STAC Workshop Proposal:
Driving Factors Indicators for the Chesapeake Bay Program

Objective

This workshop will create and prioritize criteria for factors indicators that the Chesapeake Bay Program will use to understand what affects progress towards the 2014 Chesapeake Bay Watershed Agreement Outcomes.

Description

Background

The 2014 Chesapeake Bay Watershed Agreement set forth adaptive management as a principle for how the program should operate. This framework calls on the program to consider factors affecting its ability to achieve an outcome, to consider current efforts and gaps to manage those factors, and to create management approaches based on those gaps. To better align with the 2014 Watershed Agreement, the Management Board approved in November 2015 a revised Indicators Framework (full presentation available here). This new framework specified the three kinds of information the Program needs to adaptively manage: **factors** influencing, information about our **outputs**, and **progress** indicators. Some outcomes in the 2014 Agreement remain difficult to quantify or describe an intended target, but many outcomes have or are working towards progress indicators.

There are some factors indicators that the Program maintains, such as Population and Forest Cover. However, these indicators are legacy measures that seem disconnected from the specific outcomes and the information Goal Implementation Teams (GITs) need to understand about their factors to adaptively manage. Furthermore, GITs in different positions are in need of a common roadmap regarding factors indicators. Some remain focused on acquiring or maintaining progress indicators and may not have considered data needs for factors, or may not know where to begin in considering indicators of factors. Others, such as the Climate Resiliency Workgroup, are considering not only their own factors but also recognizing that their indicators project may supply factors indicators for other workgroups and GITs.

Meanwhile, the biennial Strategy Review System (SRS) has refocused the program on the beginning steps of the Decision Framework, which is the Program's blueprint for adaptive management. The Decision Framework starts with an identification of all factors impacting the achievement of an outcome. STAC members created a generic list that provides broad categories for all factors listed in CBP management strategies (see Appendix B in the linked document). This list can be used to ensure teams are considering all kinds of factors as they look to update their Work Plans and Management Strategies.

An Urgent Need

With this renewed focus on factors, conversations on factors and indicators are happening in different areas of the Program (including individual GITs, the SRS team, STAR, GIS team, and the ChesapeakeProgress team) without an agreement of the kinds of factors that might necessitate an indicator. An agreement on direction is needed to shape the work of the Status & Trends workgroup, specify the indicators that the Indicators Coordinator should pursue with STAR on behalf of the Program; provide bounds to the conversations already occurring about factors; and clearly indicate a path for teams not yet considering factors indicators. A STAC workshop provides the unique venue to bring STAC expertise in relevant science and the scientific application of adaptive management to blend with Program perspectives on management and resource constraints for a future direction that is feasible and true to the principle of adaptive management. This proposed workshop would consider criteria for factors across all outcomes, touching all of the GITs. It would also help to fulfill the

Indicators Framework, of which STAC members played a part in creating, and it would bring the program closer to true adaptive management, which continues to be a STAC concern.

Products and Beneficiaries of the Workshop

The product of this workshop, to be included in the final report or as appendices, would be specific guidance to the Program about considerations for and prioritizing the development of factors influencing indicators, including

- A set of criteria to consider in conceptualizing factors influencing indicators
- Proposed prioritization of said criteria that can be applied across all Outcomes

STAR would review the prioritized criteria and determine whether to adopt formally the recommendations. This formal adoption would guide the development of any indicators of factors. The **Indicators Coordinator** at CBP will use these products to help **all GITs** assess their information needs regarding factors influencing their ability to achieve their outcomes. The **ChesapeakeStat team** may use the products to build out ideas for existing or new sites about progress and decision-making related to the 2014 Agreement. The **Status and Trends Workgroup** can apply the criteria to common factors mentioned in management strategies to determine what, if any, factors indicators should be developed to support adaptive management at the Program, and then work with **STAR and its workgroups** to help fill needs.

Participants

Steering Committee (Confirmed)

- Laura Free, US EPA CBPO, Indicators Coordinator (chair)
- Carl Hershner, VIMS – adaptive management expert and STAC advisor to SRS team
- Kirk Havens, VIMS - adaptive management expert and STAC advisor to SRS team
- Peter Tango, USGS – CBP monitoring expert familiar with different types of indicators, as well as the concept of thresholds for factors affecting specific populations
- Doreen Vetter, US EPA CBPO – ChesapeakeStat manager familiar with efforts to make more transparent our adaptive management efforts
- Denice Wardrop, PSU Cooperative Wetlands Center, STAC – expertise in ecosystem behavior and stress, expert in indicator development and adaptive management
- John Wolf, USGS – GIS team lead, has produced work visualizing factors' connections to each other and other Outcomes

Other Participants

No more than 25 total participants, including the Steering Committee, are expected. Other experts and workshop participants could include:

- Communications staff responsible for communicating to the public about the adaptive management process and its impact on our work
- Manager(s) responsible for implementing adaptive management in the Program
- Experts in ecosystem behavior of various types – fish, wetlands, etc.
- Experts in adaptive management (steering committee members)
- Social science expertise – behavior change, diversity, and education
- Active coordinators or managers from GITs or workgroups
- Experts in indicator development and monitoring from adaptive management programs for other ecosystems

These experts bring real world experience tracking changes in ecosystem condition to create a common framework that will be applicable across the program, regardless of the condition being measured. A STAC workshop is imperative to bring together scientists who are familiar with a diverse array of topic areas but removed from the implementation and support work of the Chesapeake Bay Program to advise the Program on the best way to implement this piece of the Decision Framework. With real-time interaction with a sampling of managers and coordinators from the Program, the recommendations of these experts can be discussed and adapted to best address the needs of the Program while remaining true to the logic of the Decision Framework. The recommendations will be more likely to be implemented after the workshop with this blend of science and management.

Logistics

Anticipated Timing: Steering Committee will begin meeting biweekly in June 2018 to plan the workshop, confirm target experts and participants, and gather existing information. Invitations will go to participants in September, for the one-day workshop to be held at the end of 2018 or early 2019. The steering committee will have a follow up meeting at the end of the workshop and a conference call within a month of workshop completion. The report will be submitted to STAC within 90 days of the workshop, and STAR will review the proposed prioritized criteria following the report submission.

Facility needs and desired location: Facility needs include a space with moveable tables and chairs to facilitate group activities and visual equipment to display presentations and discussion questions. Preferred locations for the workshop are dependent on the final number of invitees, but will likely be limited to venues that can accommodate at least 25 participants such as SERC or one of the venues commonly used for STAC meetings. Space should be acquired away from CBPO campus to encourage full and present participation in the workshop.

Anticipated budget: Total - $5500

Venue - $2000 (space, materials, applicable technology fees)

Facilitation - $1500 (needed to guide conversation while steering committee members actively participate in the workshop, plus some pre- and post-workshop planning with steering committee)

Catering - $1000 (coffee in the morning, plus lunch during the workshop)

Travel for participants and speakers - $1000

Proposed Tentative Outline

- **Ground Zero: Adaptive Management** This agenda item would ensure all participants are starting with the same understanding of the concept
- **Existing Work: Visualizing Factors and Analyzing for Commonalities** This item would cover the GIS team's previous work to visualize connections among factors and the ChesapeakeStat team's efforts to assess quantitatively the most frequently recurring factors identified in the Management Strategies
- **Strategy Review System (SRS): Reinforcing the Decision Framework** This presentation would provide a high-level view of the SRS, with the logic table as a means of stepping through the Decision Framework in an assessment of factors, current efforts and gaps.
- **Presentation from Regional Expert on Adaptive Management and Its Implementation**
- **Discussion: Manageable and Unmanageable Factors** This discussion would include examples across goal teams, and discussion around these and other questions: Should information collection focus on critical but unmanageable factors, to allow teams to test assumptions about those factors? Should the Program attempt to collect information about factors they're trying to influence, or focus on the intended result of influencing those factors?

- **Criteria for Factors Influencing Indicators** Activities with the entire group or small groups would include brainstorming and prioritization, with group discussion at each step.

Past STAC Workshop Proposals from STAR and Status

While the Status & Trends workgroup has not submitted any proposals for STAC workshops in the past, the following are a summary of previous workshops that other STAR workgroups have supported and their status. This workshop proposal includes a specific product: prioritized criteria, which can then be discussed and adopted within STAR and its workgroups. This adoption would then guide the development of future indicators.

Integrating Recent Findings to Explain Water Quality Change: Support for the Mid-Point Assessment and Beyond

The Integrated Trends and Assessment Team (ITAT) organized this workshop in December 2017 to provide the mechanism for a focused exchange among the scientists leading the efforts below to explain water-quality change and the managers working to incorporate those explanations into management of the Chesapeake Bay restoration effort. While the workshop report is still being drafted, insights from the interaction between scientists and jurisdiction managers are already being incorporated into plans for local science engagement and support for the Phase III WIP development process. Based on feedback provided during the workshop, organizers have begun to plan additional integration of ongoing applied research in 2018 to support evidence-based management.

Understanding and Explaining 30+ Years of Water Clarity Trends in the Bay's Tidal Waters

This workshop was held in two parts, in February and May of 2017. The steering committee brought together the multiple disciplines needed to synthesize the current state of science regarding influences on the long-term patterns of water clarity. Products from the workshop have been used to aid in the interpretation of long-term trends in tidal water quality and SAV conducted at CBP and by partners at VIMS, UMCES, MDDNR, and VADEQ. Output from the workshop was presented at another STAC workshop in December 2017, “Integrating Recent Findings to Explain Water Quality Change: Support for the Mid-Point Assessment and Beyond,” where findings on water clarity trends were linked to other synthesis efforts. Follow-on work is generating material for one or more journal articles and reports.

Integrating Monitoring Networks to Support the Assessment of Outcomes in the New Bay Agreement

STAR’s Monitoring analysts organized this workshop in April 2016. The final report has been completed, and the workshop spurred new ideas about collaboration with riverkeepers, citizen scientists, and other groups working on SAV and forage monitoring. The CBP’s annual Goal Team funding process supported a pilot joint monitoring project for SAV and forage, the design of which would not have been possible without this workshop.

Co-Chairs Scott Phillips (U.S. Geological Survey), Mark Bennett (U.S. Geological Survey) and William Dennison (University of Maryland Center for Environmental Science)
Scientific, Technical Assessment, and Reporting Team (STAR)
Chesapeake Bay Program
410 Severn Avenue, Annapolis, MD 21403

Mr. Brian Benham, Chair
Scientific and Technical Advisory Committee (STAC)
Chesapeake Bay Program
645 Contees Wharf Road, Edgewater, MD 21037

February 15, 2018

Dear Mr. Brian Benham,

The Chesapeake Bay Program Office's Scientific, Technical Assessment and Reporting (STAR) leadership team is writing to convey its support for the proposed 2018 STAC-sponsored workshop, "Factors' Indicators for the Chesapeake Bay Program". This workshop will bring together STAC and other experts in the areas of adaptive management, indicator development and monitoring to create much needed guidance for the Partnership. The guidance will further support the ability of Goal Implementation Teams (GITs) and their workgroups to focus on elucidating and prioritizing information needs regarding the key influences on management affecting achievement of the Outcomes in the 2014 Chesapeake Bay Watershed Agreement.

To date, the GITs have identified, with a variety of rigor, potential suites of factors that could affect their ability to achieve the outcomes. However, there is now a further need for guidance in reviewing and prioritizing factors lists. Prioritization will aid identification of coordination needs of the GITs to support work that specifies data needs and defines data collection, analysis and reporting protocols. Meanwhile, the Partnership's Strategy Review System (SRS), initiated in February 2017, provides tools and templates for GITs and their workgroups to evaluate their existing factors, acknowledge gaps, present progress and needs to the Management Board and attract gap-filling support by the Partnership. With this renewed focus on the first step after goal setting in the Decision Framework logic, the Partnership is ready for guidance promoting a cross-outcome view to determine a subset of critical factors that inform our understanding on the effectiveness of our management efforts. Such guidance will help STAR in its mission to support filling gaps in the scientific, technical assessment and monitoring needs of the Partnership that provide accountability in meeting goals and outcomes of the 2014 Watershed Agreement.

This workshop proposal lays out a clear plan for determining criteria for critical factor's indicators and suggesting prioritization of those criteria. STAR will not only actively participate in the workshop but also use the results and recommendations to further the implementation of the Decision Framework within the Partnership. In the past, STAR has championed gap-filling support to meet GIT monitoring, science and modeling needs of a diverse array of outcomes through cross-Outcome STAR meetings and discussions at the Management Board and other venues. Through its network of workgroups including

Status & Trends, Data Integrity, and Integrated Monitoring Networks, STAR will use the guidance developed from the proposed workshop to shape proposals for data collection, indicator development and reporting within the Partnership.

This workshop proposal comes at a critical time. Many GITs and workgroups have or are developing indicators of progress toward their Outcome, and some are already thinking about information needs on indicators of factors influencing their Outcome per the Indicators Framework, approved by the Management Board in 2015. With the Strategy Review System in place, it is imperative that the scientific and management communities come together to determine a path forward for prioritizing criteria for selecting key indicators of critical factors influencing achievement of outcomes. Factor recognition is driving the present and future assignment of management and monitoring resources and actions across the Chesapeake Bay Program Partnership. Guidance from the workshop will proactively shape the resource distribution considerations of GITs and workgroups. STAR looks forward to supporting the workshop planning committee and reviewing the prioritized criteria to be included in the report from this proposed workshop.

Sincerely,

Peter J. Tango, Ph.D.

Peter J. Tango – STAR Coordinator, on behalf of approval from the full STAR Leadership Team of co-Chairs Scott Phillips (U.S. Geological Survey), Mark Bennett (U.S. Geological Survey) and William Dennison (University of Maryland Center for Environmental Science).