

VISUALIZING ECOSYSTEM BENEFITS & QUANTIFYING CARBON SEQUESTRATION FOR ENVIRONMENTAL PLANS

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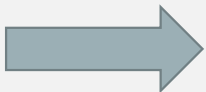
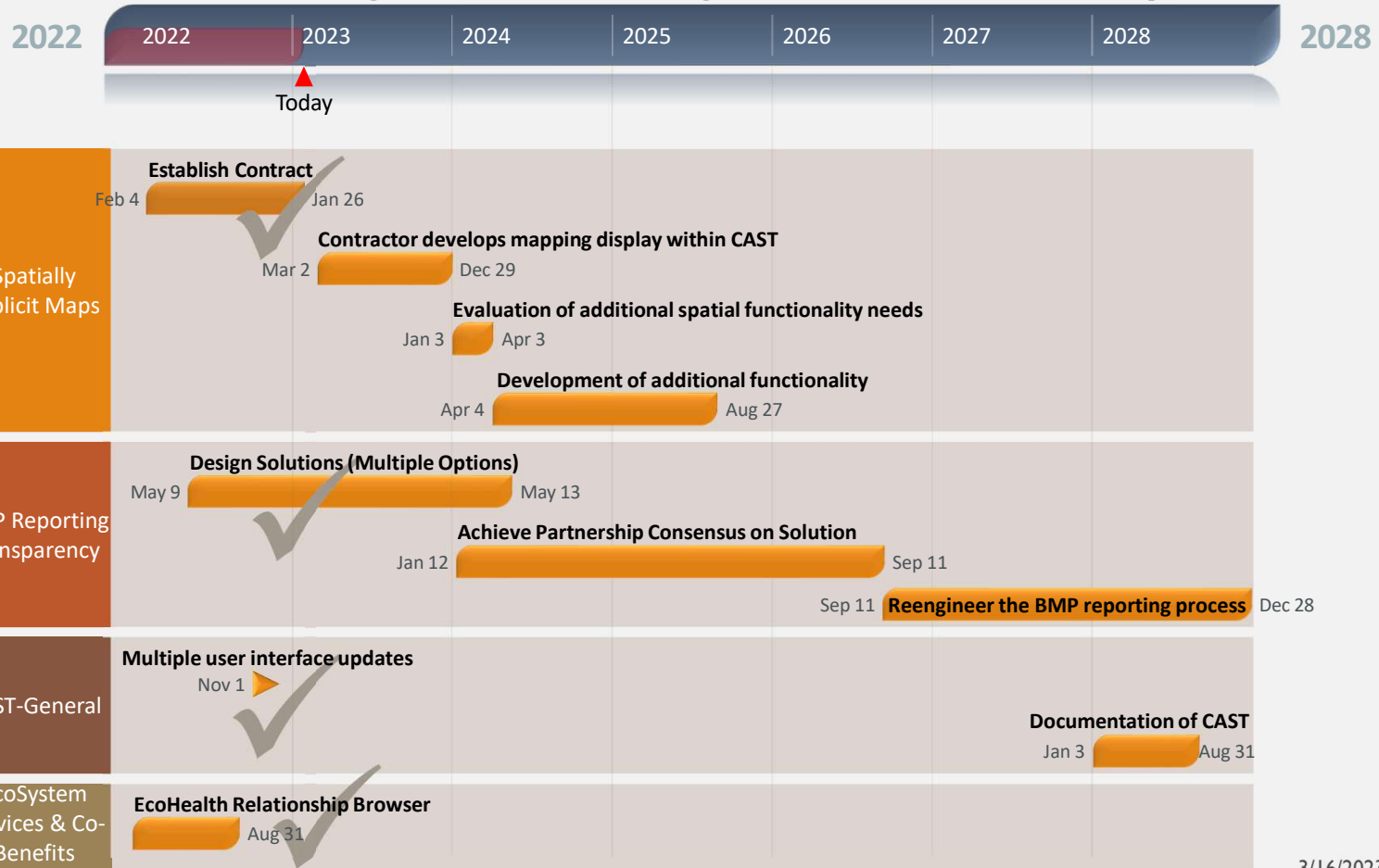
Presented at the STAC Workshop: Using Ecosystem Services to Increase
Progress Toward, and Quantify the Benefits of, Multiple CBP Outcomes

CONTEXT

- Goal Implementation Teams asked that CAST show the multiple benefits of BMPs
- Co-benefits to water quality BMPs were identified in April 2017
- Ecosystem services/benefits were quantified in 2020-2021
- These were incorporated into CAST in 2022 with a focus on the Chesapeake Bay Watershed Agreement Goals and Outcomes
- Soil carbon sequestration is the most comprehensive quantitative data coming out of the 2020-2021 project and can be an output of CAST scenarios

CAST Timeline

*contingent on funding and staff availability





New to CAST?

Register to create and edit scenarios for reducing nitrogen, phosphorus, and sediment with varying best management practices to streamline environmental planning. Registration also includes access to additional data, tools and resources including CAST's monthly newsletter.

[Register](#)

RESOURCES

DEVELOP A PLAN

Get answers to your questions about how to use CAST to develop a plan.

[Develop A Plan](#)

SOURCE DATA

Download data tables including information on load sources and agencies, BMPs, animals, geographic references and delivery factors.

[View Source Data](#)

BMPS

View information on best management practices (BMPs) including calculations, a quick reference guide, and protocol and expert panel reports.

[Learn More](#)

MONITORING

View maps and graphs of monitored water quality data.

[Learn More](#)

MAPPING TOOLS

View geographical information and shapefiles.

[Learn More](#)

COSTS

Download BMP costs data and view cost profiles for each state and Chesapeake Bay Watershed.

[Learn More](#)

TRACK PROGRESS

View helpful information on verification, river trends, how to submit progress data via NEIEN, and modeling Federal facilities.

[Track Progress](#)

ECOSYSTEM BENEFITS

Get information about the complementary benefits to BMP implementation.

[Learn More](#)
3/16/2023



Ecosystem Benefits

Ecosystem Benefits Browser

The Chesapeake Bay Program developed the Ecosystem Benefits Browser, an interactive tool that visualizes and summarizes the Goals, Outcomes, and Co-Benefits associated with CAST BMPs. The button below will take you to the tool.

[Ecosystem Benefits Browser](#)

BMP Co-Benefits

In addition to nitrogen, phosphorus and sediment goals, there may be additional, complementary objectives to BMP implementation, called co-benefits. Examples of co-benefits include: improve stream health, increase fish habitat, and reduce toxic contaminants. Identifying these additional objectives early in the planning process allows for selection of BMPs that meet the load reduction goals as well as achieve these complementary objectives.

The impacts of co-benefits are described in the fact sheets below. Each includes contact information for each state for more information.

- Brook Trout
- Climate Benefits
- Climate Resiliency
- Fish Habitat
- Forest Buffer
- Healthy Watersheds
- Protected Lands
- Public Access
- Sub-Aquatic Vegetation
- Stream Health
- Toxics
- Tree Canopy
- Wetlands

Maximizing Co-Benefits

BMPs are ranked to indicate their impact on the co-benefits evaluated. This information will be incorporated into CAST scenario results at a later date. In the meantime, the BMP co-benefit impacts are provided at the links below. This scoring matrix can be used in multiple ways:

To characterize the additional benefits of their BMP strategy beyond nutrient and sediment reductions. They can use the matrix either to select priority BMPs or to identify the additional benefits of a BMP strategy, especially for BMPs that provide similar nutrient and sediment reductions.

To make decisions about which BMPs to adopt based on management strategy priorities.

To help sell a restoration plan to local watershed groups and government officials by presenting the additional benefits that can be derived from allocating resources for BMP implementation to reduce nutrient and sediment loads.

It is important to minimize the unintended consequences of the matrix. Some BMPs might not be relevant to the user's predominant land uses and should be excluded from consideration. Similarly, some management strategies might not be relevant to some communities. Communities might want to weigh the scores or management strategies to more accurately reflect their local circumstances and priorities. Users should understand that this is an option and that they can include site-specific details about BMPs in the scoring to allow for a more customizable matrix. It is possible that the scoring system will be taken as a final recommendation of the best, or recommended, BMPs. That is not the intent of the matrix. Users should not be overly reliant on the results of the scoring in determining their BMP funding priorities. Because local conditions vary throughout the Chesapeake Bay watershed, no single BMP is the one overall best practice that fits all circumstances. For example, some BMPs are more suited to one land use or soil type than to another. This matrix does not provide that type of information.

- [Impact Scores Spreadsheet Tool](#)
- [BMP Co-Benefits Report](#)
- [BMP Co-Benefits Impact Scores](#)

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	A	F	G	H	I	P	Q	R	S
1	StateAbbreviation	BMP	BMPType	Unit	Sector	TotalAmountCredited	Cost	Lbs Carbon Sequestration	
19	MD	Cover Crop Commodity Normal	Efficiency	Acres	Agriculture	78192.575	6088855.798	20424096.01	
33	MD	Cover Crop Traditional Wheat Normal Drilled	Efficiency	Acres	Agriculture	463582.088	36099137.189	121088800.3	
13	MD	Forest Buffer	Landuse Change	Acres in Buffers	Agriculture	19098.047	5716618.261	20465466.64	
42	MD	Forest Buffer-Narrow with Exclusion Fencing	Landuse Change	Acres in Buffers	Agriculture	694.627	875640.361	744362.7273	
47	MD	Forest Buffer	Landuse Change	Acres in Buffers	Developed	722.133	128871.892	91087.17438	
69	MD	Grass Buffer	Landuse Change	Acres in Buffers	Agriculture	42513.530	7706427.628	34168124.26	
01	MD	Grass Buffer-Narrow with Exclusion Fencing	Landuse Change	Acres in Buffers	Agriculture	1172.929	1372550.062	942683.2264	
26	MD	Impervious Surface Reduction	Landuse Change	Acres	Developed	199.190	11445347.127	422278.3062	
96	MD	Tree Planting	Landuse Change	Acres	Agriculture	4673.339	714880.647	5007949.933	
02	MD	Forest Planting	Landuse Change	Acres	Developed	6614.271	281371.095	834299.3591	
17	MD	Tree Planting - Canopy	Landuse Change	Acres	Developed	3291.374	265449.305	415161.5609	
63	MD	Wetland Restoration - Headwater	Landuse Change	Acres	Agriculture	13050.443	5402883.422	19734958.28	
74									
75									
76									
77									

CARBON SEQUESTRATION IN A CAST BMP REPORT

NEXT STEPS



FEEDBACK ON WHAT IS
USEFUL



MAKE MODIFICATIONS



ADD MAPPING
FUNCTIONALITY TO SHOW
WHERE IMPACTS OCCUR

QUESTIONS AND FEEDBACK



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