CHESAPEAKE WATERSHEDS ASSESSMENT

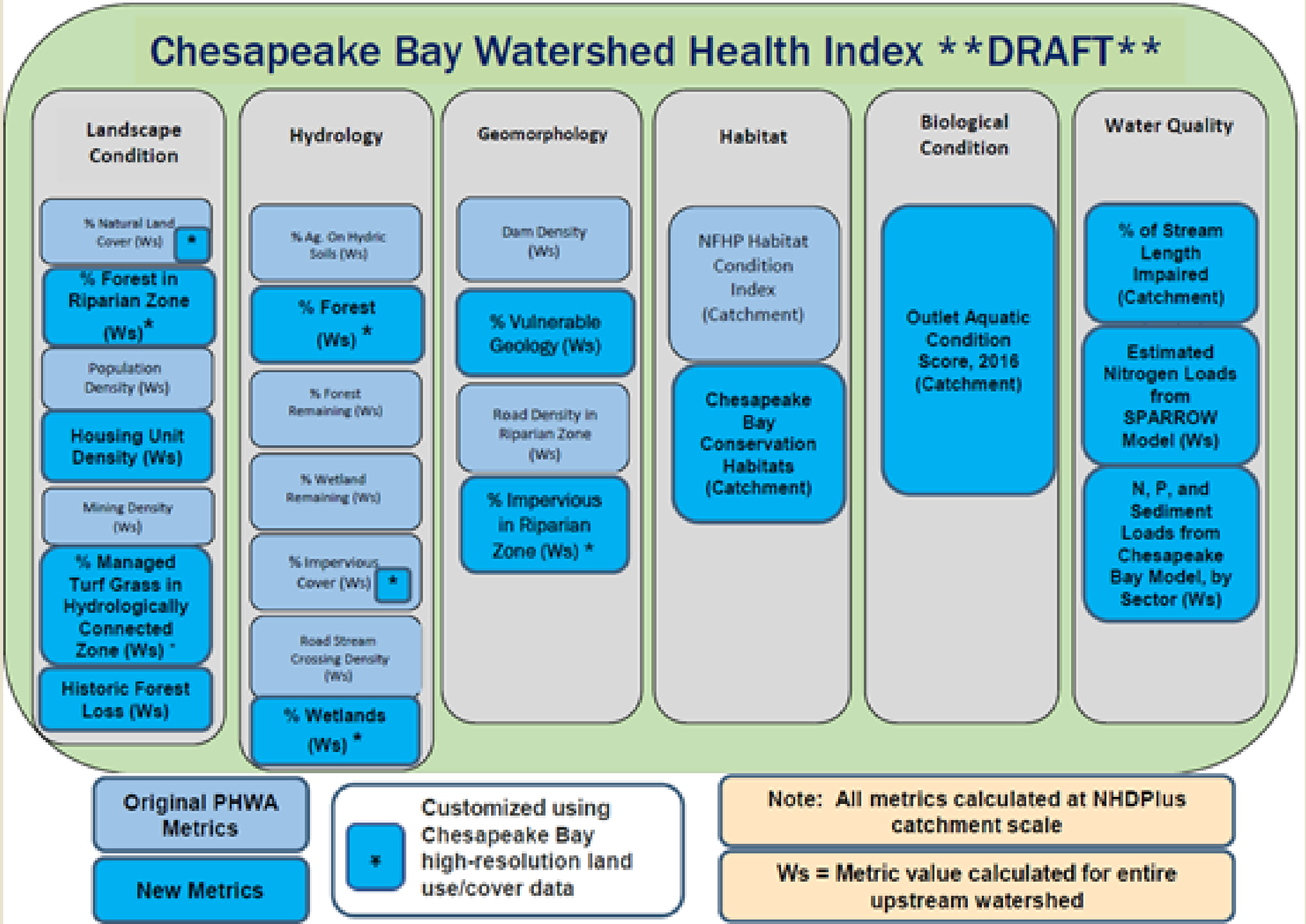
HEALTHY WATERSHEDS GOAL

Goal: Sustain state-identified healthy waters and watersheds recognized for their high quality and/or high ecological value

Outcome: 100 percent of state-identified healthy waters and watersheds remain healthy.

CHESAPEAKE BAY WATERSHED HEALTH INDEX

- Landscape Condition
- Hydrology
- Geomorphology
- Habitat
- Biological Condition
- Water Quality


Chesapeake Bay Watershed Health Index **DRAFT**
Landscape Condition
% Natural Land Cover (Ws) *
% Forest in Riparian Zone (Ws)*
Population Density (Ws)
Housing Unit Density (Ws)
Mining Density (Ws)
% Managed Turf Grass in Hydrologically Connected Zone (Ws) *
Historic Forest Loss (Ws)
Hydrology
% Ag. On Hydric Soils (Ws)
% Forest (Ws) *
% Forest Remaining (Ws)
% Wetland Remaining (Ws)
% Impervious Cover (Ws) *
Road Stream Crossing Density (Ws)
% Wetlands (Ws) *
Geomorphology
Dam Density (Ws)
% Vulnerable Geology (Ws)
Road Density in Riparian Zone (Ws)
% Impervious in Riparian Zone (Ws) *
Habitat
NFHP Habitat Condition Index (Catchment)
Chesapeake Bay Conservation Habitats (Catchment)
Biological Condition
Outlet Aquatic Condition Score, 2016 (Catchment)
Water Quality
% of Stream Length Impaired (Catchment)
Estimated Nitrogen Loads from SPARROW Model (Ws)
N, P, and Sediment Loads from Chesapeake Bay Model, by Sector (Ws)
Original PHWA Metrics
New Metrics
* Customized using Chesapeake Bay high-resolution land use/cover data
Note: All metrics calculated at NHDPlus catchment scale
Ws = Metric value calculated for entire upstream watershed

CHESAPEAKE BAY WATERSHED VULNERABILITY INDEX

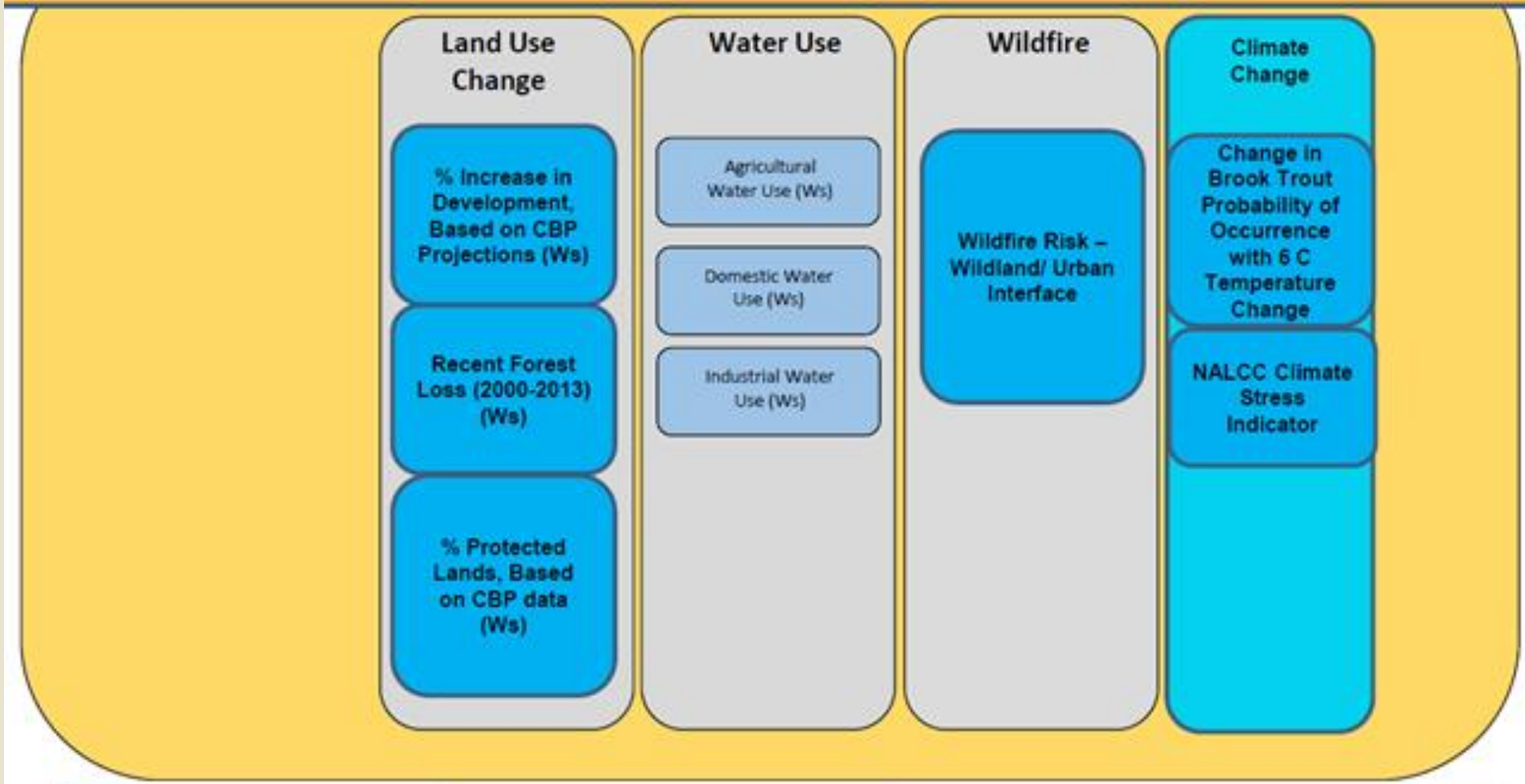
Land Use Change

Water Use

Wildfire

Climate Change

Chesapeake Bay Watershed Vulnerability Indicators **DRAFT**



Original PHWA Metrics

New Metrics

Note: All metrics calculated at NHDPlus catchment scale

Ws = Metric value calculated for entire upstream watershed

CHWA CLIMATE METRICS

Metric	Data Source
• Change in Probability of Brook Trout Occurrence, Current Conditions v. Future Conditions (Future increase of stream temperature of 6 degrees C)	• North Atlantic Landscape Conservation Cooperative (NALCC), Nature's Network, USGS Conte Lab, 2017
• Climate Stress indicator (estimated magnitude of climate stress that may be exerted on habitats (ecosystem types) in 2080, where 2080 climate conditions depart substantially from conditions where the underlying ecosystem type currently occurs are considered to be stressed).	• North Atlantic Landscape Conservation Cooperative (NALCC), Nature's Network, 2017

WHAT ELSE SHOULD BE INCLUDED?

- Sea level rise impact on forests and tidal marches
- EJ screen
- Recent grassland/wetland loss
- Percent working forests
- Human health index
- Shoreline hardening
- Change in precipitation
- Endangered fish species
- Recreational impairments

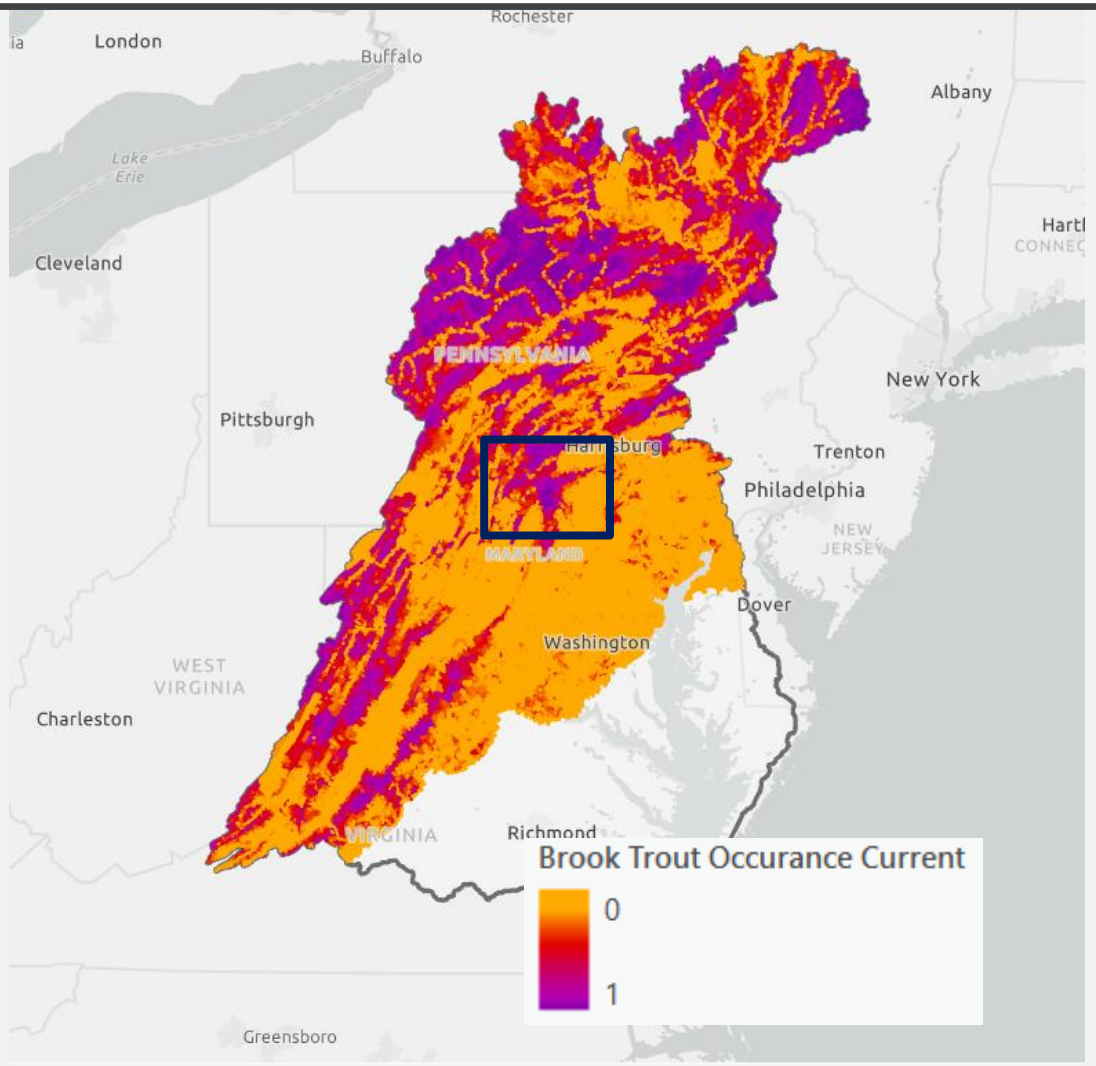
CLIMATE INDICATOR FRAMEWORK

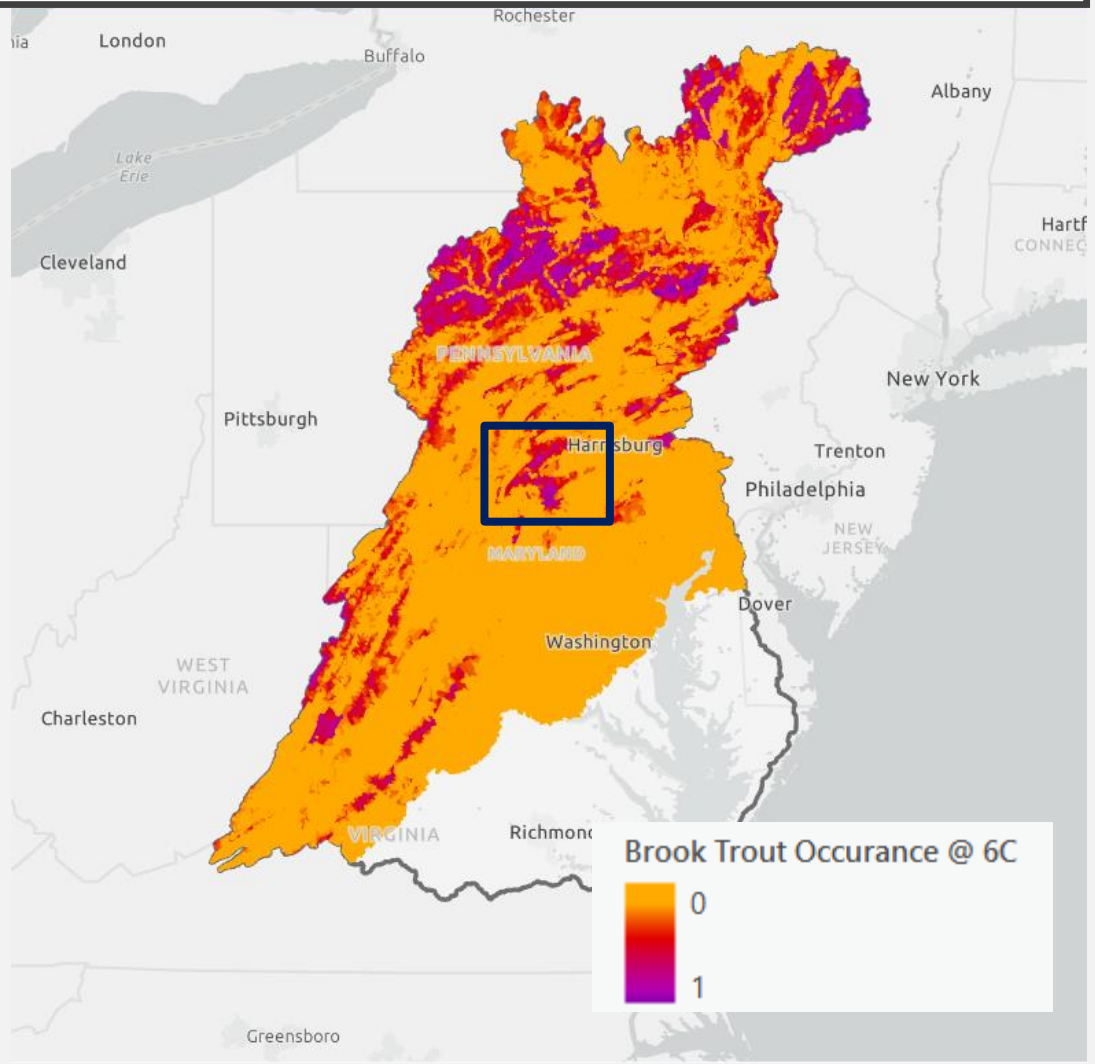
Physical Indicators (Signals of Change) ⇨ Impact Indicators (Ecological and Community Threats) ⇨ Resilience Indicators (Readiness)

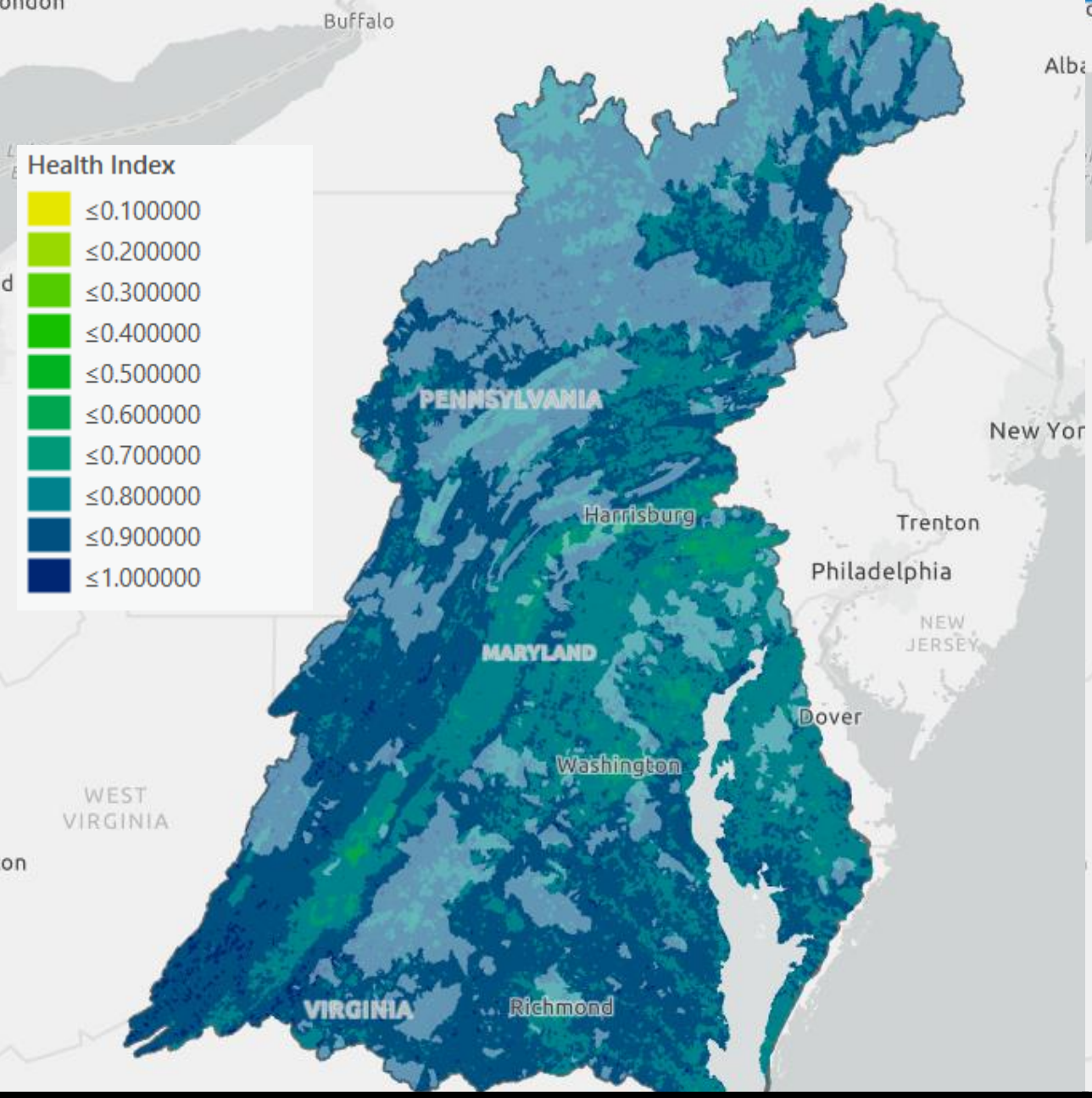
Example

Change in stream Temperature (Signals of Change) ⇨ Change in Brook Trout Habitat (Ecological and Community Threats) ⇨ Where to restore/protect brook trout habitat to increase climate *resilient* occupied habitat? (Readiness)

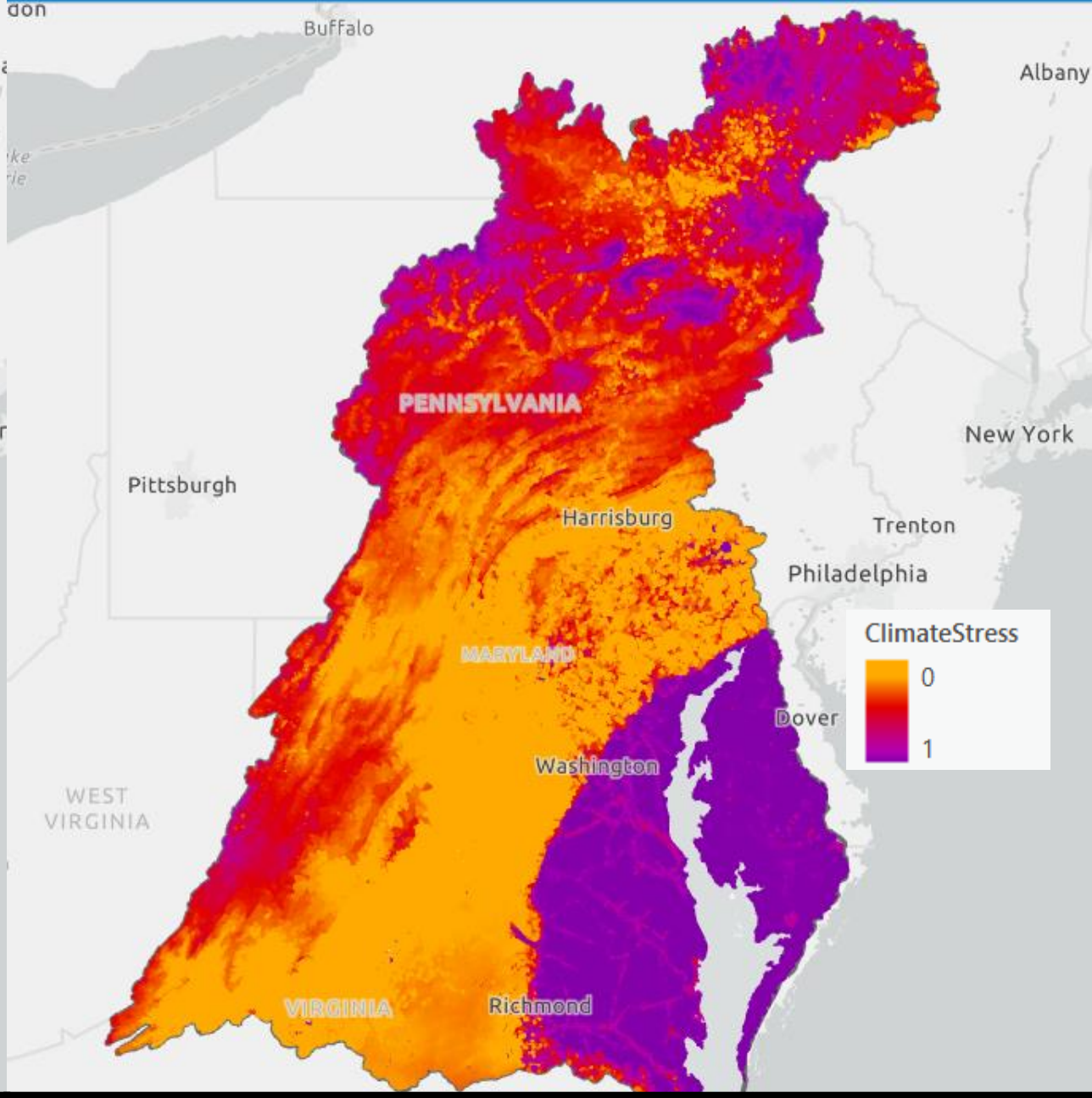
CURRENT BROOK TROUT VS. BROOK TROUT 6 DEG C. INCREASE



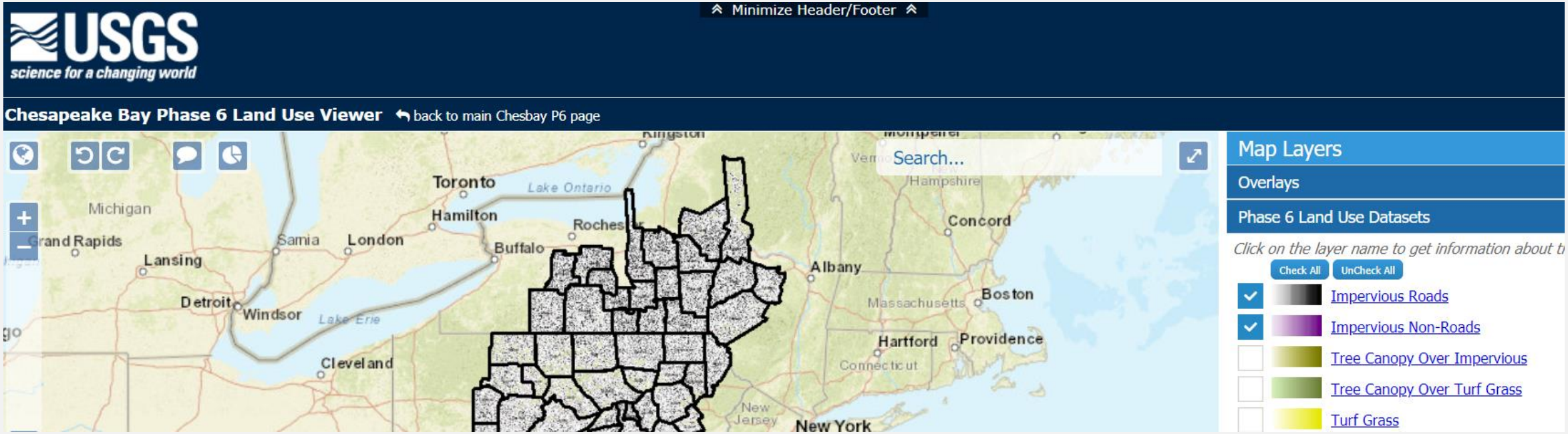




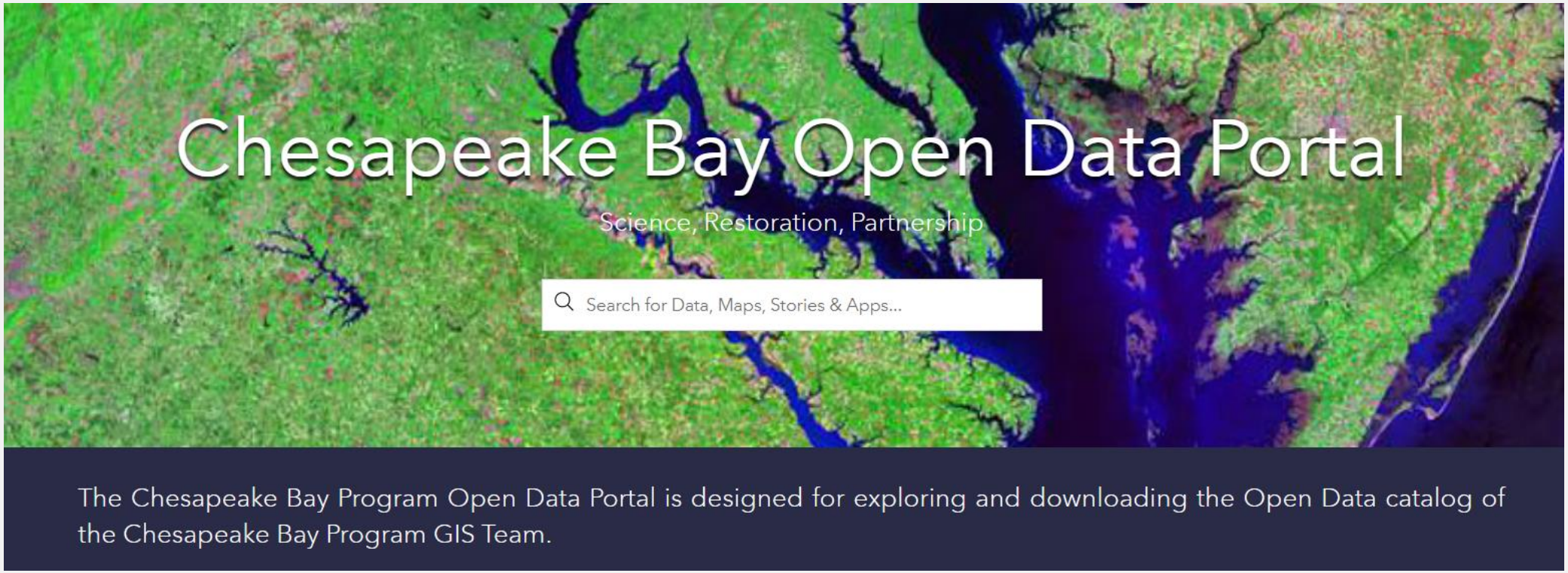
STATE ID' HEALTHY WATERSHEDS (HEALTH INDEX)



CLIMATE STRESS METRIC

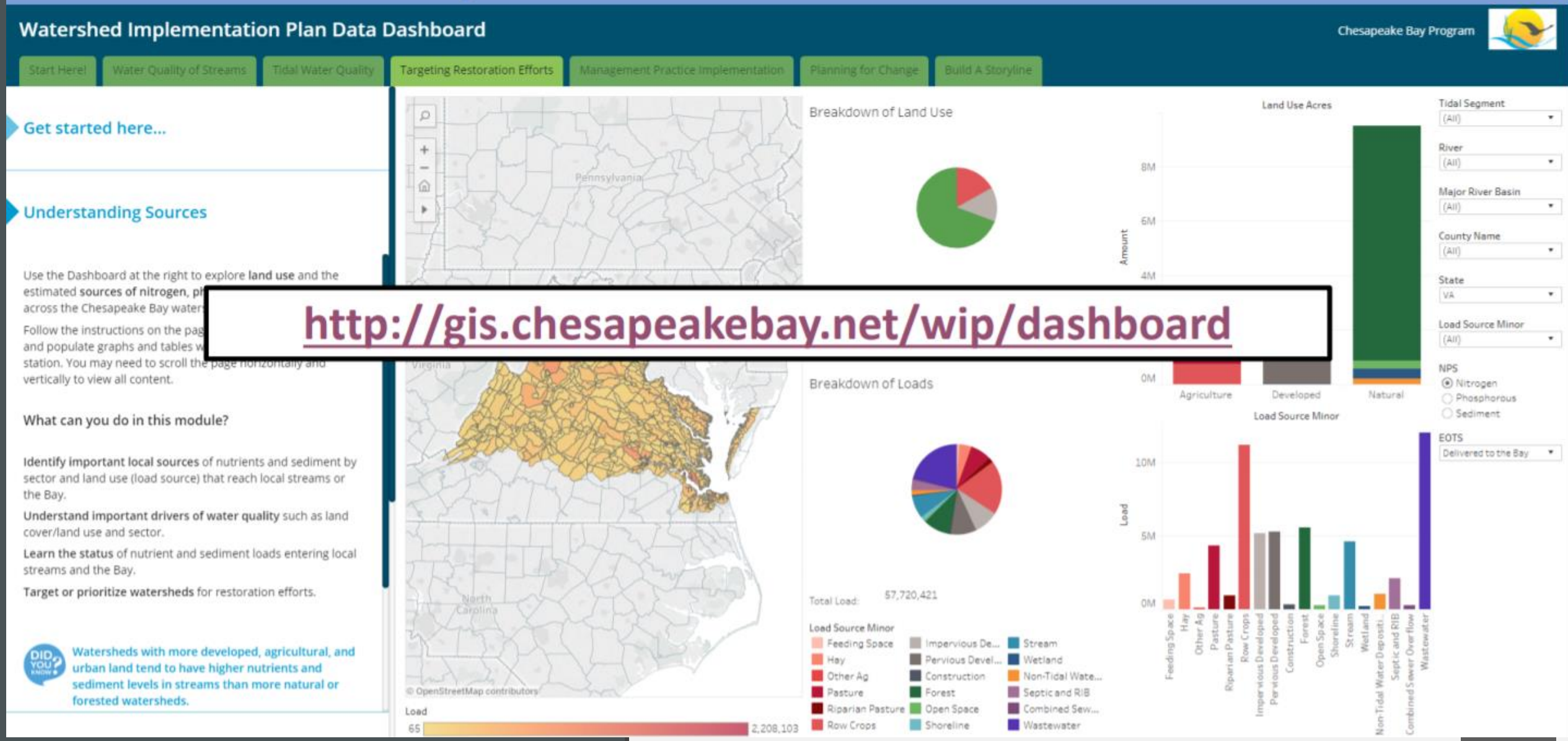


CHESAPEAKE BAY
PHASE 6 LAND USE VIEWER



http://data-chesbay.opendata.arcgis.com/

Watershed Implementation Plan Data Dashboard



http://gis.chesapeakebay.net/wip/dashboard

THANK YOU!!

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