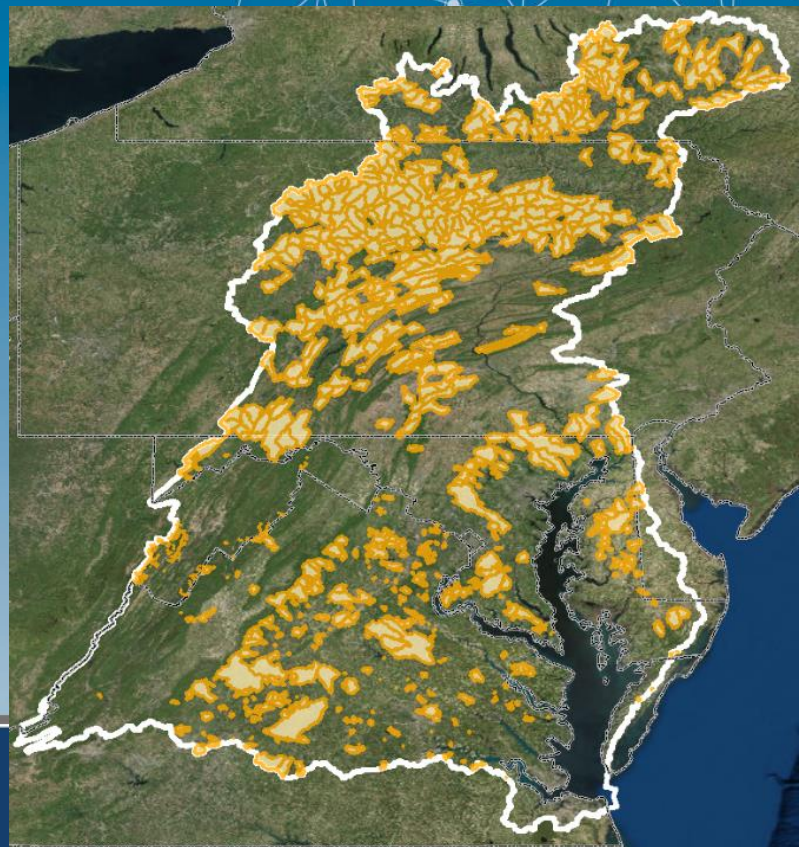
TETRA TECH

Preliminary State-Identified Healthy Watersheds Vulnerability Assessment for the Chesapeake Bay Watershed

Maintain Healthy Watersheds
Goal Implementation Team (GIT)
January 24, 2018 meeting



TETRA TECH

Today's Update

- Introduce the project
- Approach to address challenge of scale
- Seeking input on indicators of watershed condition and vulnerability

Project Overview

- **Apply the Preliminary Healthy Watersheds Assessment (PHWA) framework to**
  - (1) assess current condition of State-Identified Healthy Watersheds,
  - (2) develop an approach for future tracking of condition, and
  - (3) assess vulnerabilities of these watersheds.

Assessing Watershed Health

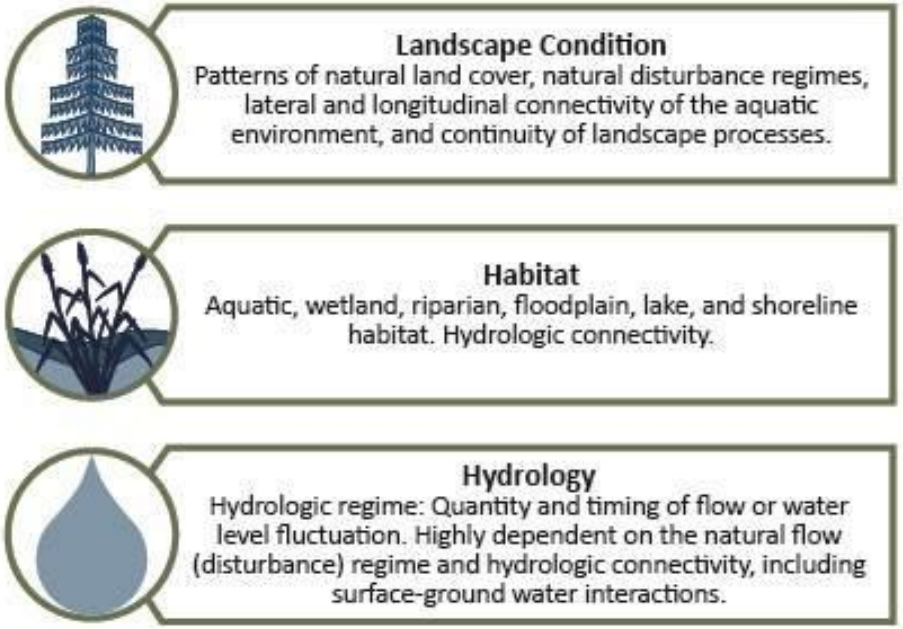
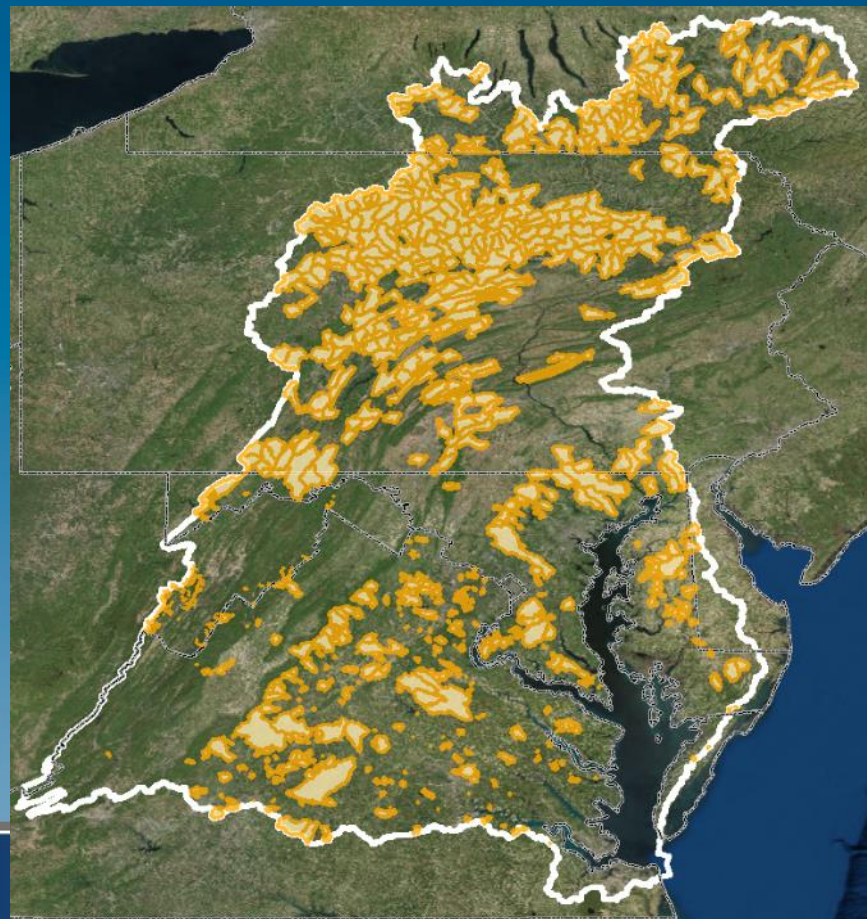


Figure 1. Six attributes of watershed health described in *Identifying and Protecting Healthy Watersheds: Concepts, Assessments, and Management Approaches* (USEPA 2012). Measurement of watershed indicators related to each attribute (i.e., "sub-index") provides the basis for the Watershed Health Index score.

EPA Office of Water Healthy Watersheds Program, March 2017

Challenge: Addressing Watershed Scale

- **PHWA developed nationally to provide data at HUC12 scale**
- **Healthy watersheds identified by Chesapeake Bay states**
  - Differing Approaches/Scales
    - Streamlines only (WV)
    - Custom (total) watersheds upstream of reaches designated as healthy waters (VA/MD)
    - HUC12 selections containing healthy reaches (PA/NY)
- **This project: Provide assessments of state-identified Healthy Watersheds, at scale finer than national PHWA (primarily NHDPlus catchment scale)**



Seeking Input on Additional/Different Data to Assess Current Condition

- While the PHWA provides indicators derived from national data, at HUC-12 scale, regional application of the PHWA framework may be augmented through the use of additional data
- Some of the original PHWA indicators are already (or can be) calculated at NHDPlus catchment scale
- Additional regional / state data may be useful to enhance the assessment of state-identified Healthy Watersheds

Seeking Input on Additional Data to Assess Current Condition

- **Food for thought: Key questions**
  - What are the watershed features or attributes most important to assess?
    - PHWA categories: Landscape Condition, Geomorphology, Habitat, Water Quality, Hydrology, and Biological Condition (and detailed indicators within each category)
    - What data are available to assess those attributes, perhaps in more detail than was possible in the PHWA?
    - What are the limitations (if any) of the available data?

Potential Data Sources

- **For example,**
  - CBP current land cover / land use (high-resolution)
  - Impervious cover
  - Forest cover, forest change
  - Stream bioassessment data

Next Steps

- Currently: getting input from state data contacts
- Compiling and applying additional data to assess current condition
- Define data needs for tracking future condition and vulnerabilities

Tracking Condition of Watershed Health Over Time

- **Develop an approach to use the PHWA framework to assess the health of state-identified healthy watersheds over time**
  - May require monitoring data or other indicators that will be updated at a frequency that will provide timely information on watershed health needed by managers
- **More food for thought:**
  - How to define when watersheds are successfully maintained as healthy?
  - Are there certain thresholds of condition that must be maintained?
  - What degree of natural variability is to be expected, and how will tracking determine whether watershed conditions remain within the expected range of natural variability, or when does a change indicate loss or degradation of watershed health?
  - Over what time period and at what intervals should watershed health be tracked?
  - Spatial and temporal resolution of data

Assessing Vulnerability

- **Apply the PHWA Framework to Identify Vulnerabilities in State-Identified Healthy Watersheds**
  - Provide information will be useful to target state management efforts in healthy watersheds.
- **More Food for Thought:**
  - HWGIT has begun to consider various influences on watershed vulnerability to future risks, e.g., urban growth, energy development, water demand, invasive species, upstream activities, land ownership type and future plans, current and future transportation corridors, climate change, and sea level rise.
    - Anything else to consider? Are data available?
  - Vulnerabilities will be addressed individually, not as a combined index.
  - Available geospatial data layer within Chesapeake Bay watershed relevant to vulnerability assessments. Examples:
    - Land use projections
    - Climate change vulnerability assessment data
    - Thermal and hydrologic data
  - Spatial and temporal resolution of data