GIT funding RFP Topic Idea

Project Title: Integrating Co-Benefits of Select Urban Contaminants into the Chesapeake Assessment Scenario Tool (CAST)

Goal Team: Water Quality and STAR. Joint project between several WQ GIT workgroups (Toxic Contaminants, Stormwater, Wastewater) and STAR (modeling team).

Technical Lead: TCW

Preparers: Scott Phillips, Emily Majcher (USGS), and others as shown in comments

Project Type: Performance Metric Development, Modeling Support, assessments of data to evaluate progress on metrics

Proposed outcomes: The project will provide recommendations and approaches for including selected urban contaminant information into CAST. The information will result in improved decision making by states and local governments on the co-benefits of nutrient and sediment practices to reduce contaminants, improve habitat conditions for fisheries, and make fish safer to consume by diverse groups in urban areas.

Justification. PCBs and other contaminants from urban areas (such as PAHs, mercury, and other metals) have caused fish consumption advisors and degraded the health of fish. Many of these areas are in low income areas where a portion of people's diet depend on fisheries. State agencies and local governments managing water quality and trying to improve habitat conditions for fisheries need improved information to mitigate toxic contaminants, and how they can take advantage of on-going nutrient and sediment reduction efforts.

TCW previously supported an effort to assess the Potential Benefits of Nutrient and Sediment Practices to Reduce Toxic Contaminants in the Chesapeake Bay watershed (Schueler and Youngk, 2015; 2016). Despite the exhaustive literature review conducted in urban and agricultural and wastewater sectors, there was little evidence at that time of published effectiveness of nutrient and sediment practices to remove toxic contaminants, and rather conclusions were made about probable practices using surrogates rather than direct measurement of reduction (e.g., sediment for hydrophobic contaminants like PCBs). Additionally, discussions with the CBP modeling team about CAST suggested without the information on BMP effectiveness of toxic contaminants, they could not be included into CAST. These issues, lack of BMP effectiveness data and getting information into CAST, greatly limited progress on identifying potential co-benefits of nutrient and sediment practices to also reduce toxic contaminants.

However, there is new information to overcome these limitations for developing co-benefits between nutrient, sediment and toxic contaminant reduction. A STAC workshop held in May, 2019 (STAC, 2020) revealed advances in the use of stormwater practices for toxic contaminant removal have occurred, especially for PCBs and mercury, two of the toxic contaminants that drive many fish consumption advisories nationwide. These advances have largely been driven by the implementation of toxic contaminant TMDLs in urban areas, particularly in the west/northwestern United States. While many of the advances have occurred outside the Chesapeake Bay watershed such as in the San Francisco Bay

area and Portland and Spokane, researchers within the Chesapeake Bay watershed and the Department of Defense have advanced experiences more locally. Additionally, a current GIT project is addressing how flood mitigation information can be incorporated into CAST, using a more qualitative approach. The lessons learned from this project can be applied to better representing toxic contaminant information into CAST.

The new information demands a timely RFP topic to make progress on the toxic contaminant research outcome to identify which best management practices might provide multiple benefits of reducing nutrient and sediment pollution as well as toxic contaminants in waterways. This proposed RFP topic will also benefit groups working to improve water quality goal, improve fish habitats, and make fish safer to eat by the diversity of people living in urban areas.

Proposed Project Steps and Timeline

The proposed project will focus on compiling information for contaminant removal by both structural, non-structural urban BMPs and wastewater treatment and gray infrastructure maintenance and formatting that information to be incorporated into CAST so managers can have an assessment of the co-benefits for water-quality and habitat decisions.

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The project will be completed through the following tasks:

1. Identify the most implemented urban best management practices in selected urban portions of the CB watershed, particularly where toxic contaminant impairments, approved TMDLs and fish consumption advisories are established (i.e., Phase 1 or Phase 2 MS4 jurisdictions). This can be accomplished by working with the CBP urban stormwater and waste water workgroups, local governments in urban areas, and the CBPO BMP team. The list of most common urban BMPs will be used to guide gathering of BMP effectiveness data (next step).
2. Review literature to establish the reported contaminant reduction (and the conditions under which that reduction was measured) in the stormwater BMPs identified in 1, and from WWTPs. The literature review would have a particular focus on the new data from the San Francisco Bay area and other Pacific Northwest cities as well as projects within the CB watershed.
3. Consult with coordinator of BMP expert panels to develop data quality criteria to reflect confidence in the reported removal for use in the CB watershed. New expert panels are not envisioned but we want to use their guidelines to categorize the case study information gathered for each prioritized BMP and the contaminant removal case study results based on location of study, comparison of climatic conditions if outside the watershed, co-contaminant presence, and other potential factors.
4. Engage CAST and watershed model staff within CBPO to determine what information is required and in what format that information should be reported to facilitate the inclusion of contaminant removal in CAST. Consider other model platforms in addition to CAST reported in literature including SWMM and winSLAMM and evaluate the effectiveness of these tools in comparison to CAST.
5. Develop recommendations on integrating information into CAST or use of other decision tools. Recommendations should include format of information gathered in 1, 2 above to support this integration into CAST (or appropriate modeling tool) and provide documentation as requested by the modeling team. An explicit approach will be developed, in collaboration with the Water-

Commented [MEH3]: We could provide example documents or a reference list in RFP if needed. Greg Allen concerns about adequate information available to create this database of information. He will review information and make a recommendation here

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Quality Goal Team and STAR modeling team to specifically summarize the information for potential incorporation in CAST, or other tools if they are recommended.

Co-Benefits: Toxic Contaminant Policy and Prevention: working to reduce PCBs in the watershed. Toxic Contaminant Research: develop information on the co-benefits of toxic contaminant, nutrient, and sediment reduction. Watershed Implementation Plans 2025: information needed to consider co-benefits of practices for 2-year milestones. Fish habitat: improving aquatic conditions for freshwater and estuary fisheries. Diversity: making fish safer to each in diverse urban areas. Local governments: making urban waters more fishable.