# Oyster BMP Expert Panel Update

Briefing to the WQGIT and CBP Partnership
Monday, February 8, 2016

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# Purpose of Briefing

The Oyster BMP Expert Panel is asking the Partnership and the WQGIT, in coordination with the Fisheries and Habitat GITs, to provide input on:

1. Main steps identified by the Panel for the Oyster BMP Nutrient and Suspended Sediment Reduction Effectiveness Decision Framework.
2. Strategy of grouping oyster practices into broad oyster practice categories for reduction effectiveness evaluation.
3. Strategy of developing and applying individual nutrient and suspended sediment reduction effectiveness crediting protocols based on oyster-associated nutrient and suspended sediment reduction processes.
4. Decision points in Step 1 and Step 2 of the Decision Framework.
5. Guidelines identified in Step 3 of the Decision Framework.
6. The 4 main oyster practice categories identified by the Panel.
7. The currently 8 identified oyster-associated nutrient/suspended sediment reduction effectiveness crediting protocols.

# Changes from the Panel Charge

- The Decision Framework will now be referred to as the, “Oyster BMP Nutrient and Suspended Sediment Reduction Effectiveness Decision Framework” instead of “Pollutant Removal Crediting Framework.”
  - Panelists wanted to make it clear that they are only evaluating nutrient and suspended sediment reduction and that the decision framework is for determining reduction effectiveness and not decisions related to nutrient trading credits (there has been some confusion with this).

# Changes from the Panel Charge Cont.

- Instead or a formal incremental approval step for the Decision Framework, the Panel will ask for GIT and CBP Partnership feedback as the framework is being developed and present the final framework in the recommendation report for approval.
  - Panelists recognized that there would likely be a need to adjust decision steps as they work through the framework and felt a formal approval step would delay Panel progress significantly if each change had to get re-approved.

# Panel Meetings to Date

- The Panel convened on September 30, 2015 and has met a total of six times for 2-hour meetings

- The Panel hosted a public stakeholder meeting on November 2, 2015 to allow stakeholders to present information for the Panel to consider.

# Panel Deliberations to Date

- Steps to be included in the Decision Framework.
- Establishment of oyster practice categories for BMP consideration (part of Step 1 of the Decision Framework).
- Identification of oyster-associated nitrogen, phosphorus, and suspended sediment reduction processes that could be developed into individual reduction effectiveness crediting protocols (part of Step 1 of the Decision Framework).

# Main Steps of Decision Framework

**Step 1**: Determine oyster practice categories and individual oyster-associated nutrient and suspended sediment reduction effectiveness crediting protocols for evaluation.

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**Step 2:** For each suitable oyster practice category and reduction effectiveness crediting protocol combination, determine the reduction effectiveness estimate (e.g., number/rate, equation/method to calculate estimate) based on current scientific understanding.

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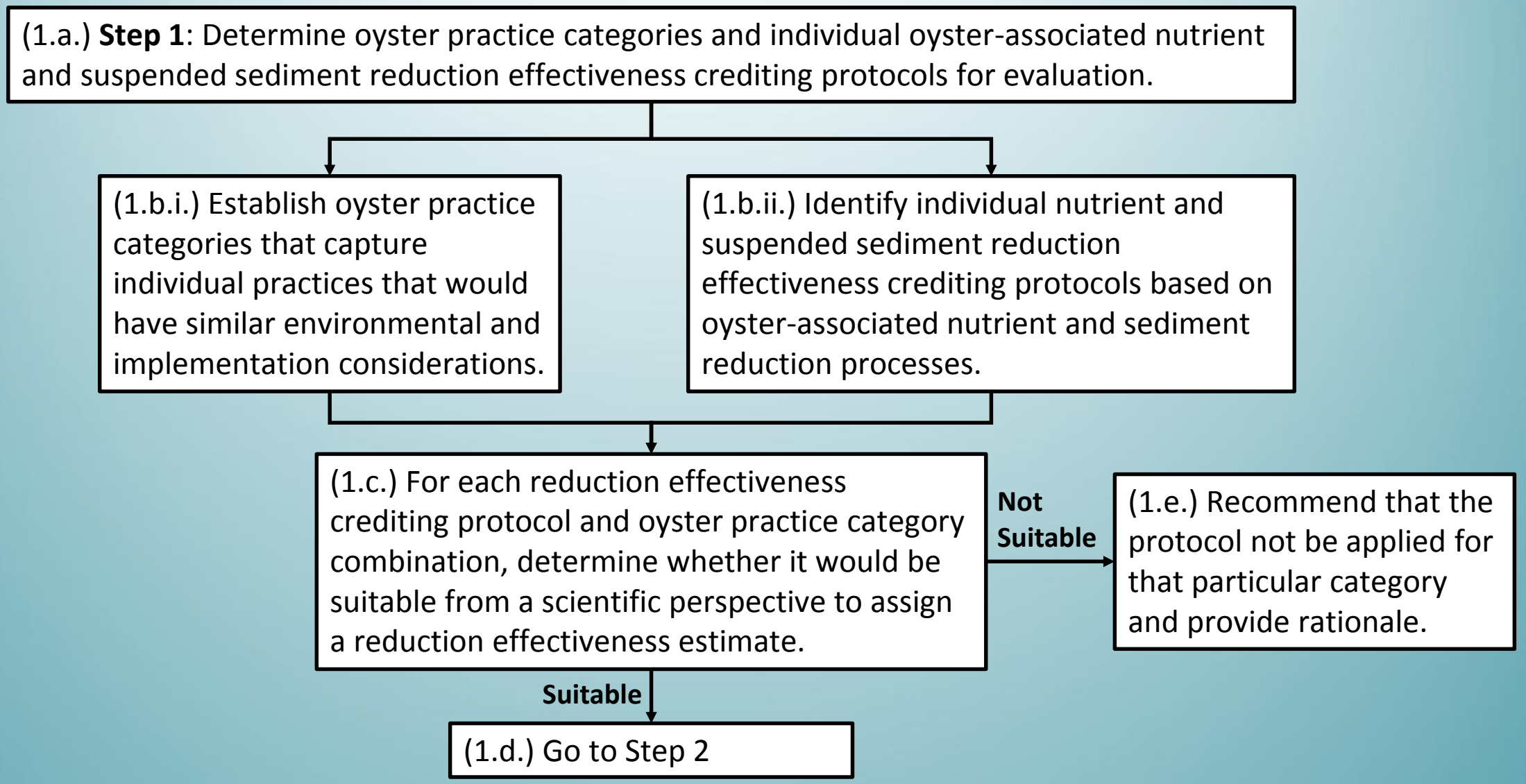
**Step 3:** Recommend BMP crediting and verification guidelines for recommended estimates, addressing key elements described in the CBP BMP Review Protocol and Verification Framework.

# Step 1 of Decision Framework



# Step 1.c. Decision Point Example (Hypothetical)

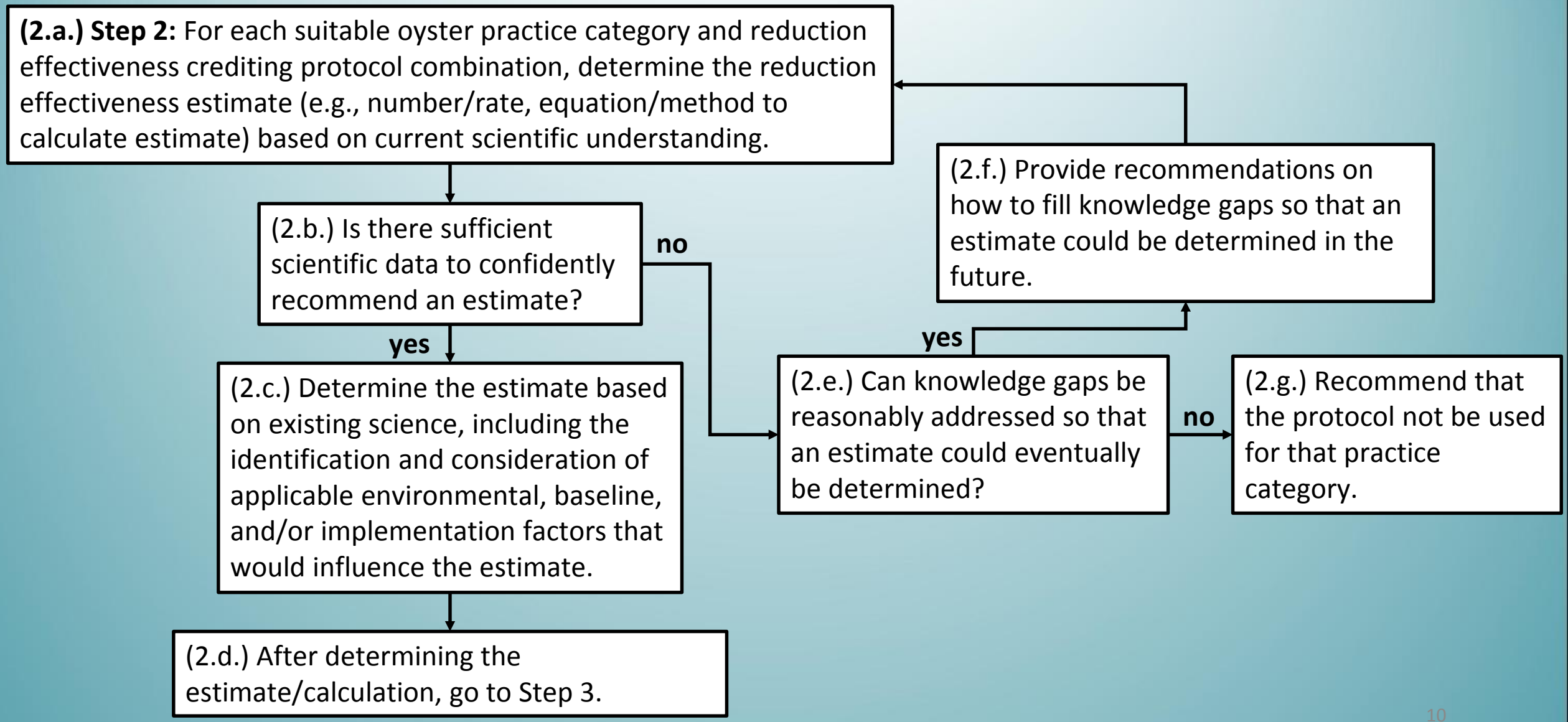
(1.c.) For each reduction effectiveness crediting protocol and oyster practice category combination, determine whether it would be suitable from a scientific perspective to assign a reduction effectiveness estimate.

| Oyster Practice Category/ Crediting Protocol Combinations | Oyster Practice Category A | Oyster Practice Category B | Oyster Practice Category C | Oyster Practice Category D |
|---|---|---|---|---|
| **Protocol 1** | # | # | # | # |
| **Protocol 2** | # | # | # | # |
| **Protocol 3** | x | x | x | # |
| **Protocol 4** | # | # | # | # |
| **Protocol 5** | # | # | # | # |
| **Protocol 6** | # | # | # | # |
| **Protocol 7** | x | x | x | # |
| **Protocol 8** | x | x | x | # |

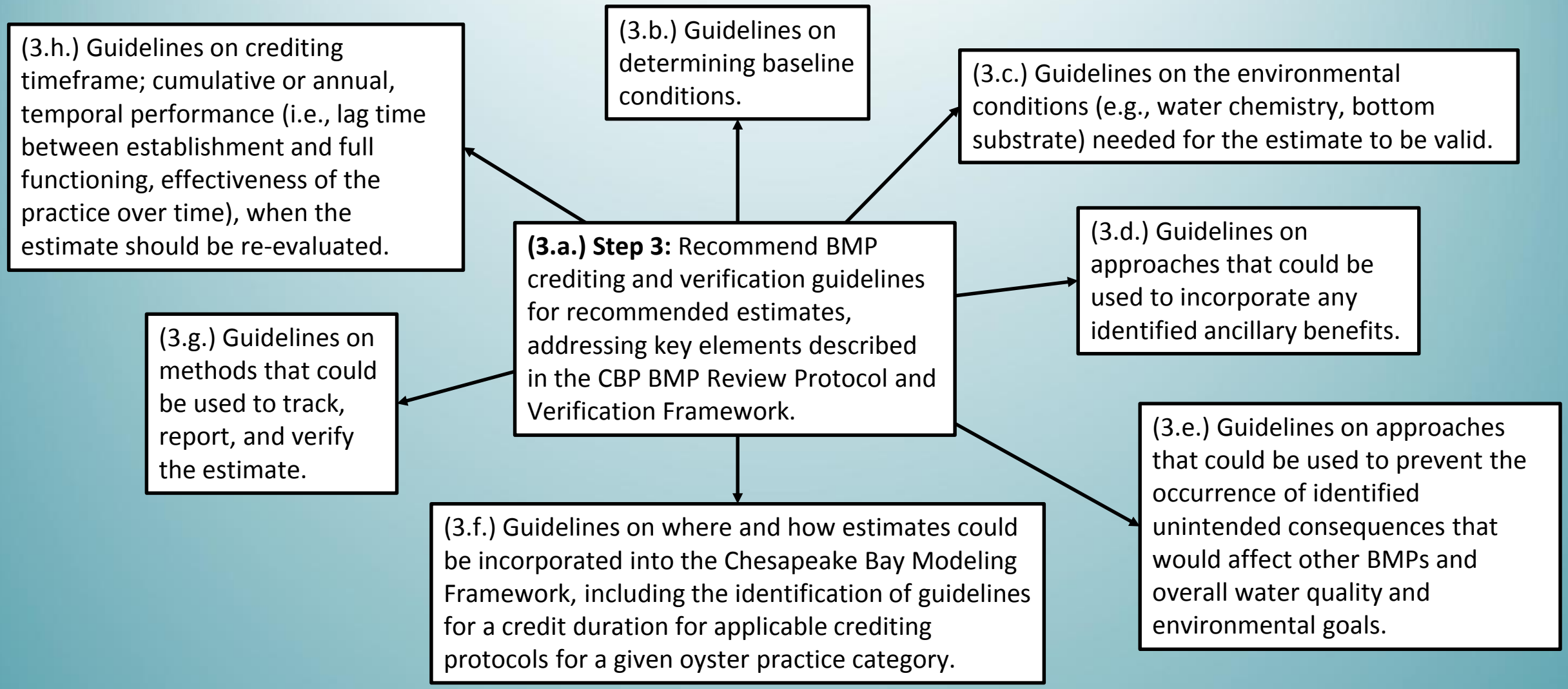
# = Scientifically suitable to evaluate a reduction effectiveness estimate
x = Not scientifically suitable to evaluate a reduction effectiveness estimate

- "Scientifically suitable" refers to whether or not the oyster-associated reduction processes the protocols are based on would even occur with a particular oyster practice category.
- The Panel felt this decision point should occur early in the framework so time isn't wasted in evaluating combinations that wouldn't be scientifically justified.

# Step 2 of Decision Framework



# Step 3 of Decision Framework



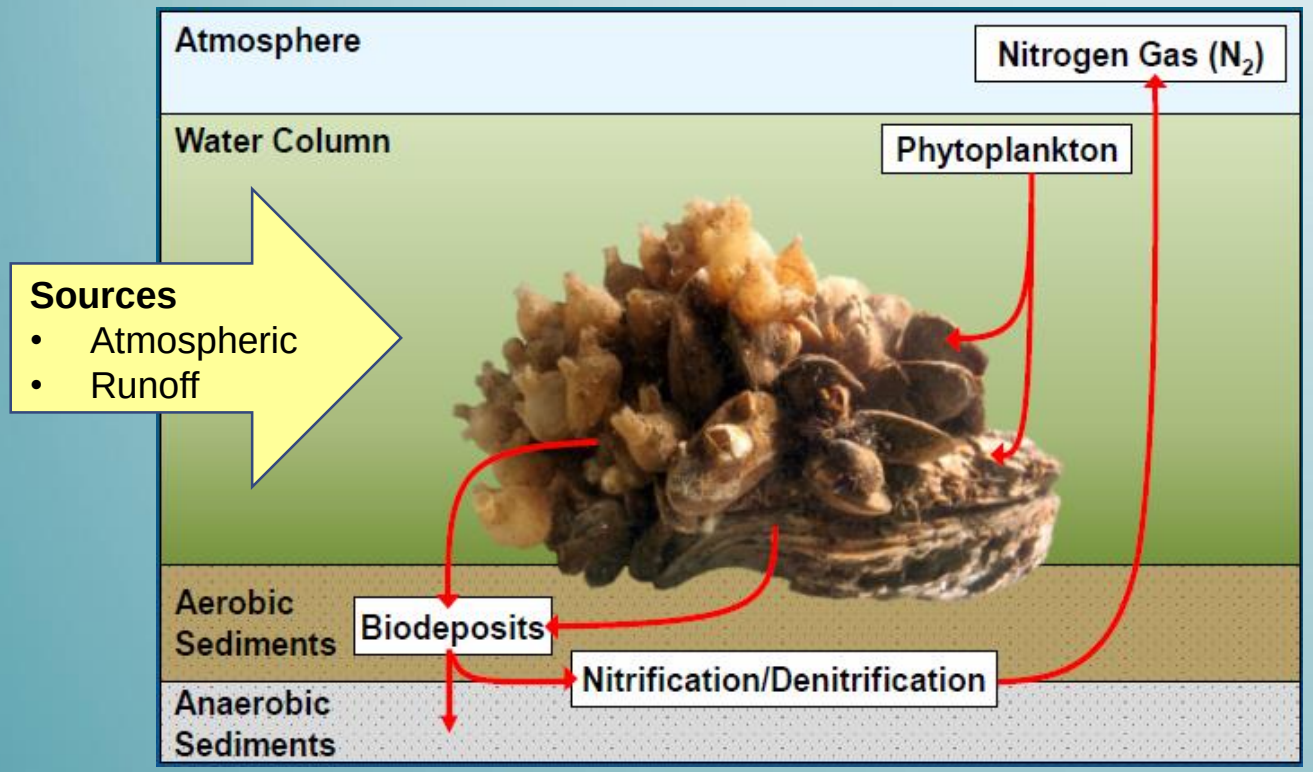
# Oyster Practice Categories for BMP Consideration

(1.b.i.) Establish oyster practice categories that capture individual practices that would have similar environmental and implementation considerations.

| Category | Oyster Practice | Description |
|---|---|---|
| A | Water Column Oyster Aquaculture | Oysters reared above the sediment surface for eventual removal from the water. |
| B | Bottom Oyster Planting Aquaculture | Spat-on-shell planted directly on the bottom or small oysters moved from one bottom location to another for eventual removal from the water. |
| C | Bottom Oyster Substrate Planting Aquaculture | Planting oyster shells or alternative substrate, such as granite, directly on the bottom to attract recruitment of natural (wild) oysters for eventual removal from the water. |
| D | Oyster Reef Restoration | Planting of oyster shell or alternative substrate and/or spat-on-shell or individual oysters reared elsewhere on bottom or raised substrate to enhance oyster population and/or oyster biomass in areas where removal is not permitted (e.g., sanctuaries). |

# Oyster-Associated Nutrient and Suspended Sediment Reduction Effectiveness Crediting Protocols

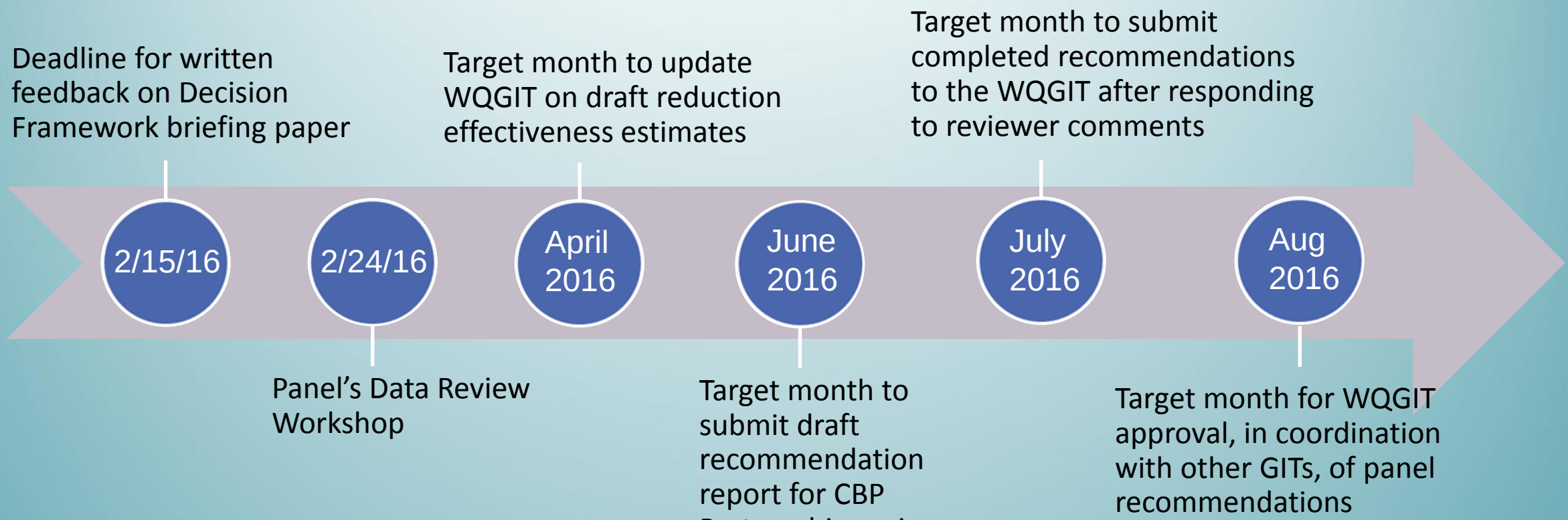
(1.b.ii.) Identify individual nutrient and suspended sediment reduction effectiveness crediting protocols based on oyster-associated nutrient and sediment reduction processes.




Kellogg et al. 2013

| Reduction Effectiveness Protocols |
|---|
| 1. Nitrogen Assimilation in Oyster Tissue |
| 2. Nitrogen Assimilation in Oyster Shell |
| 3. Enhanced Denitrification Associated with Oysters |
| 4. Phosphorus Assimilation in Oyster Tissue |
| 5. Phosphorus Assimilation in Oyster Shell |
| 6. Sediment Reduction Associated with Oysters |
| 7. Enhanced Nitrogen Burial Associated with Oysters |
| 8. Enhanced Phosphorus Burial Associated with Oysters |

# Oyster BMP Expert Panel Timeline



# How to Keep Informed of Panel Efforts

Website summarizing Panel progress available at

oysterrecovery.org/water-quality-improvement-2/

Please send any written feedback on briefing paper by **Feb. 15, 2016** to jreichert@oysterrecovery.org

# QUESTIONS?