Oyster BMP Expert Panel

Presentation for the Fisheries GIT
Thursday, November 19, 2015

Ward Slacum and Julie Reichert, Oyster Recovery Partnership, Panel Coordinators

Jeff Cornwell, University of Maryland Center for Environmental Science, Panel Chair

Chesapeake Bay Program
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The Big Picture

WQS Assessment
CB was determined to not be meeting various WQS influenced by excess nitrogen, phosphorus, and sediment

CB TMDL
Developed in 2010 as a plan to reduce nitrogen, phosphorus, and sediment loads.

WIPs
Jurisdictions (States and local partners) develop WIPS to show how they will achieve pollutant reductions

BMP Expert Panel
Determine pollutant reduction effectiveness of proposed BMPs following the CBP BMP Review Protocol

BMPs
CBP-approved practices or technologies are selected by jurisdictions for credit towards achieving their respective WIP commitments

End Goal: Meet WQS

CB = Chesapeake Bay
CBP = Chesapeake Bay Program
BMP = Best Management Practices
TMDL = Total Maximum Daily Load
WIP = Watershed Implementation Plan
WQS = Water Quality Standards

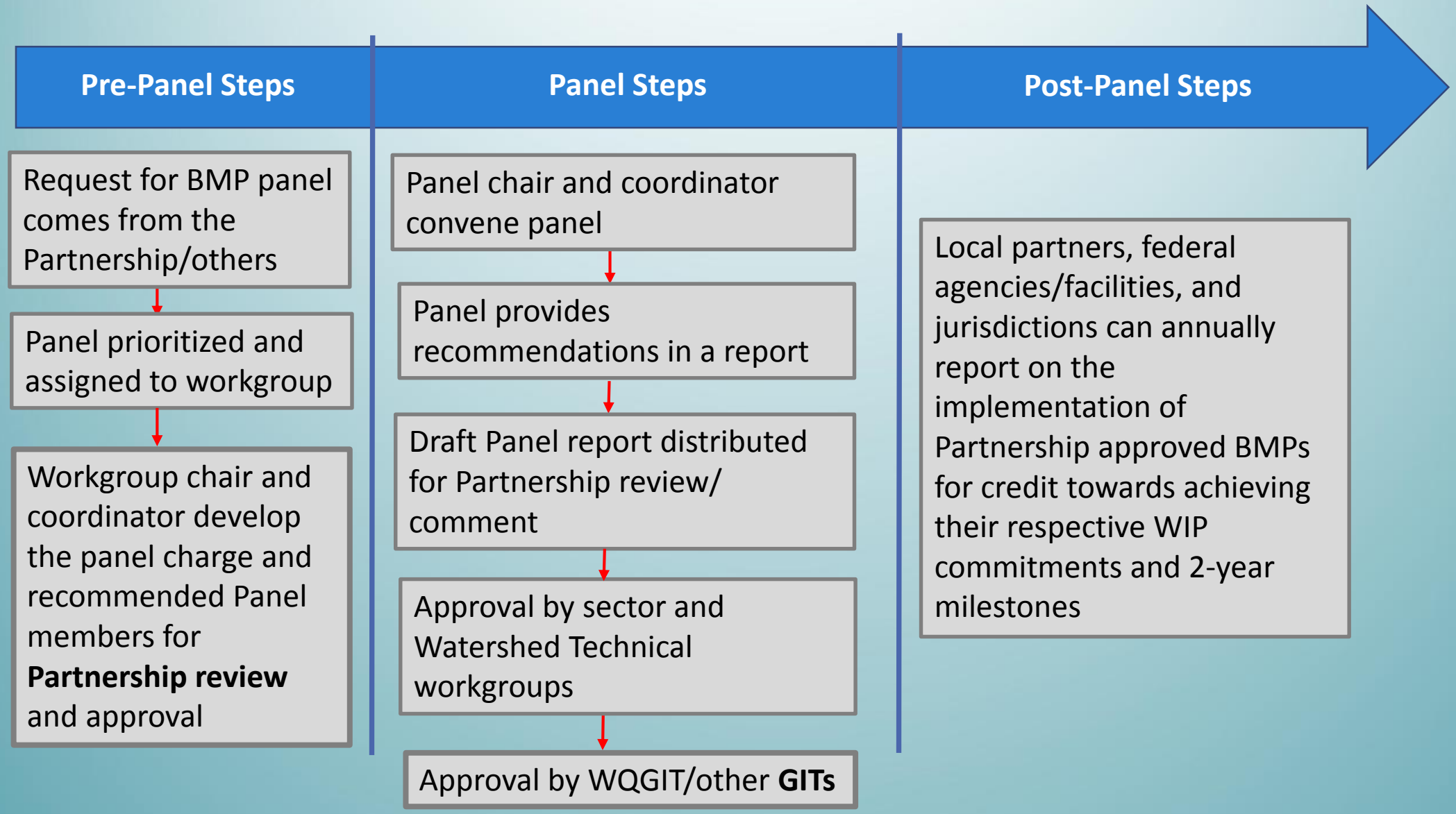
How does a practice become a BMP for implementation in the Chesapeake Bay TMDL?

- Practices must be evaluated by a BMP Expert Panel following the Chesapeake Bay Program Partnership's BMP Review Protocol to determine the nutrient and sediment loading reduction effectiveness values.
  - http://www.chesapeakebay.net/publications/title/bmp_review_protocol
- Each BMP expert panel's recommendations then go through a Partnership review and approval process as described in the BMP Review Protocol.

Why do we need BMP Expert Panels?

- Expert panels use the best available science and best professional judgment to determine the appropriate nutrient and sediment reduction of practices.
  - They develop a report that includes recommendations for definitions, loading/effectiveness estimates, and verification for the practices.
  - They also identify ancillary benefits or unintended consequences of the practices.

The BMP Review Process, "Simply" Put



Why Convene an Oyster BMP Expert Panel?

Reason	Details
Unresolved questions support the need for an oyster BMP expert panel	• There is a need for experts to resolve outstanding questions raised during the 2013 STAC Review concerning the use of oyster practices to support water quality goals in the TMDL. • New research is available to evaluate pollutant reduction estimates.
Interest in oyster practices use as BMPs is high	• The Chesapeake Bay Program has received requests to consider oyster practices as BMPs.
An oyster BMP expert panel would be timely	• Will help inform the Chesapeake Bay TMDL 2017 midpoint assessment. • Will help inform updates to the oyster model component in the CBP Model Framework

STAC (Chesapeake Bay Program Scientific and Technical Advisory Committee). 2013. Evaluation of the Use of Shellfish as a Method of Nutrient Reduction in the Chesapeake Bay. STAC Publ. #13-005, Edgewater, MD. 65 pp.

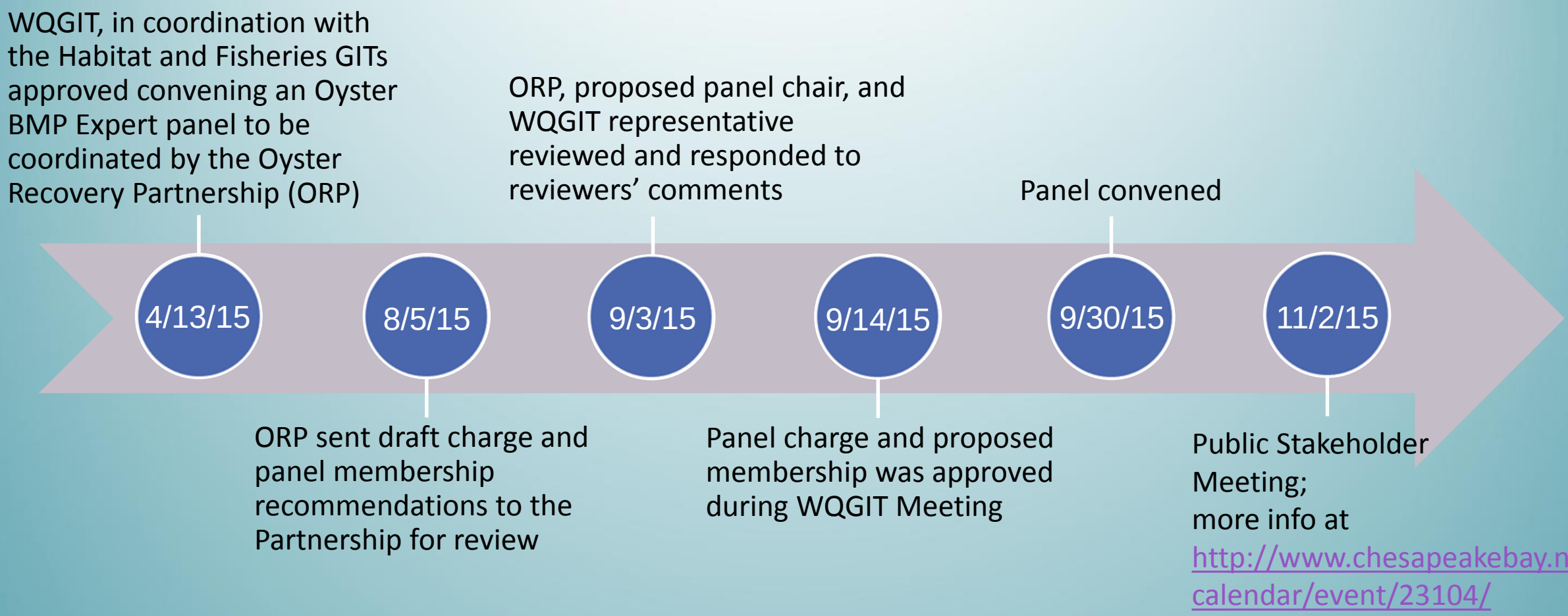
Panel Membership

The CBP partnership's BMP Expert Panel Review Protocol directs that each expert panel includes the following:

Member Role	Oyster BMP Panel http://www.chesapeakebay.net/calendar/event/23104/
Panel Chair	Jeff Cornwell, University of Maryland Center for Environmental Science
Panel Coordinators	Oyster Recovery Partnership (2)
Individuals with specific expertise to address scientific panel charge	12 experts from Maryland, Virginia, and other East Coast areas who have experience in oyster and water quality science and/or oyster aquaculture or restoration operations.
Watershed Technical Workgroup (WTWG) Representative	Jeff Sweeney, EPA
CBP Modeling Team Representative	Lew Linker, EPA
EPA Region 3 Representative	Ed Ambrogio, EPA
Requesting Source Sector Workgroup Representative	Lucinda Power, WQGIT, EPA
***Other—Verification Advisor**	Rich Batiuk, EPA

* Not a Protocol requirement

Oyster BMP Expert Panel Progress



Oyster BMP Expert Panel Overall Goals

1. Reach a consensus on acceptable pollutant reduction effectiveness estimates for oyster practices in Chesapeake Bay based on existing science.
2. Determine a methodology to update these estimates when new science becomes available.
3. Establish pollutant removal crediting and verification guidelines as it relates to their application in the Chesapeake Bay Program (CBP) partnership's model used to inform the Chesapeake Bay TMDL.

Oyster BMP Expert Panel Charge Items

1. Identify and define oyster practices, including aquaculture operations and restoration activities, for nutrient (nitrogen and phosphorus) reduction BMP consideration. Evaluate whether existing science supports the evaluation of sediment reduction effectiveness.

2. Develop a pollutant reduction crediting decision framework that will allow the incremental approval of pollutant reduction effectiveness estimates for individual oyster practices and associated pollutant removal/nutrient cycling processes (e.g., N and P bioassimilation in tissue and shell, N removal via denitrification).

3. Using the established framework from charge item 2, propose pollutant reduction effectiveness estimates that are determined to have sufficient science for one or more applicable pollutant removal/nutrient cycling processes to help inform the Chesapeake Bay TMDL 2017 Midpoint Assessment.

Charge Item 1—Identify and define oyster practices for BMP consideration

Oyster Aquaculture

Oyster Reef Restoration

Draft—Oyster Practices for BMP Consideration
Water Column Oyster Aquaculture
Bottom Oyster Culture
Bottom Shell Planting
Bottom Oyster Reef Restoration

Panelist Tasks:

- Define and provide recommendations on which oyster practices should be evaluated for BMP consideration.
- Determine whether they should be given their own BMP classification (e.g., bioextraction BMP, *in situ* BMP).
- Define their use in the CBP model framework given that nutrients are removed after entering the water and likely differ in their permanent nutrient removal.

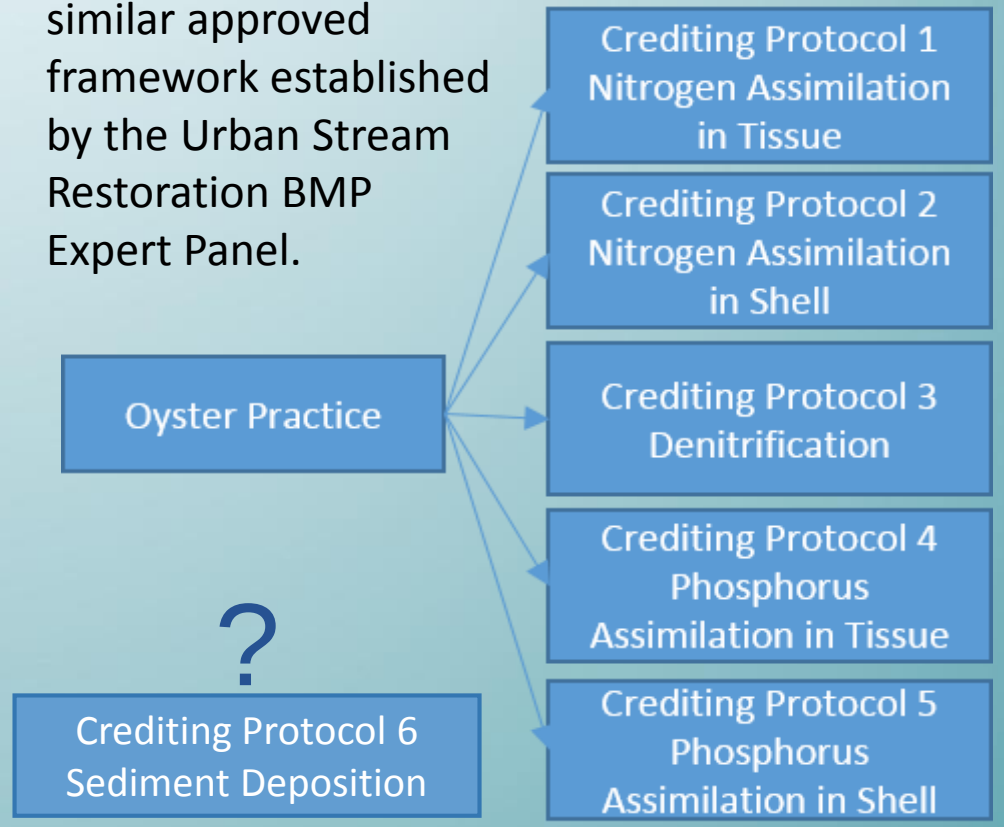
Charge Item 2—Develop a pollutant removal crediting decision framework for oyster BMPs

Panelist Tasks:

- Develop pollutant reduction crediting framework for individual practices and processes that includes:
  - Pollutant/nutrient removal crediting and verification guidelines
  - Method for updating estimates when new science becomes available.
  - Guidelines for addressing uncertainty and variability in nutrient reduction effectiveness.
- Consider recommendations from other oyster panel efforts (e.g., 2013 STAC Review and NOAA-sponsored oyster/nitrogen reduction workshop).
- Provide recommendations on how pollutant reduction crediting and verification could be tested.

Framework Example:

*Concept derived from similar approved framework established by the Urban Stream Restoration BMP Expert Panel.

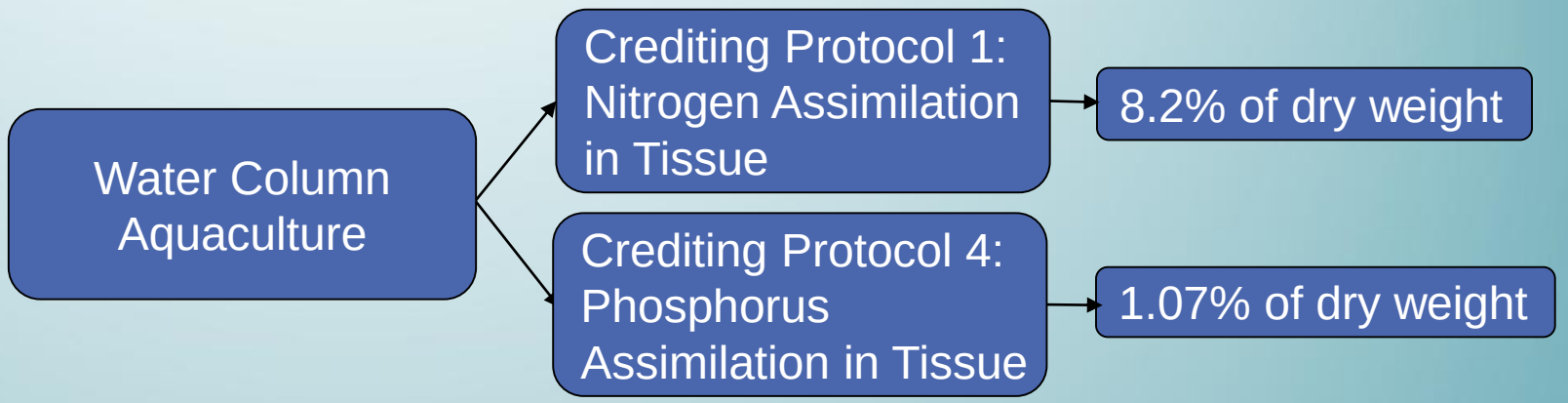


Charge Item 3—Propose nitrogen and phosphorus removal effectiveness estimates for oyster practices determined to have sufficient science

Panelist Tasks:

- Apply pollutant reduction crediting framework from charge item 2 to determine nitrogen and phosphorus removal effectiveness estimates to help inform the Chesapeake Bay TMDL 2017 midpoint assessment.
- Consider evaluations from past efforts (2013 STAC review and NOAA oyster/nitrogen reduction workshop).
- Evaluate new scientific literature.
- Review modeling approaches to determine if they would be acceptable to fill in any knowledge gaps concerning nutrient removal effectiveness.

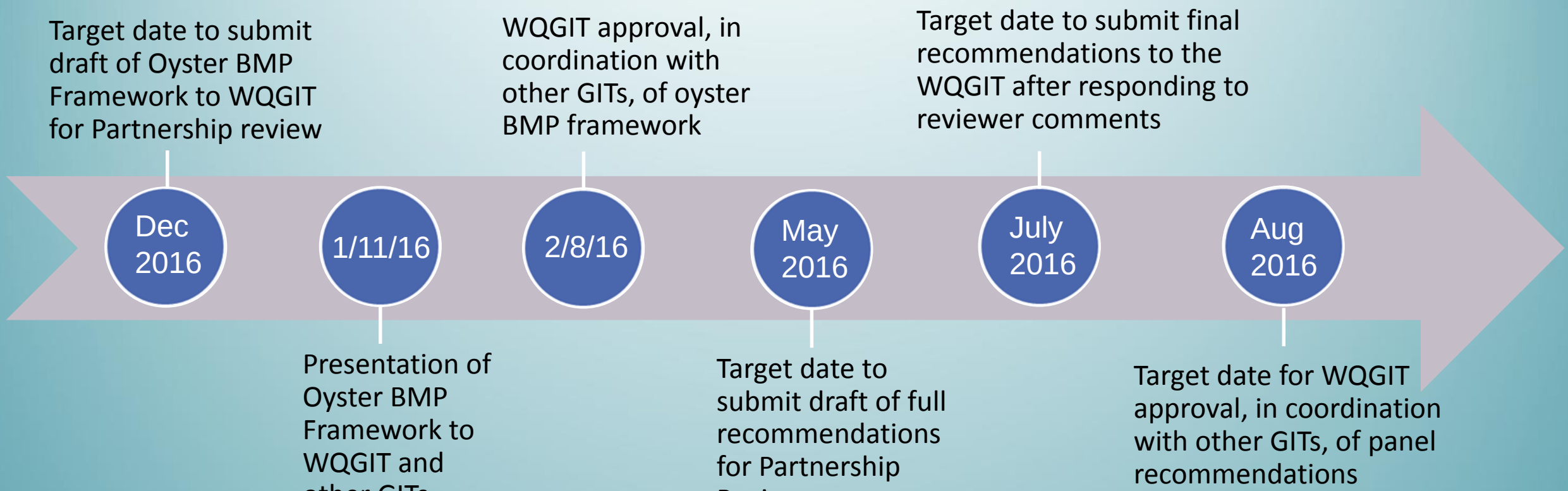
Hypothetical Example:



Example Guidelines:

- Credit only applies for harvested oysters.
- Denitrification credit not supported at this time.
- Assimilation in shell not credited because shell is returned to Bay.

Oyster BMP Expert Panel Timeline



QUESTIONS?