

## **Scientific, Technical Assessment, and Report (STAR) team**

### **Revising Science Support Activities for the Chesapeake Bay Program Partnership**

(Updated June 6, 2014)

**Need:** The new Chesapeake Bay Agreement will require additional monitoring, modeling, and analysis to help decision makers effectively achieve goals and associated outcomes. CBP science activities are coordinated through the **Scientific, Technical Assessment, and Report (STAR) team**. Over the past several years, STAR had a heavy emphasis on water-quality activities as the partners implemented the Bay TMDL. STAR was not able to fully carry out its revised purpose (prepared in 2011 and approved by Management Board) to “*facilitate with science partners to have increased capacity to serve the priority science needs of the GITs, using an adaptive-management framework, and summarize key information for the CBP partners. STAR will help coordinate the modeling, monitoring, indicator, and information management activities needed by the GITs and work with CBP science partners to synthesize information for cross-cutting CBP products (such as the Bay Barometer)*” To address the needs of the new Bay Agreement, STAR is evolving to have more of an ecosystem-based science mission.

### **Proposed Revision of Purpose and Functions for STAR**

**Purpose:** *Coordinate monitoring, modeling, and analysis needed to update, explain, and communicate ecosystem condition and change to support decision making to achieve CBP goals and outcomes.*

The major functions would include:

- Manage CBP-funded monitoring networks and coordinate with additional science providers to utilize additional networks to address the new Chesapeake Watershed Agreement.
- Ensure information quality, management, and access.
- Update, and deliver, the status and trends (indicators) of ecosystem conditions.
- Explain ecosystem condition and change.
- Expand modeling to better understand and predict ecosystem response.
- Coordinate climate change activities.
- Synthesize and communicate results to improve decision making.

Much of the technical expertise to address these functions already exists within the Goal Teams and with science providers (federal, state, and academic partners) involved in the CBP. The STAR would facilitate collaboration between science providers and Goal Team to carry out these functions. The collaboration is critical to effectively address the complex issues being addressed by the CBP and the science needs of the new Bay Agreement. The STAR can also advocate support of the CBP Office to provide data to address issues that benefit multiple Goal Teams. The products from many of these STAR efforts (such as explaining ecosystem change or synthesis products) would be “owned” by the science providers. STAR would help to promote the products to decision makers. Finally, STAR has a distinct relationship with STAC. STAC provides independent review and recommendations to the CBP to enhance science (monitoring, modeling, and research). STAR works with science providers and Goal Teams to implement the STAC recommendations.

## Description of Functions and Potential Staffing

- Manage CBP monitoring networks and coordinate with additional networks to address the new Chesapeake Watershed Agreement. The CBP currently manages several water-quality monitoring networks including a watershed network and several estuary networks (water quality and SAV). The networks are complex with multiple partners collecting data. There is additional monitoring that needs to be conducted to address the outcomes of the new Bay Agreement. The STAR will work with the CBP Goal Teams to assess existing networks (or identify gaps) for fisheries, toxic contaminants, habitats, and healthy watersheds that can be utilized to assess the new outcomes. The use of Citizen monitoring will be examined to help meet the expanded monitoring needs and applied as appropriate. STAR has begun the process to assess monitoring designs and coordination through the **Building And Sustaining Integrated Networks (BASIN)** process. Part 1 is to evaluate the water quality networks, followed by assessing options to address monitoring needed for outcomes in the new Bay Agreement (part 2).
  - Anticipated Support Needed: (1) Monitoring design and analyses needs for “phase II” of BASIN (water-quality networks). Coordinate with multiple Goal Teams and Agencies/partners to address monitoring needs for new Agreement (Phase III of BASIN). (2) Evaluate and coordinate use of citizen science as part of BASIN process.
  - Proposed Workgroup: Integrated Monitoring Networks WG
- Ensure Information quality, management, and access. The STAR will lead coordination of CBP partners to ensure the quality of information and improve management, access, and sharing of data. The CBP monitoring team would continue to lead efforts to quality assure data being collected by the program and also evaluate use of citizen-based data that support a range of analysis applications. The CBP data center, a part of STAR, will continue efforts for developing a Data Enterprise which can be used to more effectively manage, share and access data. The CBP GIS group would oversee compilation and support of spatial data needed by the Goal Teams. All of these activities would be coordinated through a new WG that would address field methods, laboratory analysis, data management, use of citizen science, and integrated information access.
  - Anticipated Support Needed: Extra help with data management needed for expanding monitoring networks and data to produce CBP indicators.
  - Proposed WG: Methods, quality, and information access WG
- Update status and trends (indicators) of ecosystem conditions. Many of the Goal Team and associated WGs have the lead responsibility to update CBP indicators. The STAR will collaborate with the Goal Teams and science providers to ensure updating of the indicators, or plan for additional indicators that are needed for the new Bay Agreement. The STAR will work with the CBP communications team to have the results reported on the CBP WWW site, in ChesapeakeStat, and the annual Bay Barometer. Finally, delivery of status and trends will be enhanced through ChesapeakeStat, which is being redesigned and other data delivery tools.
  - Anticipated Support Needed: (1) analysis of water-quality data to update progress toward meeting WQ standards attainment, (2) develop and maintain new indicators needed for the

outcomes in the Chesapeake Bay agreement. Will require analysis and “coordination” skills to interact with GITs and data providers.

- Proposed WG: Status and Trends WG
- Explain ecosystem condition and change. Explaining ecosystem condition and change is needed for specific goals (fisheries, habitat, water quality, healthy watersheds, and land conservation) and key ecosystem linkages between goals. To explain ecosystem condition and change, several activities needed to be coordinated including modeling, monitoring, and analysis. Given the large scope of the effort, the STAR will work with Goal Teams and science providers to carry out these primary activities:
- 1) Work with the GITs to make sure technical workgroups exist to address the outcomes of the new agreement. These technical workgroups could be within the GIT or as part of STAR supporting GITs. Technical WGs that already exist within the GITs include:
  - Fisheries;
  - Habitat;
  - Water Quality;
  - Stewardship;
  - Technical workgroups that need to be established include: Toxic contaminants, Climate Change, and explaining water quality change.
- 2) Host technical exchanges (in conjunction with CBP-STAC) between technical WGs and additional science providers to discuss progress in supporting the new Bay Agreement. Use the technical exchanges to identify topics where synthesis products are needed to improve decision-making.
- Conduct workshops to summarize information and produce synthesis products to enhance decision-making for the selected topics. Some examples of topical issues include:
  - Estuary fisheries (shellfish and finfish) changes in response to land change and management policies
  - Enhancement and restoration of wetlands to support black ducks, waterfowl, and water quality.
  - Ecosystem (WQ standards attainment) response to management practices to reduce nutrients and sediment
  - Stream conditions and other factors affecting the recovery and protection of brook trout populations and freshwater fisheries.
  - Effects of toxic contaminants on fisheries and wildlife
  - Conserving lands and healthy watershed in the face of a growing population
  - All of the above should include potential effects of climate change and population growth.
    - Anticipated Support Needed: coordinate efforts to address climate effects on all of above. STAR may be considered as a “home” for climate coordination activities within the CBP since this will be a cross Goal Team need.
- Modeling to better understand and predict ecosystem response. Modeling to understand the impacts of a changing ecosystem, such as the infilling our major reservoirs and the impacts of climate change on ecosystem response. In addition modeling needs to support the evaluation of management decisions to achieve outcomes in the new Bay Agreement. Modeling is an integrating tool and the concept of multiple models will be used to create a collaborative environment for integrating disparate scientific studies. The modeling would need to expand out from water quality and

address/coordinate with ecosystem modeling efforts supporting other goal and outcomes. Opportunities to better collaborate with Chesapeake Community Modeling Partnership will also be explored.

- WG: Modeling workgroup
- *Synthesize and communicate results to improve decision making*: STAR will work with Goal Team to identify technical topics where a synthesis product would help communicate results to decision makers. STAR would work with science providers and CBP communications office to summarize technical results of above efforts and communication findings and management implications to a wider range of audiences. Prepare communication products that are tailored to specific audiences and ensure the science is correctly portrayed.
  - Anticipated staffing support: Help communicate results of STAR efforts to a wider range of audiences
  - WG: May not be a WG but a joint effort with Communications Office, WWW team, and ChesapeakeStat that would focus on specific products and topics.
- Staffing needs for STAR: in addition to above function there is also a need to staff STAR so it can run more effectively to serve the CBP partnership.

#### **Short-term actions**

1. The CRC Staff will be a liaison between STAR and each GIT. The CRC staff for each GIT will be a liaison to STAR and communicate the current science information that is available to meet their science needs and help prioritize unmet GIT science needs. CRC GIT-STAR liaisons are essential to facilitating this interaction and tracking activities in this regard.
2. Revise STAR WGs to carry out new functions.
3. Increase interaction with STAC and propose workshop topics. The STAR work with GITs to propose topics for STAC workshops and work with STAC to identify science providers to address GIT topics.
4. Enhance science coordination. Based on the recommendations of STAC workshops, STAR will help to facilitate gathering the science providers and GIT WGs needed to address and implement STAC recommendations.
5. STAR will convene monthly meetings. STAR will refine its monthly meetings to review progress of providing the science requested by the GITs. The monthly meetings will also have key presentations of findings that should be of interest to multiple GITs.

STAR Workgroups (2014)					
Integrated Monitoring Networks WG	Methods, Quality and Data Access WG	Status and Trends WG	Explain Ecosystem Condition and Change WG	Modeling WG	Climate Change WG
WG Functions					
Manage water quality networks  BASIN process  Coordinate Monitoring supporting the 2014 Bay Agreement outcomes  Build upon Citizen Science and other networks	Field methods  Laboratory analyses  Citizen science field, lab, methods and data management  Center for Collaborative Computing cloud computing solutions  Chesapeake Bay Data Center	CBP Indicators outputs organized and published  Updates of Status and Trends  Delivery supported in ChesapeakeStat	Coordination with Existing Teams in GITS  WQGIT: WQ Response to management practices  Fisheries GIT: GIT Teams contribute to fisheries responses  Habitat GIT: Bay grasses (SAV WG); Wetlands change; stream health responses to management actions  Stewardship GIT: Social change  Tidal and Nontidal integrated analysis support	Bay studies support (e.g. Conowingo Dam management decisions)  Mid-point assessment support  Predicting ecosystem response  Scenario builder	TBD
Synthesis and Communication of Information from all groups					
Working with CBP Communications WG, IAN-ECOCHECK, STAC					