

Work Plan for Cross Goal Team Project: Mapping Geographic Areas that Benefit Multiple CBP Outcomes

Updated January 18, 2017 (updates with new material on pages 6-11)).

Need: The Chesapeake Bay Watershed Agreement recognizes that “to be successful in achieving its goals and outcomes, progress must be made in a strategic manner, focusing on efforts that will achieve the most cost-effective results.” It further acknowledges that using place-based approaches, where appropriate, will help produce recognizable benefits to local communities while contributing to larger ecosystem goals.

There are aspects of the Agreement goals and outcomes that are inter-related (figure 1) however, the current CBP management strategies address mostly individual outcomes. The Goal Implementation Teams (GITs) have started to more effectively collaborate on inter-related outcomes, and the CBP needs this effort to expand. This project provides an approach to help identify places where the CBP can more strategically make progress toward inter-related outcomes.

The guiding principles discussed by the GITs for addressing inter-related outcomes are:

- Providing maximum benefits for “living resources”: fish, wildlife and people (**populations**)
- Through restoration or conservation of the habitats, water quality and lands they depend on (**conditions**)
- By focusing on inter-related outcomes and where practices in the CBP management strategies should be implemented (**interventions**) based on what the science tells us and;
- Considering future threats of population growth and climate change (**drivers of ecosystem change**).

Resources to adequately achieve all 31 outcomes in the Watershed Agreement are limited. Therefore, the GITs are working together with STAR to try to address multiple outcomes to more effectively share resources through these efforts by:

- Identifying inter-related actions between outcomes so they can be done more effectively,
- Mapping geographic areas where effort can be concentrated that benefit multiple outcomes,
- Summarizing the factors that may affect achievement of multiple outcomes so they can better address these potential barriers, and
- Aligning partner efforts (federal, state and local jurisdictions, NGOs) to tackle multiple outcomes (both for 2016-17 work plans and planning for more opportunities in 2018-19).

The CBP is also beginning to design “Chesapeake Decisions”, which will be a valuable tool to inform decision making for addressing CBP outcomes. However, this tool is in early stages of development so the GITs, working with STAR, are taking some initial steps to address multiple outcomes (see Appendix 1 for details). One effort is to have a project for mapping geographic areas where actions could benefit multiple outcomes, which is the purpose of this document.

CONCEPTUAL DIAGRAM OF CHESAPEAKE BAY ECOSYSTEM

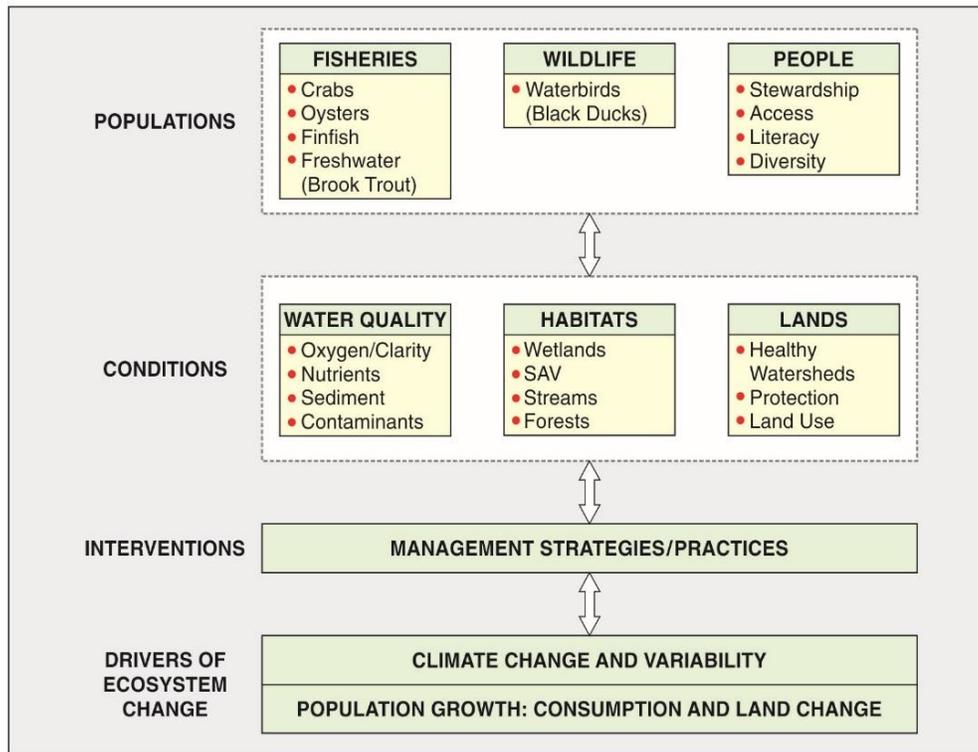


Figure 1 (from Phillips and Blomquist, 2015)

Audiences and Benefits of the Mapping Project

The initial audience for the project is the GITs since they (1) are focused on implementing activities to achieve outcomes, and (2) have representation of federal, jurisdictional, and NGO partners. We want to have the GITs work effectively with both the:

- The Management Board, which includes the GITs Charis and CBP signatories, can further identify ongoing efforts and help direct resources to areas identified important for both restoration and conservation.
- Principal Staff Committee, who can consider policy implications to better achieve inter-related outcomes.

Benefits

The value of this cross-outcome, place-based work reflects the original purpose of creating the CBP—to bring together the intellectual and financial resources of each individual partner to protect and restore the watershed in a smarter, more efficient manner. Specifically, it will help:

- Improve our work and enhance work already being planned. It will help individual partners go beyond what they can do alone. Partners will provide support to each other as they implement their work plans and management strategies. Cross-outcome work will help maximize ecosystem benefits, result in multiple benefits and create synergies that would not happen otherwise.
- Prioritize where we work and put resources where they can do the most good (smarter funding). Prioritization can help identify and address current geographic and funding gaps.

- Communicate the work and value of the partnership as a convener and collaborator and showcase CBP as a leader in adaptive management.
- Enhance interaction among multiple stakeholders, local communities and with each other.

The mapping project will allow the GITs to better identify “regional” locations to better coordinate and focus resources that will benefit multiple, inter-related outcomes. The result will be better integration of efforts between multiple partners to make progress toward multiple outcomes. The project will also provide an improved understanding of focusing in key geographic locations to achieve maximum benefits for restoration and conservation activities.

Considerations to identify geographic areas

There are several approaches or considerations for mapping geographic areas:

- Focus on places most important for living resources (fish, wildlife, and people)
- Identify areas to focus restoration and conservation activities
- Consider threats from land and climate change
- Identify areas where multiple partners are already working or consider priorities.

Mapping considerations for each of the items are discussed below.

1. Focus on places more important for living resources.

The initial focus is on living resources that are specified in the Bay Agreement:

- Fish: crabs, oysters, forage fish, and brook trout (as an indicator for freshwater species),
- Wildlife: black ducks (as an indicator for other waterfowl)
- People: outcomes related to stewardship, public access, literacy, and diversity.

The geographic extent for different species varies across the watershed. For example, the tidal waters contain a unique set of shell and finfish species compared to remainder of the watershed. Wildlife has similar distinctions in the range they occur in the watershed. Initially, the project team and GITs considered dividing the watershed into different provinces (Highlands, Piedmont, and Coastal Plain) given the different occupancy ranges of living resources. However, the initial mapping will just consider the entire watershed and make some distinctions for fishery habitat in tidal areas.

Each GIT identified a list of initial outcomes they would like to have mapped (see table xxx) considering the needs for fish, wildlife, and people. Almost every outcome has areas we want to 1. Protect because they are already providing a function to benefit an outcome, or 2. Restore, where they function needs improved to help achieve an outcome (next item has more details)

2. Identify areas for conservation and restoration activities that benefit multiple outcomes

Where habitats and lands need to be protected or restored for fish, wildlife, and people. These are usually different and distinct areas. Two examples include the map on the left showing areas important to protect based on ecological integrity and water quality (figure 2) and map on the right (figure 3) showing areas important to restore based on nitrogen loads to local waters.

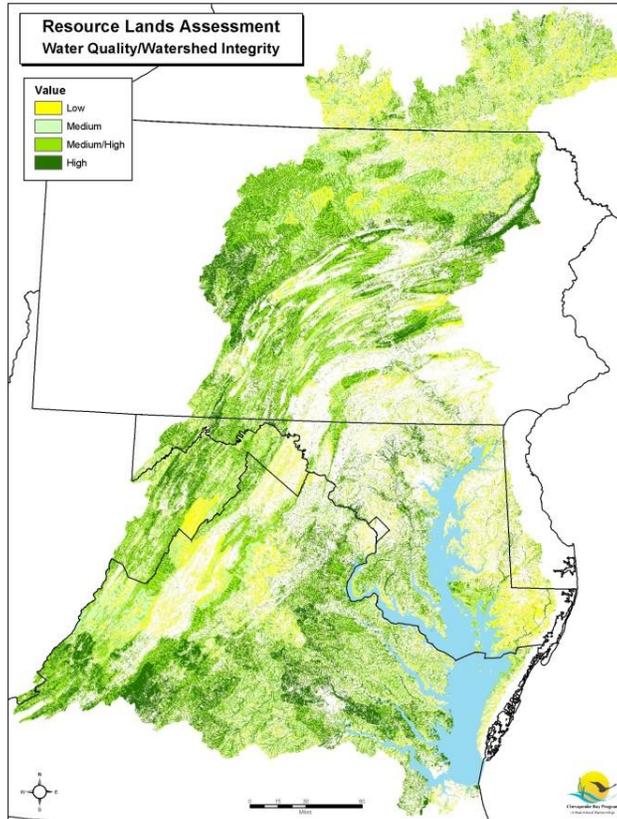


Figure 2: Map of areas of ecological integrity and important water quality protection (from CBP Resource Lands Assessment).

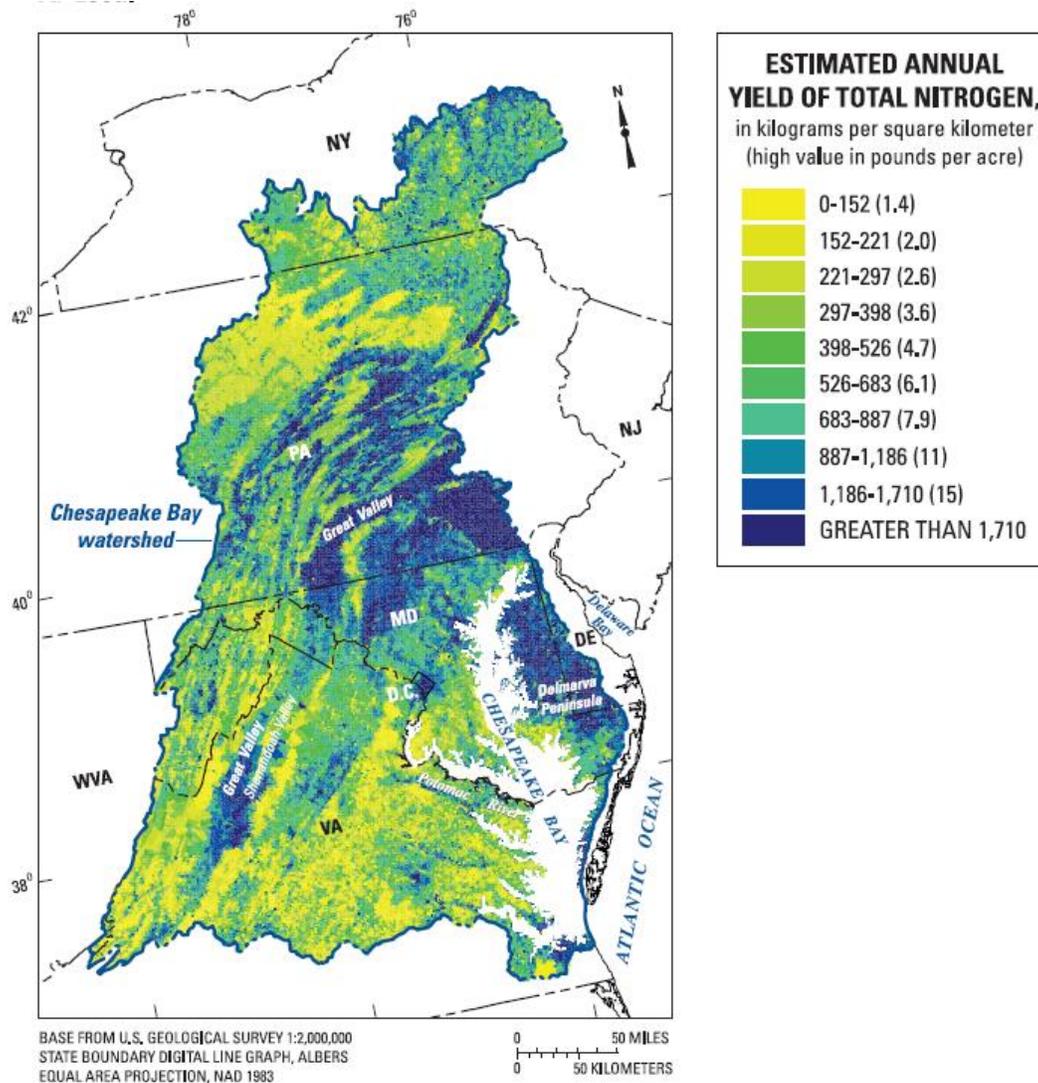


Figure 3: Map of nitrogen loads to local streams in the Chesapeake Bay Watershed (from Ator and other, 2011)

3. Consider threats from land and climate change

Understanding the threats to restoration and conservation areas would be based the two primary stressors to the Bay ecosystem (fig 1):

- Population growth and associated land-use change
- Climate change and variability.

The CBP has a Land-Change Model (Claggett, USGS) that can be used to show likely areas of land-use change. The CBP has multiple assessments of climate change being conducted through the Climate Change Workgroup. Selected results of these assessments, such as extent of projected sea-level rise, will be used to display potential geographic areas.

4. Identify areas where multiple partners are already working or consider priorities

Many groups have already identified areas where they are focusing efforts that can be used for the mapping project. Some examples include Harris Creek Oyster restoration effort, Delmarva RCPP wetlands restoration, and federal partner focus areas. These areas will be gathered for the mapping project so areas of benefits (maps produced in items 1 and 2) can be compared with current areas where partners are focused. This will help partners decide if the location of current efforts should be modified.

5. Conduct joint planning with multiple partners to enhance efforts in selected geographic areas

The areas identified from steps 1-3 will provide the most “strategic geographic areas” for protection and restoration efforts for multiple outcomes. The next step is compare these areas with those in step 4 where partners are already focusing efforts or consider a priority. Where both ideas line up, it provides an opportunity to enhance activities. Other areas identified in steps 1-3 may not have much current effort, so areas could be considered for future CBP activities.

2017 Update on Status and Next Steps

(Updated Jan, 2017)

Below is an update and next steps on each of the major work elements for Federal Fiscal Year 17

Compile list of GIS layers that will be helpful to identify geographic areas

Who: GITs working with CBP GIS team (John Wolf, Chris Wright, and Renee Thompson)

Goal teams prioritized selected layers to be used to develop conservation and restoration maps, which included (see table 1 for full listing):

- Fish habitat mapping, particularly for forage, migration and spawning location priorities (GITs 1 and 2)
- North Atlantic Landscape Conservation Cooperative (NALCC) and Appalachian LCC to bring in layers that depict index of ecological integrity and the synthesis mapping of the State Wildlife Action Plans. They will have mapped Regional Conservation Opportunity Areas (RCOA) in July 2016 – which will show state priorities within a regional context and the layers are supposed to be compatible with our system. (GITs 1 and 2)
- Water quality maps of high loading areas to local streams and the Bay (GIT3)
- Landscape Chesapeake priority conservation lands, public access points and healthy watersheds mapping (GITs 4 and 5).

Updated Status: During the November Cross-Goal Team meeting, feedback was provided on the initial maps for conservation and restoration.

Next Steps:

- Revisions being made by GIS team and revised maps are ready review.
- Should we use staffer-coordinator meeting or Jan 31 Cross-GIT meeting for review?

Begin to analyze information to identify geographic areas.

Who: GIT Teams working with CBP GIS team and STAR (S. Phillips as lead). Analysis will include:

- Identify areas of intersection where multiple priorities coalesce based on the science
- Then begin to bring in other layers (actions in the work plans or outcomes not yet mapped) and discuss opportunities to add other disciplines to these geographic areas where work is either already happening or could happen in the context of restoration and protection
- Categorize map layers in terms of positive or negative factors (vulnerabilities, threats, opportunities)
- Conduct structured decision making (SDM) to decide on the target focus areas with an eye toward geographic distribution, input from partners and signatories.
- Environmental justice screen to see what gaps or opportunities surface
- Identify the emerging stories, sound bites, story maps to communicate the work

Updated Status: At the Nov 30 meetings, the GITs suggested that management questions be developed to help with the analysis of information and identify potential places. Also the “threat maps” (climate and land change) need to be developed to help with analysis.

Next steps:

- Have Goal Teams develop management questions to help guide analysis. Goal Teams submitted initial questions (see attachment 1).
- Use the questions to help guide identification of potential places where restoration or conservation actions could be focused. The Goal Teams may have to modify the questions based on the analyses.
- Once potential places have been identified, use information on existing efforts and threats (next two items) to help prioritize efforts have been submitted). We should see how they fit together.
- Develop threat maps. USCOE has agreed to work on climate change threat maps (sea-level rise and flooding). GIS team will work with Peter Claggett to develop maps of future land-change. Need to determine date for initial products.

Gather information on existing partner efforts and priorities

Who: *Kristin Saunders and Greg Barranco working with GITs, other partners, and MB*

- Coordinate efforts with Army Corps of Engineers to see how this work might inform or glean information from the Chesapeake Bay Comprehensive Water Resource and Restoration Plan watershed assessment.
- Discuss with NFWF their ideas for selecting priority areas.
- Engage MB and PSC (integrates with signatories at “levels” above staff on the GITs)
- Assess the opportunity to have habitat restoration and other outcome benefits reflected in the Phase 3 WIPs for each state.

Updated Status: discussions held with USCOE and NFWF, who will share their ideas and consider information gathered from mapping project.

Next Steps:

- USCOE is collecting data on implementation efforts. We need to figure out a way to get it displayed with other information on where efforts are being conducted.

Coordinate project efforts and interaction with CBP entities to prioritize efforts

Who: Kristin Saunders and Greg Barranco coordinate efforts between GITs and interacting with CBP partners and entities (such as MB). Scott Phillips provides collaboration with STAR.

Updated Status: additional input from jurisdictions was being gathered by Kristin and Greg. Jurisdictional input has been received from their representatives on the Goal Teams. Initial input from jurisdictional representatives on Management Board received at Sept, 2016 meeting.

Next Steps:

- Greg and Kristin are conducting individual meetings with each jurisdiction.
- Jurisdictional input (on the MB level) may be best used to finalize places and efforts based on initial areas identified by GITs.
- Determine how maps can be best used as part of the Strategy Review System. Is there an opportunity to present an example at the Feb 8-9 meeting?

Table 1: Initial layers to consider for restoration and conservation

	Data Layer	Topics
GIT 1	Priority Living Resources Areas (surrogate for Fish Habitat)	Conservation
	Oyster Restoration Areas	Restoration
	National Fish Habitat Action Plan (risk of current habitat degradation)	
GIT 2	Regional Conservation Opportunity Areas	Conservation
	Index of Ecological Integrity (NALCC)	Conservation or Restoration
	Brook Trout Black Duck Energetics Model	Conservation Conservation?
GIT 3	SPARROW Nutrient Loads	Restoration
	Waters Impaired for PCBs	Restoration
	Long Term WQ Monitoring Trends	Restoration
	Water Quality Standards Attainment	Restoration
GIT 4	Healthy Watersheds	Conservation

	Protected Lands	Protection Overlay
GIT 5	Public Access	Conservation
	Land Protection Priorities (via Chesapeake Conservation Partnership)	Conservation
Climate	Sea Level Rise/Inundation Flood Hazard Risk (riverine) Wetland Adaptation Areas	Threat Threat Threat/ Conservation
Diversity	High Poverty Ethnic Minority Public Health Indicator ((e.g. cancer rates, asthma, birth defects))	
Land Change	CB Land Change Model	Threat

Attachment 1: Initial Management Questions

Fisheries Goal Team

Kara Skipper, 1/13/17

The Sustainable Fisheries GIT would like to contribute the following management questions for the Cross-GIT mapping project:

- Where do areas at low risk to fish habitat degradation align with healthy watersheds (at HUC 12 scale)?
- Which of the six selected tributaries for oyster restoration provide opportunities to link oyster restoration to water quality improvements on land?* (* Six selected tributaries for oyster restoration include: Harris Creek, Little Choptank, Tred Avon, Piankatank, Lafayette, and Lynnhaven)

Habitat Goal Team

(Kyle Runion 1/12/17)

The Habitat GIT's management questions for the cross-GIT mapping project

- Where should we restore/protect brook trout habitat to increase long term occupied patch size?

- Where should we restore forest buffers in order to increase ‘flow’ for terrestrial/aquatic wildlife?
- Where should we target NRCS practices to preserve potential marsh migration corridors adjacent to high value black duck wintering/nesting habitat?

Water-Quality Goal Team

Lindsey Gordon, 1/13/17. The primary question is:

- “Where are conservation priority areas, and how do they intersect with best places to focus nutrient and sediment reductions (loading effectiveness maps of Chesapeake Bay Watershed segments)?”

The Toxic Contaminant WG also had this question:

- Where are some of the best places to focus nutrient and sediment reduction that would also provide high benefit for reduction of toxic contaminants (or just PCBs)?

Healthy Watersheds Goal Team

Rene Thompson, 1/17/17

Katherine took some time to try and pull out some relevant management questions that were directly called out as an area of focus, gap, or factor influencing in our Management Strategy. Some of these are not going to be a good fit for this project, but a few are. The vulnerability question is a big one for our GIT. Also just knowing where conservation priorities are and the intersection between existing protected lands and healthy watersheds can help us glean where we may need to focus more. Questions include:

- Where are vulnerable healthy watersheds/what healthy watersheds are most vulnerable? (areas where development is likely to increase, areas of invasive species, areas vulnerable to climate change and sea level rise)
- Where are marginally healthy waters and watersheds?
- Where are priority forests?
- Where are state and federal land protection priorities

Stewardship Goal Team

From Amy Handen (1/17/17)

Questions were related to several outcomes.

Env Literacy

1. Where are potential public access sites in relation to green schools?

Public Access

1. How close are public access sites to specific diverse communities such as those that speak a

certain language or maybe communities of lower income?

2. Since we are working to make as many sites as practical ADA accessible, would it be possible to determine how close such sites are to disabled populations which may include elderly.

Stewardship WG chair: I am interested in seeing this tool map green infrastructure projects as it relates to socio-demographics and cross examining that with who is leading those projects; I am also interested in seeing green infrastructure project locations mapped as it relates to our forthcoming stewardship data (from our tool). I suppose the questions here would be is there a correlation between demonstration project prevalence and stewardship level? I suspect this is not highly correlated though or would be more highly correlated to NGO capacity within those areas to advance stewardship education and engagement programs. There are other things I would like to see answered in this vein though, for example does public access level correlate to stewardship level? Etc.