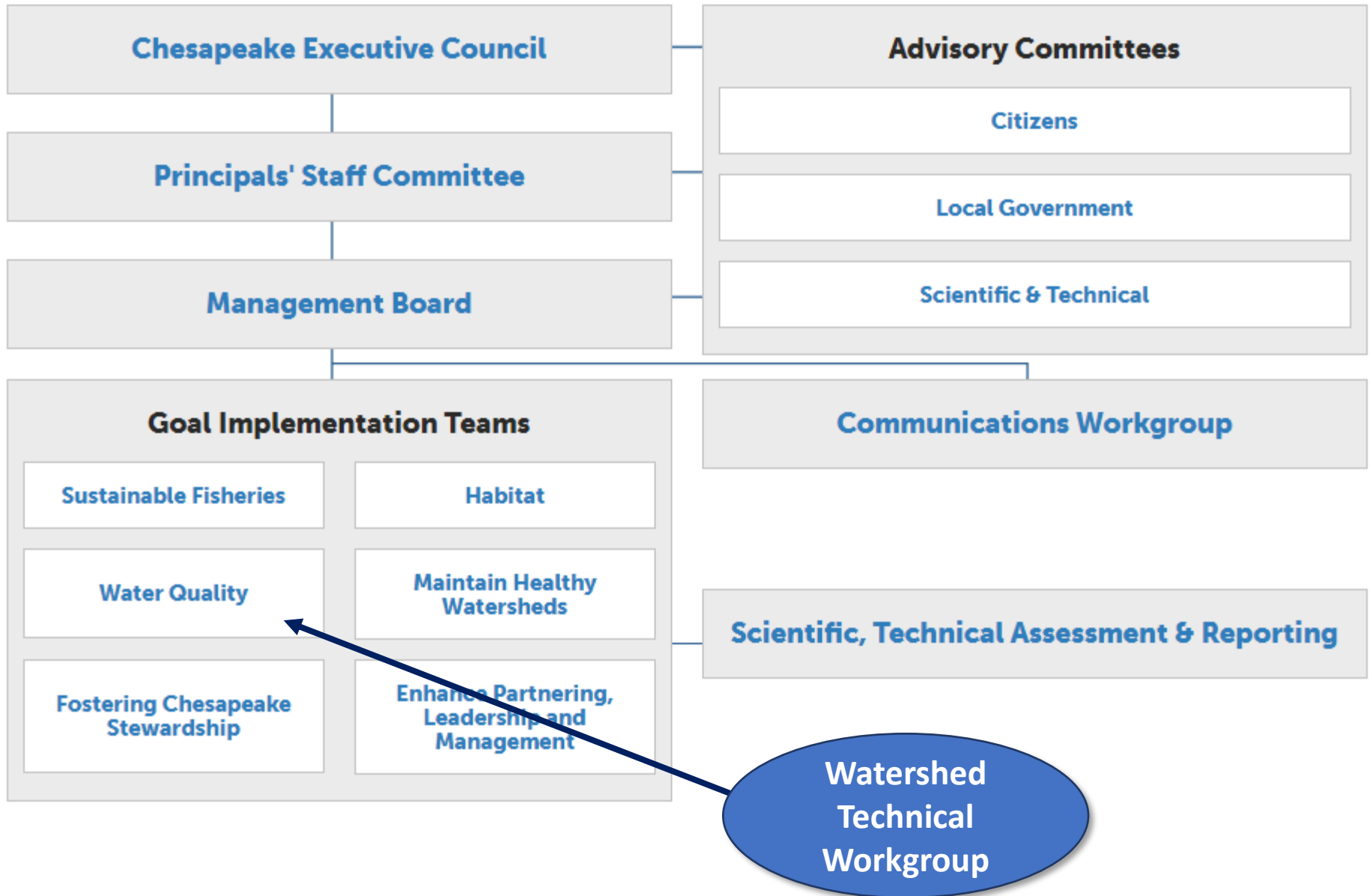
Advisory Committees

- Scientific, Local Government, Citizen



**Watershed  
Agreement  
Signatories**

# WTWG position in Chesapeake Bay Program





# Other Goal Implementation Teams (GITs) and Workgroups (WGs) Applicable to the WTWG

Water Quality Goal Implementation Team ([WQGIT](#))

Federal Facilities Workgroup ([FFWG](#))

Milestones Workgroup ([MSWG](#))

Urban Stormwater Workgroup ([USWG](#))

Wastewater Treatment Workgroup ([WWTWG](#))

Agriculture Workgroup ([AgWG](#))

Land Use Workgroup ([LUWG](#))

BMP Verification Ad Hoc Action Team ([BMPVAHAT](#))

Modeling Workgroup ([Modeling Team](#))

# Watershed Technical Workgroup Members

*last updated on 10.29.2021*

## Chair

<u>Affiliation</u>	<u>Name</u>	<u>Term</u>
Chair	Cassandra Davis (NYSDEC)	2021- 2022

## At- large Members

<u>Affiliation</u>	<u>Name</u>	<u>Term</u>
At- large	Norm Goulet (NVRC)	2021- 2023
At- large	Jessica Rodriguez (DoD)	2021- 2023
At- Large	Jordan Baker (HRG Inc.)	2021- 2023

## Signatory Members

<u>Affiliation</u>	<u>Primary</u>	<u>Secondary</u>
MD	Greg Sandi (MDE)	Sarah Lane (MDNR)
VA	Bill Keeling (VA DEQ)	Arianna Johns (VA DEQ)
PA	Ted Tesler (PA DEP)	Lisa Beatty (PA DEP)
DC	Matt English (DOEE)	John Maleri (DOEE)
DE	Chris Brosch (DDA)	Clare Sevcik (DNREC)
WV	Alana Hartman (WV DEP)	Dave Montali (Tetra Tech)
NY	Cassandra Davis (NYSDEC)	Lauren Townley (NYSDEC)
EPA	Jeff Sweeney (EPA)	Megan Thyne (EPA)



**Voting  
Members**

## WTWG Advisors

<u>Affiliation</u>	<u>Name</u>
Modeling	Gary Shenk (USGS)
CAST	Jess Rigelman (J7 Inc.)
USGS	Mark Bennet (USGS)
CAST	Olivia Devereux (Devereux Consulting)
CAST	Sucharith Ravi (UMCES)
NRCS	Leon Tillman (NRCS)
Land Use WG	Peter Claggett (USGS)
Agriculture WG	Loretta Collins (UMD)
Urban Stormwater WG	David Wood (CSN)

# Watershed Technical Workgroup Members

*last updated on 10.29.2021*

## Chair

<u>Affiliation</u>	<u>Name</u>	<u>Term</u>
Chair	Cassandra Davis (NYSDEC)	2021- 2022

## At- large Members

<u>Affiliation</u>	<u>Name</u>	<u>Term</u>
At- large	Norm Goulet (NVRC)	2021- 2023
At- large	Jessica Rodriguez (DoD)	2021- 2023
At- Large	Jordan Baker (HRG Inc.)	2021- 2023

## Signatory Members

<u>Affiliation</u>	<u>Primary</u>	<u>Secondary</u>
MD	Greg Sandi (MDE)	Sarah Lane (MDNR)
VA	Bill Keeling (VA DEQ)	Arianna Johns (VA DEQ)
PA	Ted Tesler (PA DEP)	Lisa Beatty (PA DEP)
DC	Matt English (DOEE)	John Maleri (DOEE)
DE	Chris Brosch (DDA)	Clare Sevcik (DNREC)
WV	Alana Hartman (WV DEP)	Dave Montali (Tetra Tech)
NY	Cassandra Davis (NYSDEC)	Lauren Townley (NYSDEC)
EPA	Jeff Sweeney (EPA)	Megan Thyne (EPA)

## WTWG Advisors

<u>Affiliation</u>	<u>Name</u>
Modeling	Gary Shenk (USGS)
CAST	Jess Rigelman (J7 Inc.)
USGS	Mark Bennet (USGS)
CAST	Olivia Devereux (Devereux Consulting)
CAST	Sucharith Ravi (UMCES)
NRCS	Leon Tillman (NRCS)
Land Use WG	Peter Claggett (USGS)
Agriculture WG	Loretta Collins (UMD)
Urban Stormwater WG	David Wood (CSN)

## At-Large Members:

*At-large membership is reserved for NGOs, quasi-governmental organizations, federal agencies, academic institutions, and other local practitioners.*

# WTWG Roles and Responsibilities

[WTWG Homepage](#)

## Purpose

- Provide a forum for communication and discussion between and among the jurisdictions and other CBP participants on technical issues

## Main Tasks

- Support the Water Quality Goal Implementation Team (WQGIT) and the greater Bay Program partners in implementing management strategies to achieve the nutrient and sediment reductions necessary to restore the Bay.
- Review and approve how BMPs are tracked and reported by CBP partner jurisdictions and agencies for use in the Watershed Model to ensure that the assumptions accurately reflect real world conditions and are consistent and equitable between the different sectors.

## Member Roles

- Review technical appendices of best management practices (BMPs) expert panels
- Provide technical review & recommendations to the CBP Modeling team on Watershed Model Processes and input data.
- Review Chesapeake Bay watershed model processes and management strategy development and implementation

# What makes an effective member?

**1. Attends meetings regularly**

If a member cannot attend, it is appreciated if they notify us ahead of time and have someone on the line to represent them if possible.

**2. An active participant in meetings**

Participates in discussions and provides feedback to the WTWG leadership or presenters when requested.

**3. Communicates with WTWG leadership ahead of a meeting regarding concerns or objections over a certain decisional or agenda item.**

An open line of communication enables us to be proactive in resolving issues ahead of a meeting in order to bring forward the most appropriate and accurate information and/or proposals. if there are concerns or objections

**4. Conducts themselves in a professional, ethical, and respectful manner.**

# CBP Ethical Behavior Guidelines

1. No participant in a Chesapeake Bay Program discussion shall seek to influence consensus or action by the group in such a way as to derive any direct or indirect personal profit or gain. (Applies also the member's business, affiliations, or close associates).
2. Any participant in a discussion with a conflict of interest is expected to announce that they may have a potential conflict of interest and shall refrain from further participation in any discussion or decision on such matter.  
*Chairs and Co-Chairs of meetings shall remind all participants of this policy before decisional discussions begin.*
3. Suspected violations of this policy will report to the Chair of the Management Board (MB) for further review or elevated to the Chair of the Principals' Staff Committee (PSC) where appropriate.

*All participants in the Chesapeake Bay Program partnership should be familiar with these ethical behavior guidelines, conduct themselves in a manner that places the highest priority on allowing consensus to occur and be respectful of all opinions, including balancing the priorities of the members' respective organization/jurisdiction with the priorities of the partnership.*

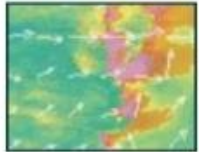
# Chesapeake Bay Model Inputs and Outputs

## Data and Model Inputs

Pollution Control Data  
Land Use Data  
Point Sources Data  
Septic Data  
U.S. Census Data  
Agricultural Data

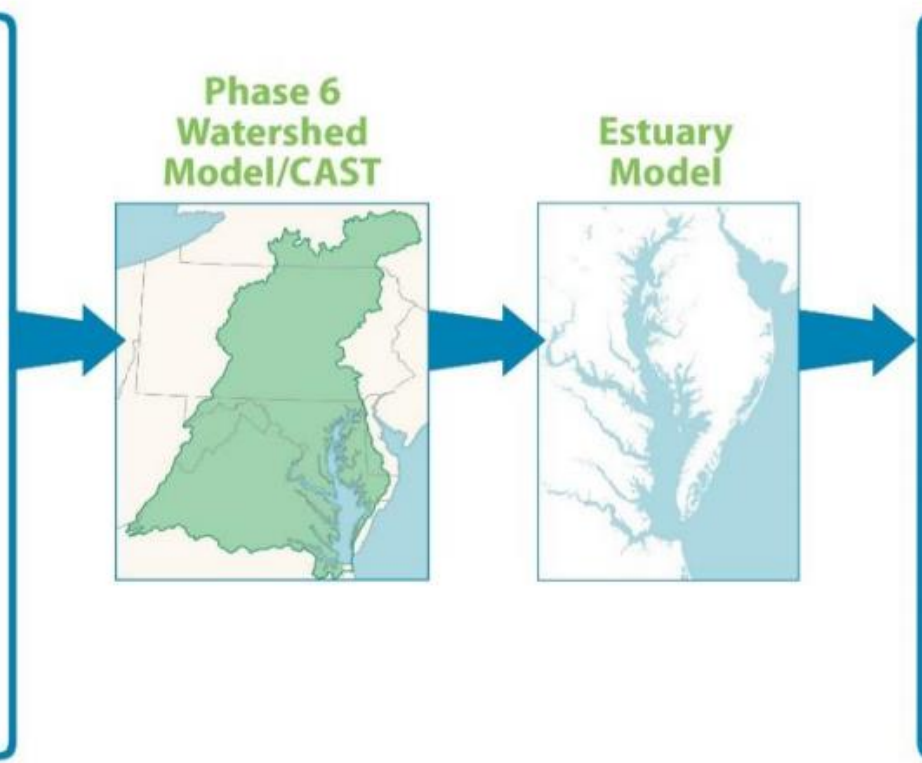


Land Use  
Change  
Model



Airshed  
Model

Precipitation Data  
Meteorological Data  
Elevation Data  
Soil Data

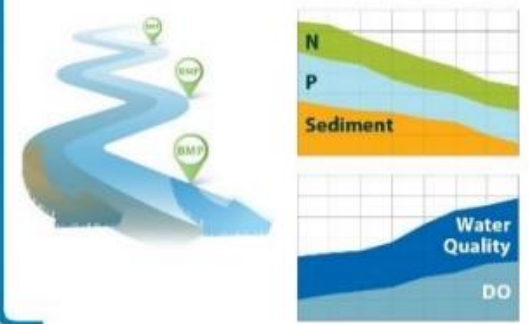


## Model Outputs

### Prediction of Impacts



### BMP Implementation Results





- [Chesapeake Assessment Scenario Tool](#) (CAST) is a web-based nutrient and sediment load estimator tool that allows users to access EPA's Chesapeake Bay Program Office Watershed Model.
- Users specify a geographical area, and then select Best Management Practices (BMPs) to apply on that area. CAST builds the scenario and provides estimates of nitrogen, phosphorus, and sediment load reductions.
- Public scenarios, annual progress and official Watershed Implementation Plans (WIPs), are available for users to review.
- WTWG will review updates to CAST as they occur



# CAST Reports Available

## Atmospheric Deposition

- Air deposition loads for nitrogen and phosphorus at the land-river segment scale

## Base Conditions

- Base conditions utilized for the selected scenario before BMPs are credited, including land use acres, septic systems, and animal counts. Acres and septics after BMPs are credited are provided for reference.

## BMP Input Files

- BMP Input Files download. Generates up to 4 text files (Land, Policy, Animal and Manure Transport) depending on the BMPs included in the selected scenario.

## BMP Submitted vs Credited Report

- BMPs submitted and the BMPs credited for the selected scenario. Cost results per BMP are also provided for reference.

## BMP Summary Report

- Summary of BMPs credited in measurement units and percentages

## Loads per Unit

- Nitrogen, phosphorus and sediment loads per unit estimated by CAST

## Loads Report

- Nitrogen, phosphorus and sediment loads estimated by CAST

## Nutrients Applied

- The nutrients applied report includes the nitrogen and phosphorus nutrients available to be applied to the land and the amount that is applied to each load source. The amount that runs off into waterways is in the Loads Report.

## Quick Results Report

- Load, BMP and cost results for a single scenario summarized for the entire scenario and at the land-river segment scale

## Wastewater Report

- Wastewater, CSO, Monitored Septic, and Rapid Infiltration Basin permit numbers, facility names, MGD, nitrogen, phosphorus, and sediment loads at the land-river segment scale for each source at edge of stream and edge of tide scale

# Resources Available on CAST Website

[Phase 6 Model Source Data](#)

[Model Documentation](#)

[BMP Calculations](#)

[Map Tools & Spatial Data](#)

[Cost Effectiveness of BMPs and Cost Profiles](#)

[Track Progress](#)

- Phase III WIP BMP information
- Trends over Time from 1985 through 2025
- Tributary Summaries for 12 major tributaries
- Submerged Aquatic Vegetation Reports
- River Trends
- Progress Reporting to National Environmental Exchange Network (NEIEN)
- Verification & Quality Assurance Project Plans
- Information for Federal Agencies

# National Environmental Exchange Network (NEIEN)

- Jurisdictions submit annual BMP implementation and verification using [XML files to NEIEN](#).
- Each jurisdiction has their own database(s) to export XML files based on [NEIEN Schema](#).
- CAST pulls jurisdictions' NEIEN submissions and creates error reports available to jurisdictions. Error reports and uploaded NEIEN submissions are available on CAST to certain users with access.

# CAST versus NEIEN

NEIEN

## NEIEN Uses:

- Accepts BMP data submissions from jurisdictions. Processes the data for errors, including active and expired credit durations. Links reported practices to CAST BMPs. Submits BMPs to CAST for further processing.

## NEIEN Outputs:

- Validation Reports

CAST

## CAST Uses:

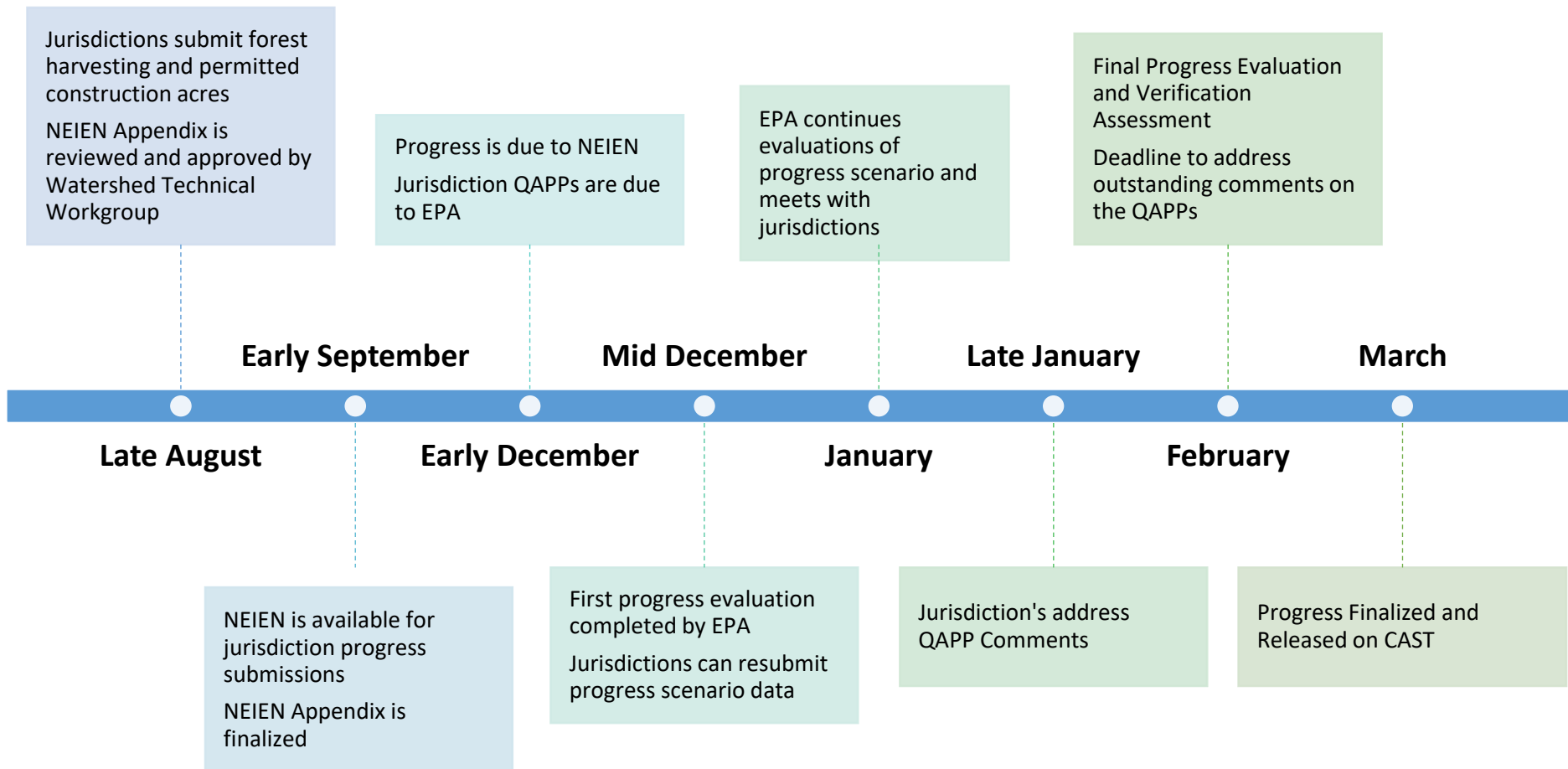
- To develop loading goals, explain trends in monitoring data, plan management actions, combine the effects of different management actions, Bay Program accountability system, provides a common currency

## CAST Outputs:

- Nutrient and sediment loads, BMP implementation, nutrient applications, land use areas, etc. – **changes through time**

# Annual Progress Reporting Estimated Timeline

## Progress Year is June 1 to July 30



All dates on timeline are estimations. Exact dates for annual progress reporting is available in EPA Chesapeake Bay Grant Guidance for that year.

# Why Model Annual Progress?

## Purpose of Annual Progress

- One mechanism to track progress towards nutrient and sediment load reduction targets established by the program to achieve water quality standards.
- Annual progress summarizes the implementation of BMPs to date.

## Which factors impact annual progress?

- Model Inputs
- Model Updates
- Model Processes

# BMP Verification:

## How the Partnership ensure reported practices are present on the ground and functioning as expected

- What is the purpose of verification?
  - To provide regulatory **oversight to and accountability for** practices to ensure that *practices, treatments, and technologies resulting in reductions of nitrogen, phosphorus, and/or sediment pollutant loads are implemented and operating correctly.*
- Each jurisdiction has implemented a [verification program](#) to verify and report practices on an annual basis.
- **Where can I find details about the Verification Program?**  
The Basin-Wide [BMP Verification Framework](#) (published October 2014)

## BMP Verification:

### How does the model (NEIEN) apply verification to practices reported to NEIEN by jurisdictions?

There is a system for flagging BMPs in NEIEN that have not been reinspected

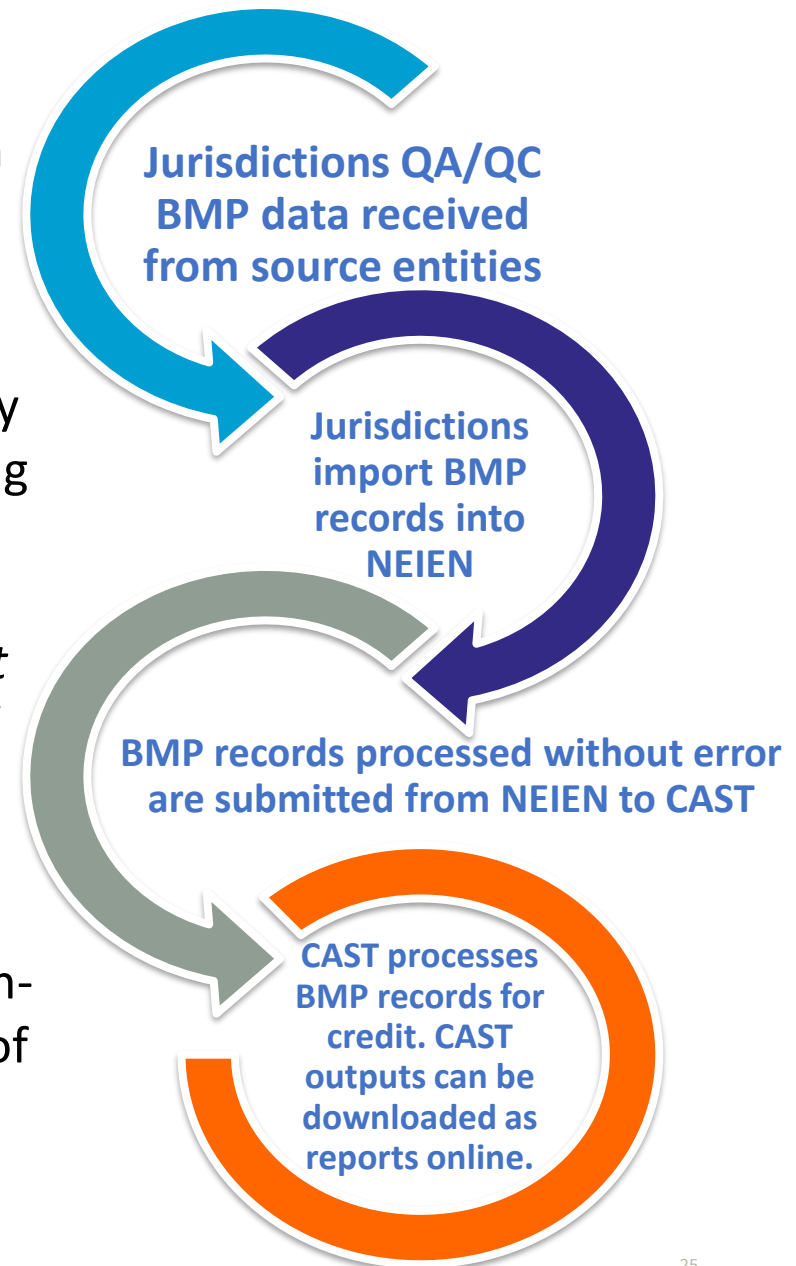
- This system consists of each BMP being assigned an expiration date in the model.
- Expiration Date = Credit Duration.
  - For example, the credit duration of animal waste management systems (AWMS) is 15 years.
  - *This means*, an AWMS can remain credited in the model for a maximum of 15-years until an inspection date needs to be reported.
- Where can I view the Credit Durations for all Practices? [The P6 NEIEN Appendix.](#)



# Annual Progress Evaluation and Verification

[Appendix V](#) outlines the Bay Program evaluation and verification of annual progress:

- The purpose of the progress evaluation is to monitor the progress jurisdictions and the Bay Partnership are making towards 2025 planning targets put in place by the establishment of the TMDL in 2010.
  - *The 2009 Progress Scenario was the most recent progress scenario and will be used as the starting point for evaluating progress to date.*
- The purpose of the verification assessment is to ensure that submitted data reflects real, on-the-ground implementation and verification of best management practices to ensure that reported practices are being maintained and functioning as intended.



# Examples of Recent Decisions and Discussions

- **Ex. 1: Understanding how land use BMPs are backed-out of the model once they are picked up by updated land use model inputs**
  - Decision: Approval of 15-year backout and credit duration for Forestry BMPs
- **Ex. 2: Review technical appendices for the following Expert Panel Reports:**
  - Stream Restoration Practices
  - Animal Mortality Management BMP
  - Agriculture Ditch Management BMP

# WTWG Leadership Contacts

Vanessa Van Note, EPA- CBPO / WTWG Coordinator  
([vannote.vanessa@epa.gov](mailto:vannote.vanessa@epa.gov))

Cassandra Davis, NYSDEC / WTWG Chair  
([cassandra.davis@dec.ny.gov](mailto:cassandra.davis@dec.ny.gov))

Hilary Swartwood, CRC / WTWG Staffer  
([swartwood.hilary@epa.gov](mailto:swartwood.hilary@epa.gov))

# Acknowledgements

*Special thanks to the Federal Facilities WG and Agriculture WG, who developed the original guides, which we used as a template to create this one.*