

**Challenges faced by
stakeholders in developing
evidence-based management
decisions to improve and
maintain the health of the
Chesapeake Bay watershed and
estuary.**

**Why is it so difficult to build an
effective Watershed
Implementation Plan?**

Social/Political Challenges

- Fairness/Equity
- Property Rights
- Public Resources
- Communications
- Competition for Resources and Attention

Technical Challenges - Knowledge

- Awareness, understanding and appropriate application of the science.
- We may not know the science exist
- We may not be able to find the applicable science
- We may not understand the science
- We may not be able to translate the science to action

Technical Challenges - Timing

- Is the information available when it is needed?
- Our need for the science is driven by the Bay Program's accountability schedule
 - Phase 3 WIPs will be developed between May 2018 and January 2019
 - Two-year Milestones are developed in the Fall/Winter of odd years.
- What do long term trends tell us about the actions we have taken in the last two years?

Technical Challenges - Scale

- What scale of decision making is supported by the models and the various synthesis products?
- We are being asked to plan and engage stakeholders at the local scale
 - City/County
- We need science that is valid and meaningful at that scale

Technical Challenges – Source Attribution

- Which source sector is driving the water quality problems in an area?
- We know poultry populations in Virginia are growing
- We know poultry litter is high in phosphorus
- We know there are watersheds where phosphorous levels are increasing
- Does this mean we know poultry populations are causing the increases?

Technical Challenges - Geographic Variability

- Where should actions be taken?
- Our watershed is not homogeneous.
- Using a Statewide or even Countywide approach to planning implementation is easier, but it is almost certainly wrong.
 - Extended Dry Detention Ponds in Mathews County, VA
- Implementation decisions need to be made at the parcel/field scale.

Technical Challenges - BMP Selection

- Are there viable control actions that can be employed to reduce water quality impacts?
- This is the manifestation of scale, source attribution and geographic variability
- We can easily pick the BMPs with the highest reduction efficiencies or best cost effectiveness
- But it is much harder to pick the right BMPs for a particular place

Technical Challenges - BMP Performance

- Which actions have proven to be effective, or ineffective in the observed water quality response?
- This piece of information is important to our planning and adaptive management process.
- With improved BMP records in the models, is it possible to correlate implementation actions with observed water quality response?

Technical Challenges - Co-Benefits

- How do we maximize the net benefits (ecological, economic, societal, etc.) from our implementation decisions?
- Local implementation partners need to maximize their return on their investment.
- Many are focused on priorities other than Bay restoration

Technical Challenges - Uncertainty

- How sure are we that these answers are right and will result in the desired outcome?
- What is our degree of confidence that if implemented perfectly, our plans will result in attainment of water quality standards?
- If we establish local goals, they are met, and water quality does not respond as we anticipated, it will be difficult to go back to local partners and ask for more. Should we hedge our local goals based on uncertainty?