Land Use Methods and Metrics Logic Table and Work Plan

Primary User: Goal Implementation Teams, Workgroups, and Management Board | Secondary Audience: Interested Internal or External Parties
Primary Purpose: To assist partners in thinking through the relationships between their actions and specific factors, existing programs and gaps (either new or identified in their Management Strategies) and to help workgroups and Goal Implementation Teams prepare to present significant findings related to these actions and/or factors, existing programs and gaps to the Management Board. | Secondary Purpose: To enable those who are not familiar with a workgroup to understand and trace the logic driving its actions.
Reminder: As you complete the table below, keep in mind that removing actions, adapting actions, or adding new actions may require you to adjust the high-level Management Approaches outlined in your Management Strategy (to ensure these approaches continue to represent the collection of actions below them).
Long-term Target: Assess and understand the impacts of land use change on watersheds, habitats, and communities at a scale relevant to county-level decision-makers.

*Notes:

- This example contains information in those columns that are currently **optional** to complete (Metrics, Expected Response, and Adapt/Learned). It is meant to illustrate how these columns could be used, if groups have the corresponding information and would like to provide or document it. The information in these columns is not representative of the direction of the Stream Health workgroup.
- This example does not include all factors listed in the Stream Health Management Strategy, but uses the information provided in the first iteration of the logic table in this new format. In addition, this example focuses on those factors that had specific actions associated with them. The SRS Planning Team will look at ways to represent more holistically the factors identified in the Management Strategy that might not be addressed through work plan actions.

KEY: Use the following colors to indicate whether a Metric and Expected Response have been identified.	
Metric	Specific metrics have not been identified
	Metrics have been identified
Expected Response	No timeline for progress for this action has been specified
	Timeline has been specified

Factor	Current Efforts	Gap	Actions **(critical in bold)**	Metrics	Expected Response and Application	Learn/Adapt
What is impacting our ability to achieve our outcome?	*What current efforts are addressing this factor?*	*What further efforts or information are needed to fully address this factor?*	*What actions are essential to achieve our outcome?*	*Optional: Do we have a measure of progress? How do we know if we have achieved the intended result?*	*Optional: What effects do we expect to see as a result of this action, when, and what is the anticipated application of these changes?*	*Optional: What did we learn from taking this action? How will this lesson impact our work?*
Scientific and Technical Understanding: Development of separate metrics for impervious surface, forest, farm, and wetland conversion at a resolution sufficient to inform county-level decisions.	The Geospatial Award will result in 1m resolution monitoring of forest, farmland, and impervious surface change every 4-5 years.	No affordable method exists to track wetland conversion and change. QL-1 or QL-2 LiDAR data are needed throughout the watershed.	1.1, 1.2, 1.3, 1.4, 1.5, 1.6 Continued full support of the Geospatial Award.			
Scientific and Technical Understanding: Methodology to quantify impacts to water quality, habitats and healthy watersheds, and communities.	Impacts to water quality have been addressed via CAST.	Impacts to habitats, healthy watersheds, and communities.	2.1, 2.2, 2.3 Management elevation of importance of this outcome.			
Public Engagement: Development of a plan to communicate findings with the public, elected officials and the Bay Program.	Launch of the Chesapeake Bay Land Change website including development of land change forecasts.	No work done on the development of a Local Engagement Strategy that will integrate and disseminate results of land use methods and metrics outcome and land use options evaluation outcomes.	3.1, 3.2			

WORK PLAN ACTIONS					
Green – action has been completed or is moving forward as planned. Yellow - action has encountered minor obstacles. Red - action has not been taken or has encountered a serious barrier.					
Action #	**Description**	**Performance Target(s)**	**Responsible Party (or Parties)**	**Geographic Location**	**Expected Timeline**
Management Approach 1: Monitor the rate of conversion of forests, wetlands, and farmland, (and the rate of impervious surface change).					
1.1	Design and implement a manual, stratified sampling approach at the county level and assess land cover change from high resolution imagery circa 2009-2013.	Acquire NAIP imagery for 2009, 2013	USGS, CBPO GIS Team	Prince George's County, MD	Spring 2018
		Design sampling framework	USGS, CBPO GIS Team	Watershed counties	Winter 2019
		Classify samples using Land Image Analyst or other software	CRC Staffers/ Interns	Prince George's County, MD	Summer 2019
1.2	Assess land use change throughout the Bay Watershed and Bay States from the early 1980's through mid-2010's using the CBP 2013 high-res land use coupled with the Land Change Analysis and Monitoring Program Database and National Land Cover Database, the NRCS National Resources Inventory, and the USFS's Forest Inventory and Assessment data.	Work with CBP GIS Team to assign and completed task	USGS, CRC Staffers	Watershed counties	Summer 2019
1.3	Assess difference in high resolution land cover maps at the County level.	Quantify change between two independently classified high-res land cover datasets.	CRC Staffers/ Interns	Prince George's County, MD	Summer 2019
		Compare with results from 1.1.	USGS, CBPO GIS Team		Summer 2019

1.4	Investigate options for monitoring "hot spots" of land change every two years	Review literature of the science and technologies associated with remote sensing and image interpretation as well as consultation with remote sensing professionals	Chesapeake Conservancy	Watershed counties	Fall 2019
		Provide recommendations on the most effective and efficient approach			
1.5	Monitor "hot spots" of change	Assess "hot spots" of change from 2013/14 - 2017/18 - 2019/20 - 2021/22	Chesapeake Conservancy	Watershed counties	Summer 2019, Summer 2021, and Summer 2023
1.6	Map and ReMap High-res land cover/use: 2013/14; 2017/18; 2021/22	Using the best available methods, map high-res land cover/use wall-to-wall every four years, remapping previous years in the process.	Chesapeake Conservancy, University of Vermont	Watershed counties	Summer 2020, Summer 2023
Management Approach 2: Quantify the impacts of land conversion on water quality, healthy watersheds, and communities.					
2.1	Quantify impact of land conversion on water quality (explaining changes in nutrient and sediment that relate to monitored and modeled land conversion)	Assess the impact of future 2025 land use scenarios (Land Policy BMPs) on nutrient and sediment pollutant loads	USGS, CBPO GIS Team	Watershed counties	Fall 2018
		Assess the impact of future 2050 land use scenarios on nutrient and sediment loads			Summer 2019
2.2	Quantify impact of land conversion on healthy watersheds, wildlife, and stream habitats	Identify specific components of "health" and "habitat" to be evaluated and collect data, 1985-2015	CBP Habitat and Healthy Watersheds GITs	State-identified healthy watersheds and habitats of interest	Spring 2020
		Analyze observed changes in land cover/use relative to changes health and habitat metrics (1985 - 2015)	USGS, CBPO GIS Team		Fall 2020
		Forecast changes in land cover/use through 2050 and relate to potential changes in health and habitat metrics	USGS, CBPO GIS Team		Spring 2021

2.3	Quantify impact of land conversion on communities	Identify specific components of "communities" to be evaluated.	LGAC, LGEI, LUWG, CCP	Watershed counties	Spring 2020
		Conduct literature review on the relationship between land change and community components.	TBD?	National	Fall 2020
		Forecast changes in land cover/use through 2050 and relate to potential changes in communities	USGS, CBPO GIS Team	Watershed counties	Spring 2021
Management Approach 3: Communicate the results to the public, elected officials, and to the Bay Program.					
3.1	Link the results of the Land Use Methods and Metrics Outcome Land Use Options Evaluation Workplan	Participate in the development of a Local Engagement Strategy that will integrate and disseminate results of land use methods and metrics outcome and land use options evaluation outcomes	LGAC and CBP Local Leadership Workgroup	Watershed counties	Spring 2021
3.2	Chesapeake Bay Land Change website	Launch Phase 6 land use data website	USGS, CBPO Web Team	Watershed counties	Summer 2017
		Testing, refinement, expansion	USGS, CBPO Web Team		
		Develop land change forecasts	USGS, LUWG		