**Date:** July 12, 2016

**From:** Tom Schueler
CBPO Stormwater Coordinator

**To:** Urban Stormwater Work Group
and other interested parties

**Re:** Response to Comments
Floating Treatment Wetland Expert Panel Report

*Background:* The Expert Panel Report was released for public review on June 6, 2016 and a detailed webinar was conducted shortly thereafter. The 30 day window for comments expired on July 8, 2016. Comments were received from the following organizations and individuals:

- Matt Johnston, CBPO
- PA DEP
- MDE
- DOEE
- City of Alexandria, Virginia
- Webinar attendees

*Comment #1. Plant nutrient uptake (MDE)*

The sharp eyes of MDE caught a major typo on page 4.

"Nutrient uptake by the plants themselves was **not** found to be a significant pollutant removal mechanism"

*Response:* correct the typo in the sentence

*Comment #2. Simplified FTW Practice Reporting (Johnston, CBPO)*

To simplify reporting of the FTW practice, Matt recommended that FTWs be sub-divided into five classes of FTW practices, based on ranges in raft coverage achieved. Matt proposes that a new Table D-1 be added to the Scenario Builder Appendix (Appendix D), as shown below:

| **Table D.1. Pollutant Removal Rates for FTW Pond Retrofits** | | | | |
|---|---|---|---|---|
| | | **Pollutant** | | |
| **Practice Name** | **Raft Coverage in Pond** | **TN** | **TP** | **TSS** |
| FTW-1 | 10% | 0.80% | 1.60% | 2.30% |
| FTW-2 | 11-20% | 1.70% | 3.30% | 4.70% |
| FTW-3 | 21-30% | 2.50% | 4.90% | 7.00% |
| FTW-4 | 31-40% | 3.30% | 6.50% | 9.20% |

| | | | | |
|---|---|---|---|---|
| FTW-5 | 41-50% | 4.10% | 8.00% | 11.50% |

*Response: Accept the change, subject to WTWG concurrence.*

*Comment #3. Expert Panel Report Disclaimer (PADEP)*

PA DEP requested that the report be accompanied by the following disclaimer:

"The statements and procedures outlined in the expert panel report are intended to supplement existing jurisdictional requirements. Nothing in the expert panel report shall affect jurisdictional regulatory and other legal requirements."

*Response:* Other expert panel report have contained similar language in the past. Unless another Bay state objects to the proposed language, it is recommended that it be included. Guidance from the USWG is requested on where to put the disclaimer (e.g., cover, Section 1, or next to the section on reporting and verification).

*Comment #4. Treatment Wetlands vs. Jurisdictional Wetlands (DOEE)*

The District of Columbia did not have any technical comments on the report, but noted that:

"The creation of floating wetlands should not be an option for mitigation for impacts to wetlands in the District. Floating wetlands in the District should not be considered jurisdictional wetlands."

*Response:* The expert panel would concur with both statements and would support adding general statement about mitigation and jurisdictional wetlands to the section on qualifying conditions (Section 2.2).

*Comment #5. The credit durations for the FTW practice are too short (PADEP)*

The recommended three and one-year credit durations are highly impractical. The minimum credit duration for structural practices should be 5 years to make the verification process less burdensome.

*Response:* The panel outlined its reasoning for a shorter credit duration for FTW retrofits in Section 5.2, noting that FTW performance is reliant on routine operation and maintenance tasks. In the view of the panel, the burden for inspecting, maintaining and verifying them falls entirely to the FTW "operator" and not the state stormwater regulatory agency.

As a compromise, the USWG may want to consider a two prong approach where (a) the one-year credit duration is eliminated (no enforceable maintenance plan = no credit) and (b) extend the credit from 3 to 5 years for FTW retrofits with an enforceable operation and maintenance plan.

The existence of an enforceable operation and maintenance plan would be added to the list of FTW performance criteria in Section 2.1.

*Comment #6. Rationale for choosing such a low Nitrogen removal rate for FTWs (PADEP)*

PADEP wanted clarification on why the panel chose such low removal rates for N when one of the monitoring sites showed a higher N reduction rate (NC Highway Site).

*Response:* The researcher who performed the monitoring study for the two North Carolina FTW sites was an active member of the panel (Ryan Winston). He notes that there are several different metrics to define FTW retrofit removal. He noted that when he calculated the percent removal rate, both pond sites seem to perform about 10-14% better post-retrofit (Table 1). However, this improvement was not statistically significant, meaning the change in concentration was not outside the realm of random error in the stormwater samples collected. When other metrics were used to evaluate his monitoring data (such as the change in influent and effluent EMC), the N-removal picture for the two sites was much more mixed (see Table 2).

Consequently, the panel elected to use an engineering model (i-FTW) to derive the credit for FTW retrofits. The full rationale for how the final removal rates were calculated can be found in Appendix B. Note the considerable variability in N removal rates as provided in Figure 6 of that appendix.

*Comment #7. Unintended consequences: risk of hypoxic discharges and downstream warming (various webinar participants)*

Concerns were raised about the potential for unintended consequences associated with deployment of FTWs in wet ponds, based on the data presented in Figure 2 (page 10) and the general discussion on downstream discharges (page 18). Past research has shown that existing wet ponds have the potential to induce downstream warming and release hypoxic water during the summer months. For this reason, the use of wet ponds is often discouraged or even prohibited in trout watersheds.

Based on the limited monitoring data, the panel concluded that shading by FTW rafts was unlikely to change the temperature profiles in wet ponds, and therefore, would have no major impact on preventing downstream warming. The panel concluded that FTW rafts did induce hypoxia in the vicinity of the rafts, but the dissolved oxygen (DO) depletion was localized, and did not appear to extend to the pond outlet.