

Chesapeake Bay Program Partnership Structure and Modeling Purpose



Chesapeake Bay Program
A Watershed Partnership

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Who is the Chesapeake Bay Program?

☞ The CBP is a partnership

- Federal agencies
- State agencies
- Local governments
- Non-profit organizations
- Academic institutions

Chesapeake Bay watershed





Chesapeake Bay Program Partnership

🌀 Federal agencies

- Environmental Protection Agency (EPA)
- US Department of Agriculture (USDA)
- US Forest Service (USFS)
- US Geological Survey (USGS)
- US Fish and Wildlife Service (USFWS)
- And more

🌀 State agencies

- Natural Resources/Environmental departments
- Agricultural departments
- Parks and Recreation groups
- Fish and Wildlife agencies

🌀 Local Governments

Alphabet
soup!

DAF
DCR
DCNR
DDA
DEC
DEP
DEQ
DNR
DNREC
MDA
MDE
PDA



Chesapeake Bay Program Partnership

∞ Non-profit organizations

- Chesapeake Bay Foundation
- Center for Watershed Protection
- Ducks Unlimited
- National Fish and Wildlife Foundation
- And more

∞ Academic institutions

- Land grant universities
- Cooperative Extension programs
- Sea Grant programs
- Research centers and consortiums
- And more



The Partnership Approach

- ∞ Brings together diverse leaders and experts across numerous political boundaries to collaborate on achieving a common goal –a healthy bay
 - Consolidate and coordinate efforts
 - Share resources
 - Compliment efforts and avoid duplication

- ∞ Partners come together to evaluate data, share best practices, report on progress toward goals, and make policy and management decision



History of the Partnership

☞ 1983 Chesapeake Bay Agreement

- Signed by governors of Maryland, Pennsylvania, Virginia; mayor of District of Columbia; administrator of EPA; chair of Chesapeake Bay Commission
- Signatories became the Executive Council

☞ 1987 Chesapeake Bay Agreement

- 40% nitrogen reduction by 2000

☞ Chesapeake 2000

- Goals to reduce pollution, restore habitat, protect living resources, promote sound land use practices, and engage the public
- Headwater states (Delaware, New York, West Virginia) joined the water quality restoration efforts

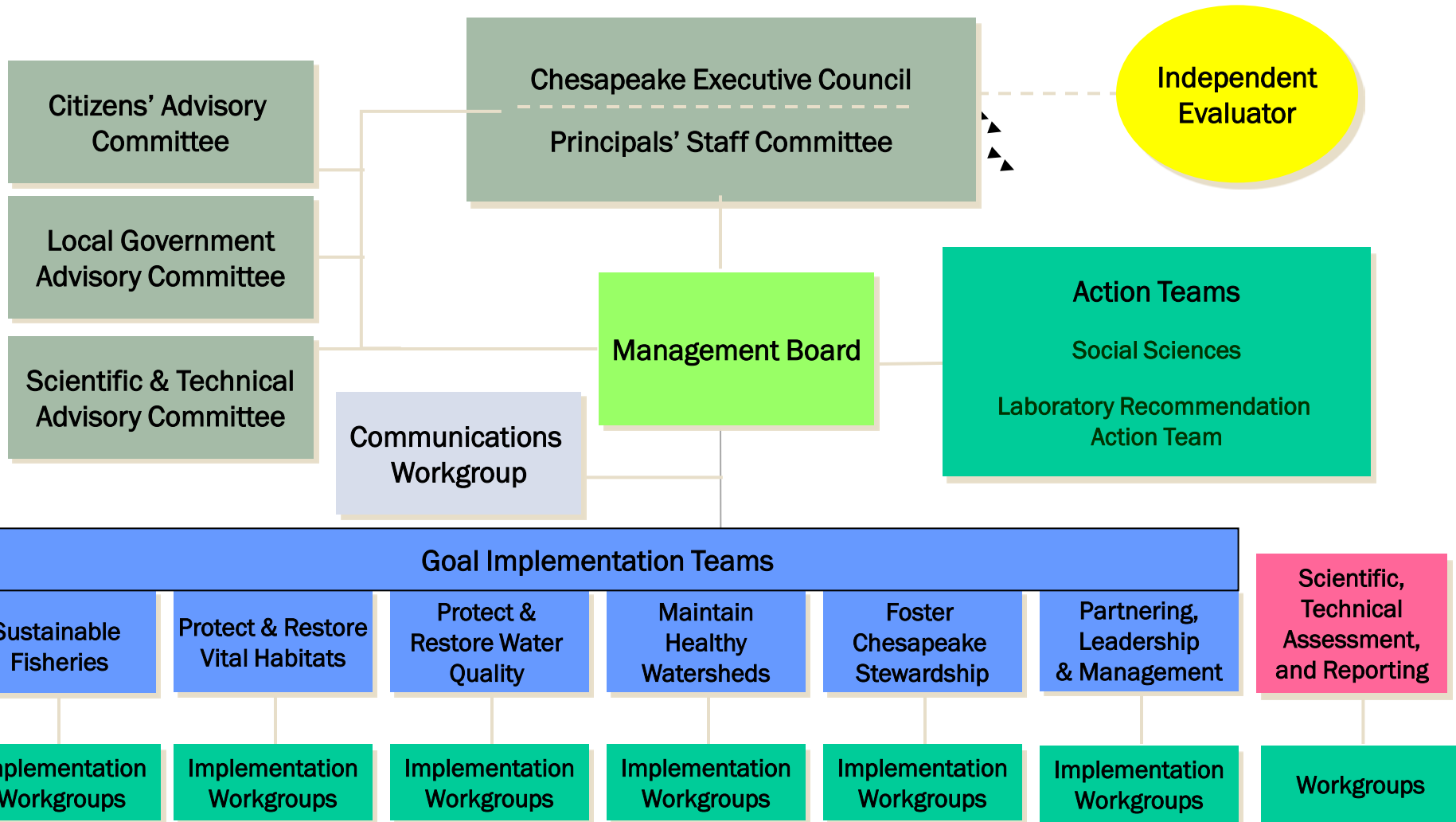


History of the Partnership

- ∞ Executive Order 13508 (May 2009)
 - Increased focus and emphasis on Bay restoration
- ∞ Total Maximum Daily Load (December 2010)
 - Set limits on nitrogen, phosphorus, and sediment
 - 100% of the actions to achieve the TMDL must be in place by 2025
 - 60% of the actions to be in place by 2017
- ∞ Watershed Implementation Plans (2010, 2012, 2017)
 - Outlines how jurisdictions will achieve load reduction goals
 - Spatial and temporal goals for implementing best management practices (BMPs)
- ∞ 2-Year Milestone Goals
 - Interim goals that ensure accountability and progress toward 2017 and 2025 targets



Organizational Structure (4-2-2013)





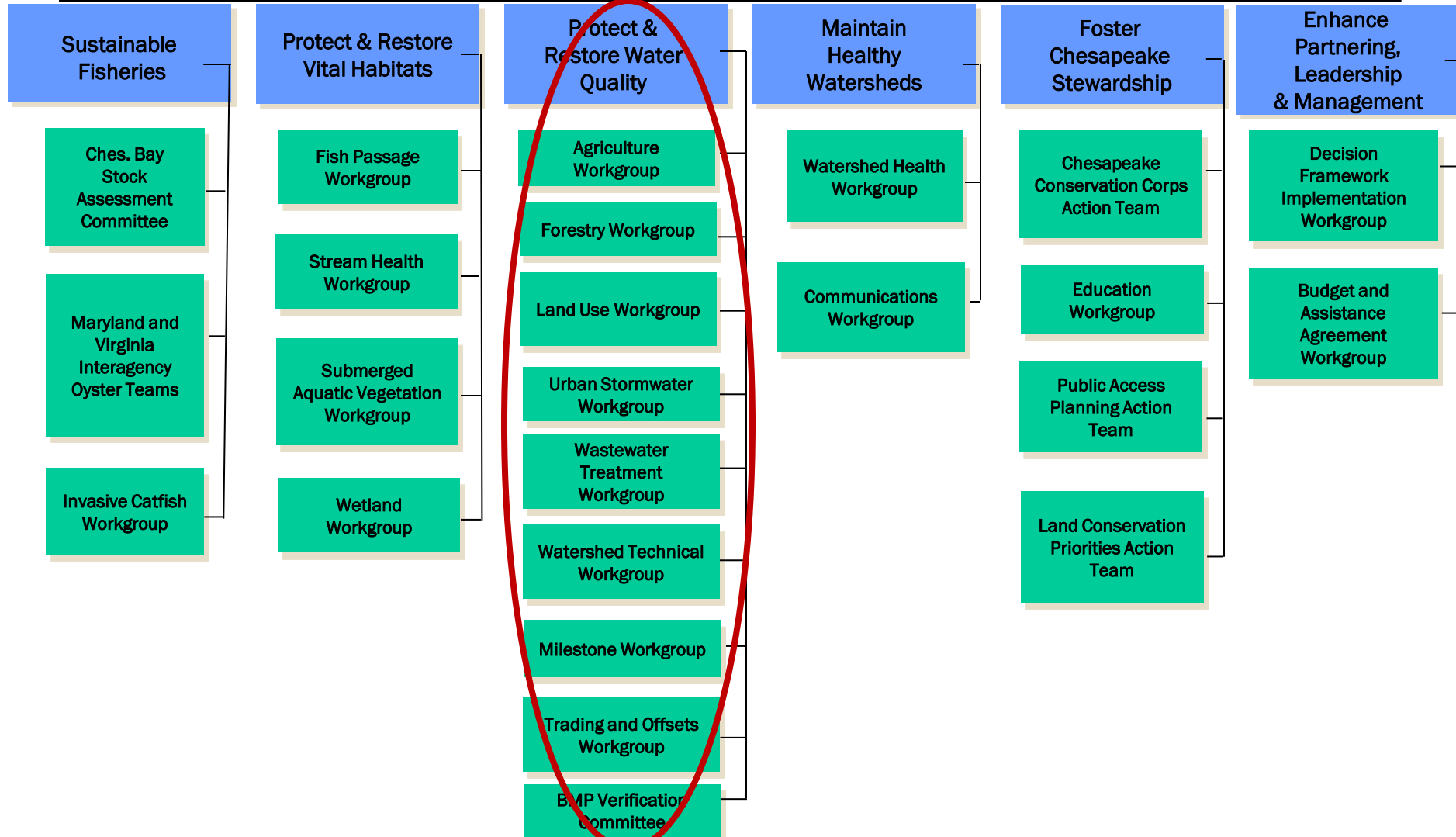
GIT Leadership Profile (4-2-13)

GIT	Chairs	Vice-Chairs	Coordinators	Staffers
1-Sustainable Fisheries	NOAA	MD (DNR)	NOAA	CRC
2-Protect and Restore Vital Habitats	USFWS	NGO (Bay Trust)	USFWS	CRC
3-Protect and Restore Water Quality	VA (DEQ)	Academic (UDel)	EPA	CRC
4-Maintain Healthy Watersheds	NGO (Nature Con.)	MD (MDDP)	EPA	CRC
5-Foster Stewardship	NPS	MD (DNR)	NPS	CRC
6-Enhance Partg, Leadership, & Mgmt	VA (DCNR)	EPA	EPA	CRC
STAR	Academic (UMd)	USGS	USGS	CRC
Communications	NPS	MD (MDE)	NGO (ACB)	CRC
Summary	Total:	Total:	Total:	Total:
	4 Fed	2 Fed	7 Fed	0 Fed
	2 State	4 State	0 State	0 State
	1 NGO	1 NGO	1 NGO	8 NGO-Grantee
1 Academic	1 Academic	0 Academic	0 Academic	



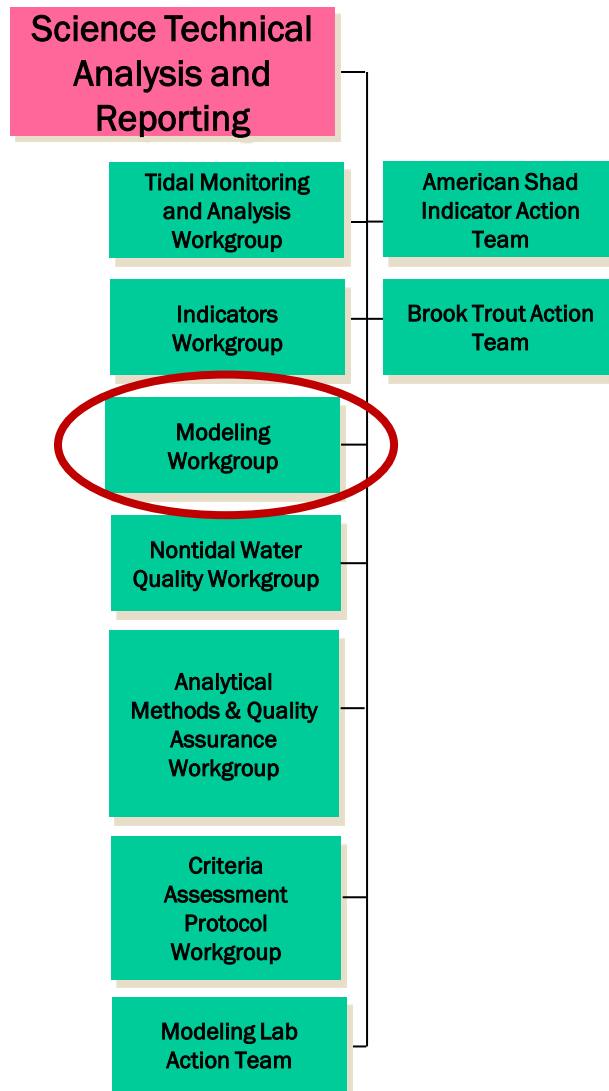
Organizational Structure (4-2-13)

Goal Implementation Teams





Organizational Structure (4-2-13)

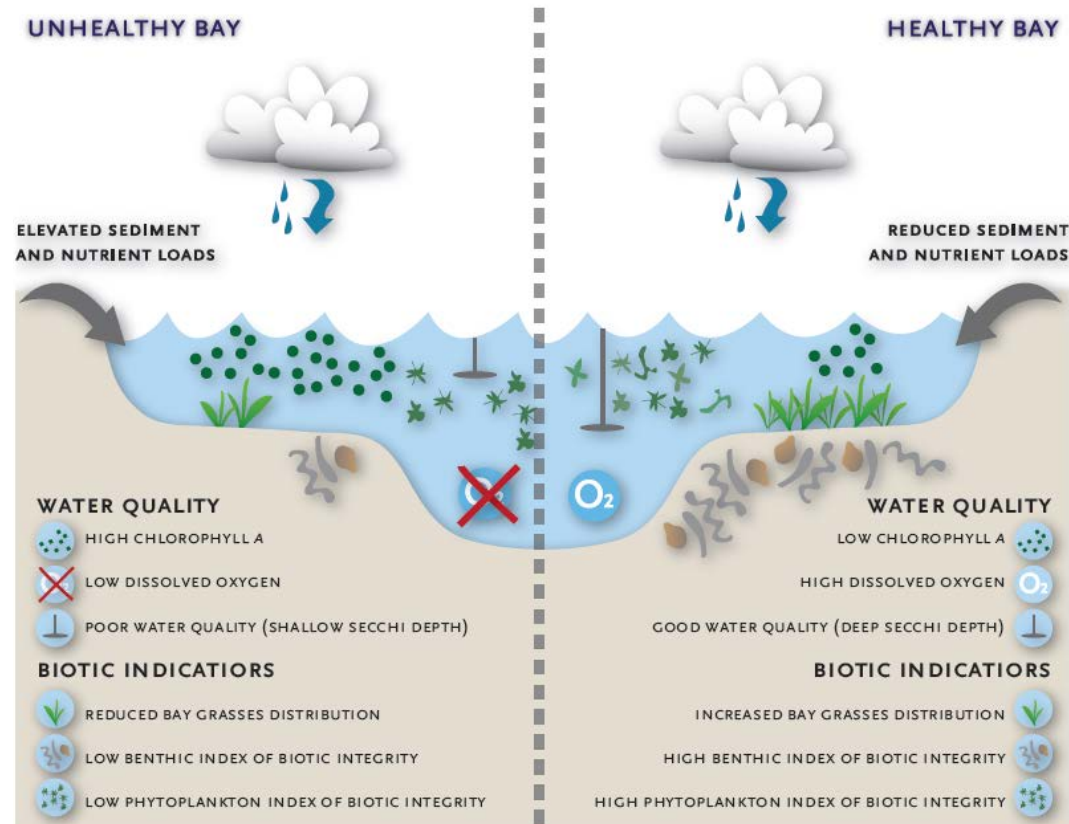


Why use models?

Mathematical representations of complex systems

- Models synthesize large amounts of data
 - The Chesapeake Bay our nations largest estuary!
 - Large watershed with diverse topography and land use
 - Critical habitat for many plants and animals

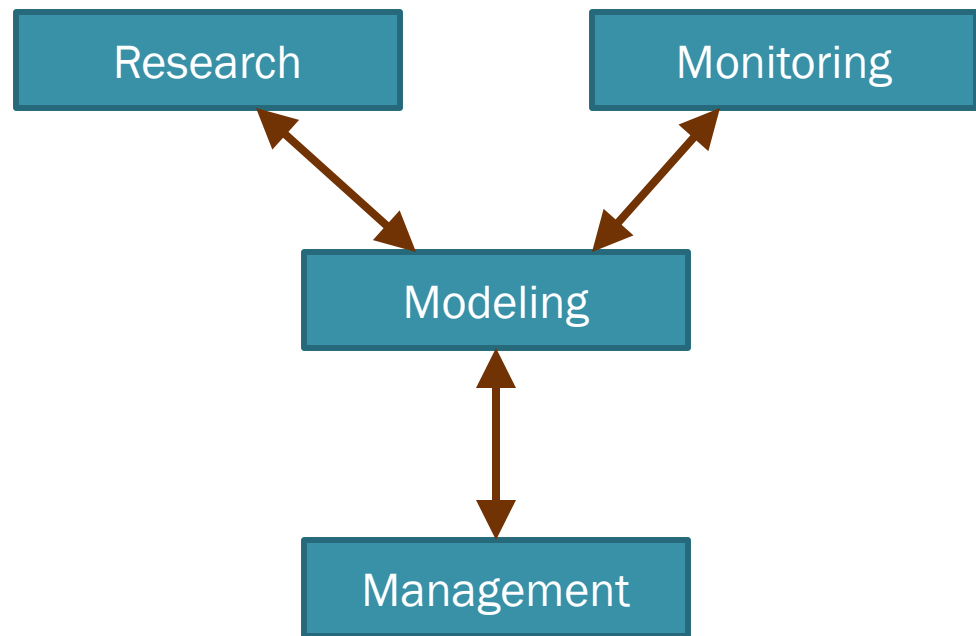
Model scenarios predict responses to changes in inputs and processes



Why use models?

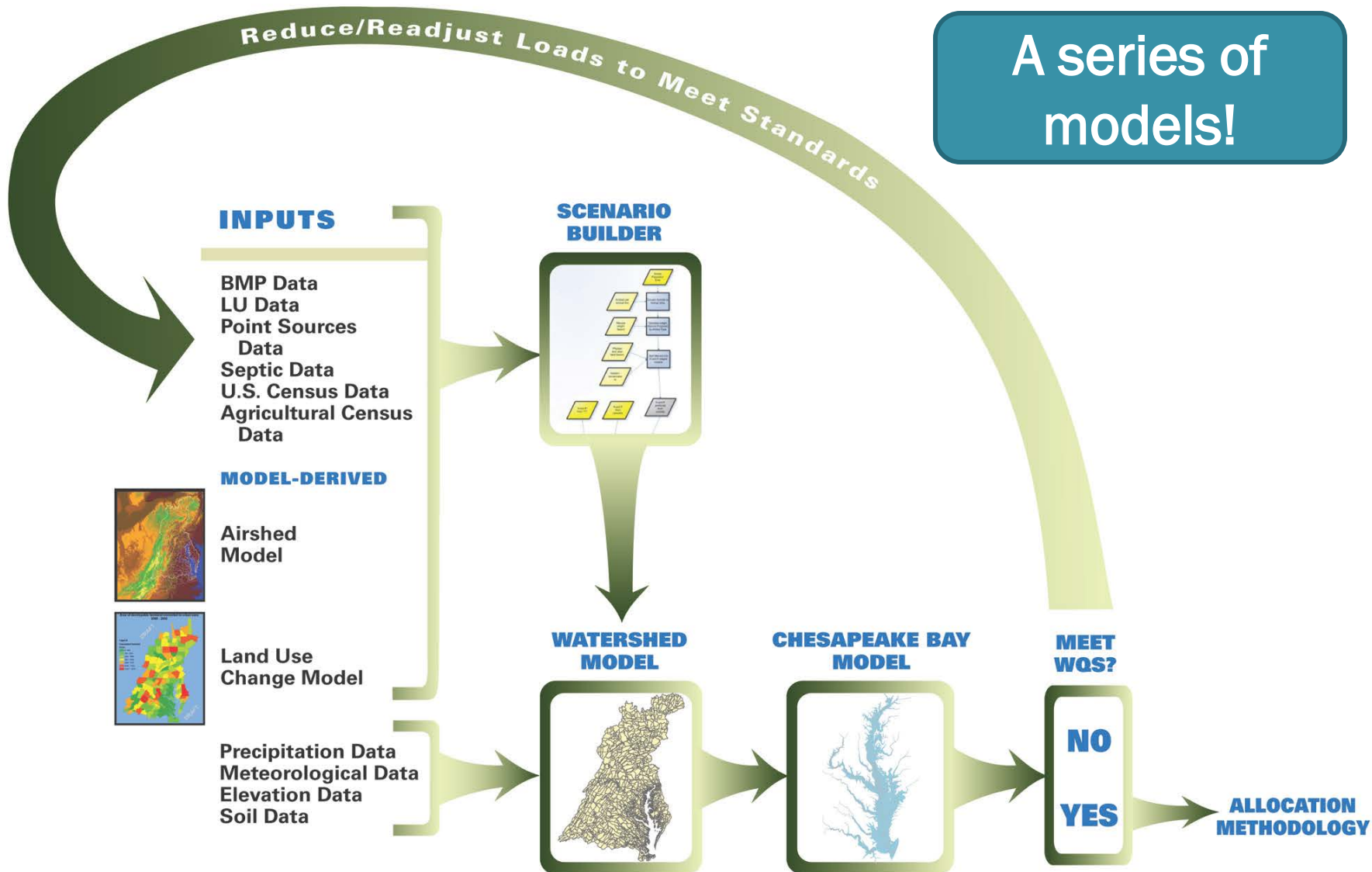
∞ Models are part of a toolkit for decision making

- ∞ Establish Total Maximum Daily Load reductions
- ∞ Track load changes over time



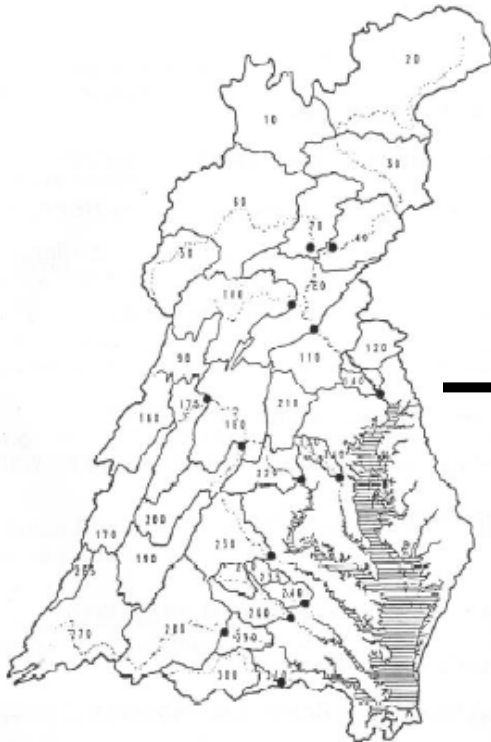
Partnership Models

A series of models!



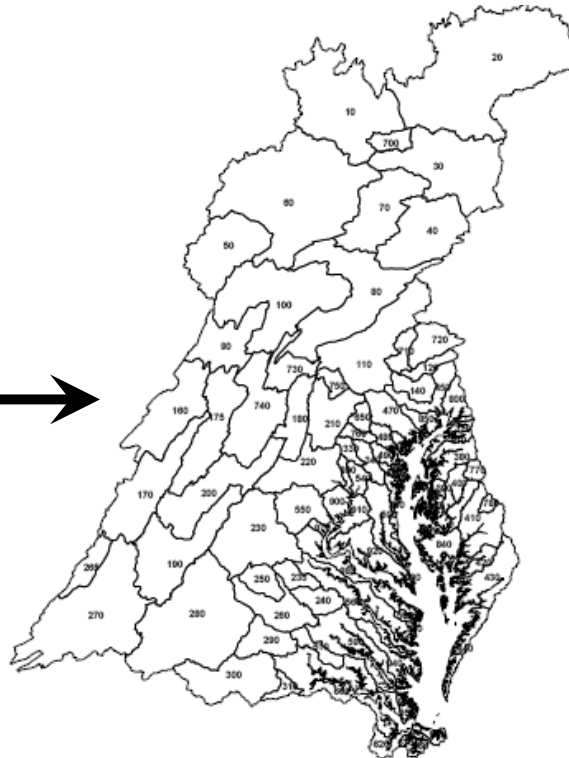
History of the Watershed Model

Phase 1



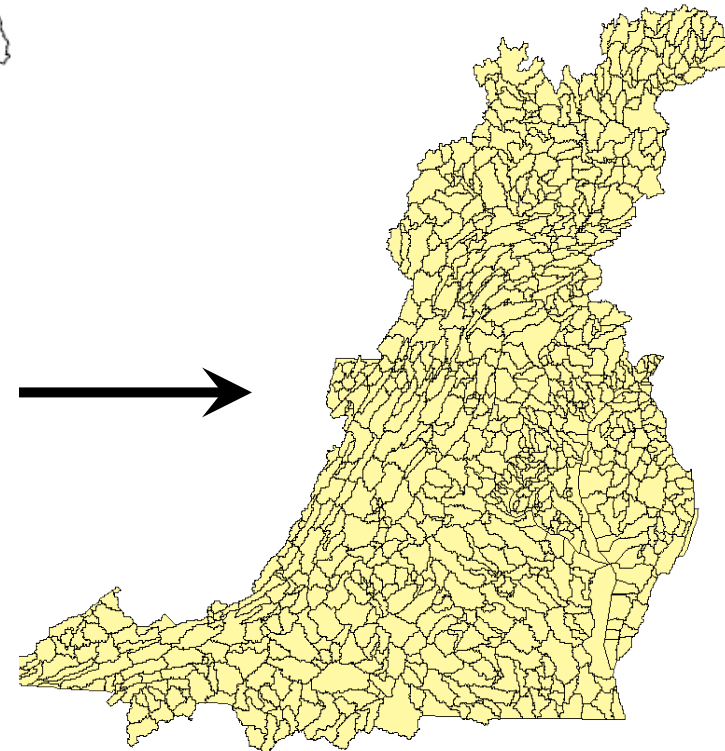
- Completed in 1982
- 63 model segments
- 5 land uses
- 2 year calibration period
- No BMPs simulated

Phase 4



- Completed in 1998
- 94 model segments
- 9 land uses
- 14 year calibration period
- 20 BMP designations

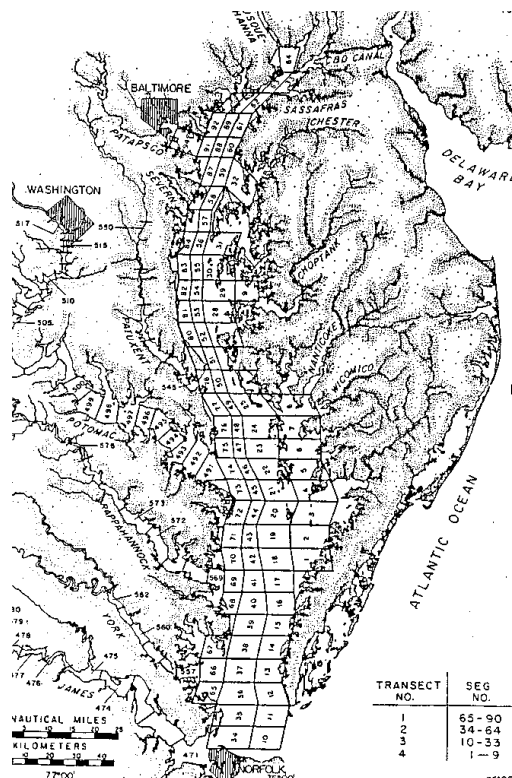
Phase 5



- Completed in 2010
- 1,000+ model segments
- 30 land uses
- 21 year calibration period
- 1400 BMP designations

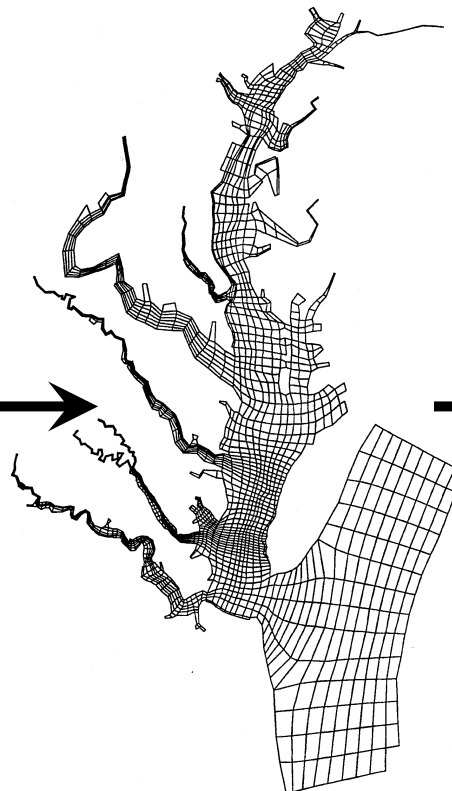
History of the Bay Water Quality Model

1987



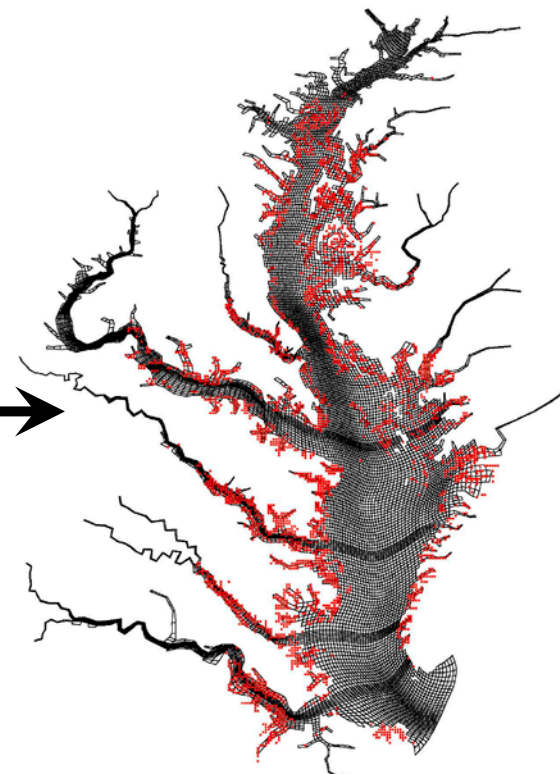
- Steady State
- Advanced Bay Science
- Contributed to initial "40%" goal

1997



- 10,000 cells
- Hydrodynamics resolved tides
- Sediment/water interaction
- Included living resources
- Used for tributary strategies

2008



- 57,000 cells
- Sub-hour hydrodynamics
- Oysters
- Menhaden

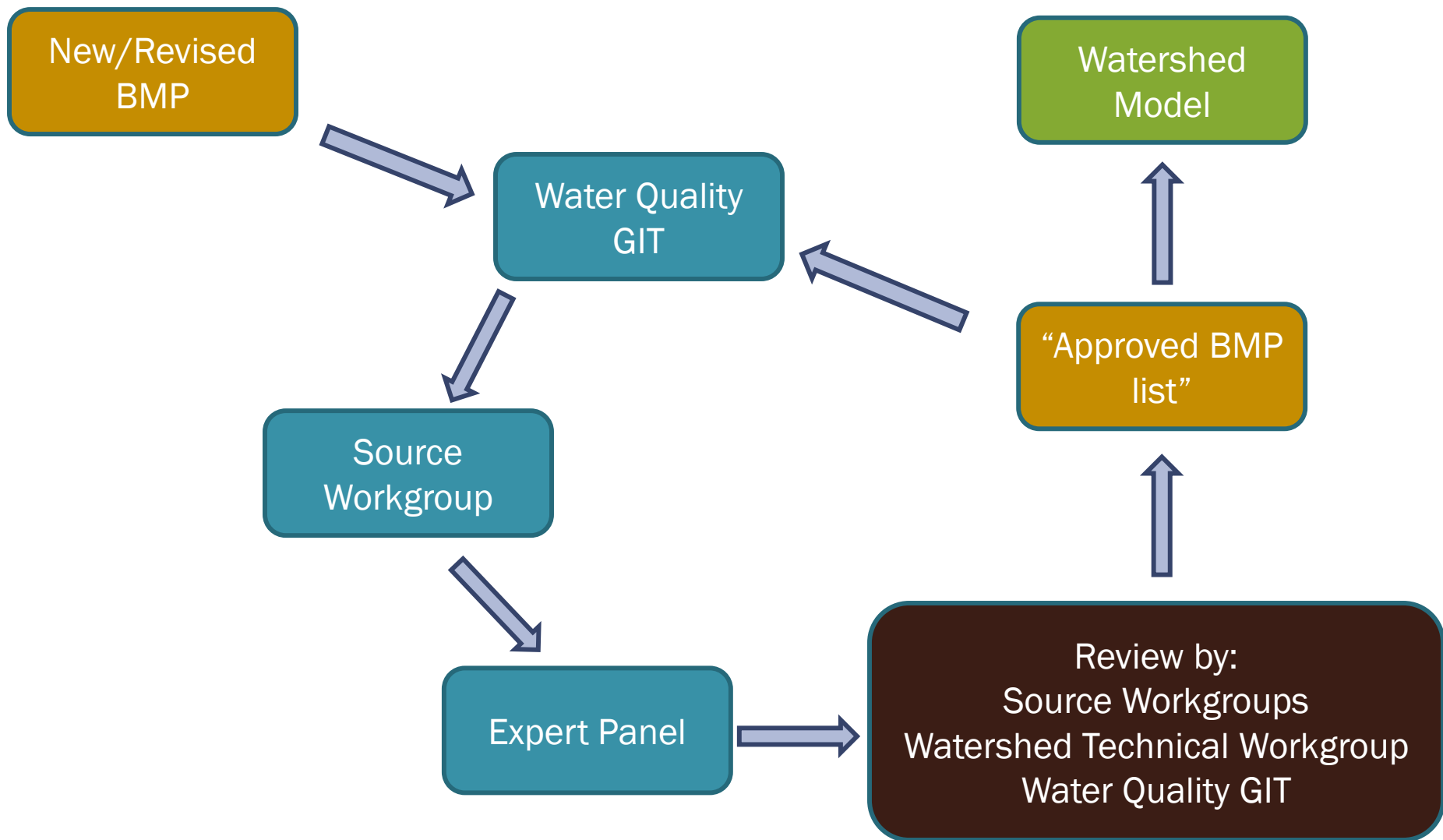


Model Improvements Continue

- ∞ Improvements in precision, scope, complexity, and accuracy have occurred over time
- ∞ The Partnership is committed to continuously improving the models
- ∞ Revisions regularly shared for review, testing, and recommendations by Partnership
- ∞ New creditable data and restoration practices can be incorporated
- ∞ Extensive independent scientific peer review



Protocol for Adding/Modifying BMPs





Expert Review Panels: Planned and Active

Agriculture

- ☞ Nutrient Management
- ☞ Poultry Litter
- ☞ Conservation Tillage
- ☞ Cover Crop Panel
- ☞ Manure Treatment Technologies
- ☞ Animal Waste Storage Systems
- ☞ Manure Injection/Incorporation
- ☞ Cropland Irrigation Management

Urban

- ☞ Urban Retrofits
- ☞ Performance Based Management
- ☞ Stream Restoration
- ☞ LID and Runoff Reduction
- ☞ Urban Fertilizer Management
- ☞ Erosion and Sediment Control
- ☞ Illicit Discharge Elimination
- ☞ Impervious Disconnect
- ☞ Floating Wetlands
- ☞ MS4 Minimum Management Measures

Forestry

- ☞ Riparian Buffers
- ☞ Urban Tree Planting
- ☞ Forest Management
- ☞ Urban Filter Strips and Upgraded Stream Buffers



The Chesapeake Bay Program...

- ∞ **is a partnership** between federal, state, and local government agencies, non-profit groups, and academic institutions **with a common goal** of restoring the health of the Bay.
- ∞ **is organized to allow thorough participation**, review, and feedback on a variety of issues to **help make management decisions** and **achieve restoration goals**.



The Chesapeake Bay Models...

- are linked to **project loads** of nitrogen, phosphorus, and sediment and **simulate how management decisions** regarding pollution controls, land use, and atmospheric deposition **could impact the ecosystem**, specifically focusing on water quality and living resources.
- have been and will continue to be **modified over time** as **new and better sources of data** become available and as **new technologies** to reduce pollutant losses are **developed and adopted**.

Questions / Discussion



Chesapeake Bay Program

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