



Tidal Monitoring and Analysis Workgroup Wednesday, July 10 2013

Meeting Calendar:

<http://www.chesapeakebay.net/S=0/calendar/event/19481/>

OBJECTIVES:

- 1) The Workgroup will vote on the 2013 Chesapeake Bay Program Indicators that the Tidal Monitoring and Analysis Workgroup will be responsible for.
- 2) The Workgroup will determine short-term options for continued operation of the Tidal Network in the face of federal funding cuts to the CBP Monitoring Networks.

ACTION ITEMS:

- Present the PHI to Habitat Goal Implementation Team (GIT), Water Quality GIT, and to STAR (after budget discussions are resolved). (*C. Buchanan*)
- Determine what CBPO involvement in the PHI will be. (*C. Buchanan, M. Mallonee, L. Hernandez, P. Tango*)
- Provide the workgroup with annotated version of the attachment: Creating a Surrogate for the Bay-wide PIBI. (*C. Buchanan*)
- Send a written summary of the Improvements to Tidal Indicators Framework presentation to the TMAW workgroup (*L. Hernandez*)

LEADERSHIP:

Walt Boynton (Chair)	UMCES CBL	boynton@CBL.UMCES.EDU
Liza Hernandez (Coordinator)	UMCES/CBPO	lhernandez@chesapeakebay.net
Lea Rubin (Staff)	CRC/CBPO	lrubin@chesapeakebay.net

PRESENTERS:

Claire Buchanan	ICPRB	cbuchan@icprb.org
Elgin Perry	Statistics Consultant	eperry@CHESAPEAKE.NET
Peter Tango	USGS	ptango@chesapeakebay.net

PARTICIPANTS:

Arthur Butt	VADEQ	ajbutt@deq.virginia.gov
Ben Cole	MD DNR	BCole@DNR.STATE.MD.US
Bill Romano	MD DNR	bromano@dnr.state.md.us
Bruce Michael	MD DNR	bmichael@dnr.state.md.us
Caroline Wicks	UMCES IAN	cwicks@umces.edu
Cindy Johnson	VA DEQ	csjohnson@deq.virginia.gov
Claire Buchanan	ICPRB	cbuchan@icprb.org

Dan Dauer	ODU	ddauer@ODU.EDU
Diana Muller	South River Fed.	riverkeeperdiana@southriverfederation.net
Don Smith	VA DEQ	dhsmith@deq.virginia.gov
Doug Moyer	USGS	dlmoyer@usgs.gov
Janine Howard	VA DEQ	janine.howard@deq.virginia.gov
Kevin Sellner	CRC	sellnerk@SI.EDU
Mark Trice	MD DNR	mtrice@DNR.STATE.MD.US
Mike Lane	ODU	mflane@ODU.EDU
Mike Mallonee	ICPRB/CBPO	mmallone@chesapeakebay.net
Nita Sylvester	EPA	Sylvester.Nita@epamail.epa.gov
Renee Karrh	MD DNR	rkarrh@DNR.STATE.MD.US
Roberto Llanso	Versar	llansorob@VERSAR.COM
Tish Robertson	VADEQ	tlobertson@DEQ.VIRGINIA.GOV
Tom Parham	MD DNR	tparham@dnr.state.md.us

MINUTES

Welcome, introductions, announcements – W. Boynton, Chair (UMCES-CBL)

- No monthly TMAW meeting in August, 2013.

Brief Tidal Indicators Refresher – L. Hernandez (UMCES-CBPO)

[Attachment: L. Hernandez – Current Tidal Indicators Framework](#)

L. Hernandez provided a brief overview of the current tidal indicators framework as it relates to the current objectives of CBPO. With the intention of improving the tidal indicators framework she asked the workgroup to consider the following:

- What is the purpose of the Indicators?
- Who are the Indicators serving? And,
- Are they aligned with the current objectives and goals of the Chesapeake Bay Program?

Discussions about changing the Indicator Framework occur later during this meeting. *See: Improvements to the Tidal Indicator Framework – L. Hernandez (UMCES-CBPO) below*

Chlorophyll *a* Replicate Analysis – L. Hernandez (UMCES-CBPO) and E. Perry (Statistical Consultant)

[Attachment: L. Hernandez and E. Perry – Chlorophyll *a*: Comparing Data Input for Indicator Analysis](#)

Edit to presentation: (Slide 5) Thresholds units are in $\mu\text{g L}^{-1}$ not mg L^{-1}

L. Hernandez and E. Perry presented the results of their work comparing two methods of preparing the input data (for input into the CBP interpolator) for the Chlorophyll *a* assessment, for the purpose of the Workgroup choosing a singular method moving forward.

- Method 1) used for the CBPO Indicator is the random replicates method, and
- Method 2) used for the UMCES report card is the average of replicates. Both prepared by the CBPO tidal monitoring analyst.

To check out: [CBPO Chlorophyll a Indicator](#), [UMCES Chlorophyll a Indicator](#)

- L. Hernandez and E. Perry found no significant difference between the two treatments of the replicates.

Discussion, Comments and Concerns

- **Deciding factors in determining Chlorophyll a data input method as suggested by participants:**
 - Will the Chlorophyll a data input method chosen affect the states 303d assessment?
 - No, States either use a different method of analysis, or do not assess for chlorophyll a.
 - A pro for the average replicates method is that it minimizes statistical error since uncertainty is not being reported with results.
 - A pro for the average replicates method is that it allows for the use of all available data.
 - A meeting participant suggested that someone should look at the level of precision in the chlorophyll a assessment and determine the confidence interval.
 - Chlorophyll a is the most variable parameter measured
 - CBP can reduce variability by assuring that all labs are using the same methods of chlorophyll a sample collection and analysis.
- The reporting of the chlorophyll a indicator is inconsistent with the current CBPO partnership water quality objectives, should CBPO continue to report this Indicator?
 - Meeting participants feel that since the CBP website is used for presenting the overall health of the Chesapeake Bay, CBP should continue to present the Chlorophyll a Indicator.
 - Meeting participants believe it is important to maintain biological indicators in order to provide an overarching representation of Bay health.
 - Meeting participants believe it is important to find linkages between chlorophyll a and water quality.

Vote for Chlorophyll a data input method:

Average replicates will be used by both CBPO and UMCES for input to chlorophyll a indicators.

A Surrogate for the Bay-wide PIBI – C. Buchanan (ICPRB)

[Attachment: Creating a Surrogate for the Bay-wide PIBI](#)

C. Buchanan presented her work on the development of a "phytoplankton habitat index" (PHI). The objective of the PHI is to 1) strongly mimic the PIBI, and 2) is derived from water quality

parameters still monitored bay-wide. C. Buchanan includes in her presentation possible applications of the PIBI Surrogate, benefits, remaining challenges, and next steps.

Discussion, Questions, and Concerns

- **ACTION:** Present the PHI to Habitat Goal Implementation Team (GIT), Water Quality GIT, and to STAR (after short-term budget discussions are resolved). (*C. Buchanan*)
- The PHI is discussed in a paper submitted by Claire Buchanan and Jackie Johnson to the Journal of Environmental Management.
- E. Perry recommended another method for designing the new PHI: by using all existing data, converting the PIBI into a pass/fail system, developing a step-wise statistic regression, and a model using all currently monitored parameters, to see what combination of parameters gives the best results of predicting the PIBI pass or fail.
 - **ACTION:** C. Buchanan will send E. Perry the data to try his surrogate PHI approach. (*C. Buchanan*)
- **ACTION:** Determine what the CBPO involvement in the PHI will be. (*C. Buchanan, M. Mallonee, L. Hernandez, P. Tango*)
- **ACTION:** Provide the workgroup with annotated version of the attachment: Creating a Surrogate for the Bay-wide PIBI. (*C. Buchanan*)

Monitoring Budget Update and Discussion of Next Steps for Addressing Short-falls – P. Tango (USGS-CBPO)

Attachments: [*P. Tango – Status of Monitoring Budget Presentation*](#)
[*P. Tango – Addressing Chesapeake Bay Monitoring Networks Funding Shortfalls*](#)
[*P. Tango – 2009-2013 Monitoring Networks Funding Levels*](#)
[*P. Tango – 2013 the 2009 MRAT Table II*](#)
[*P. Tango – 2013 CBP Monitoring Program Updates*](#)

P. Tango provided a status update of the projected monitoring budget cuts for FY2013. STAR leadership has asked TMAW and the NTWG to develop options to address the near-term and long-term funding cuts to present to STAR in July at the [STAR Special Session](#).

Discussion

Maryland Tidal Monitoring Program Comments:

- MD was already considering a \$55-57K one time cut to the current program, for the purpose of funds needed for the recalculation of the Benthic IBI. The \$55-57K would come from the elimination of:
 - One or two winter cruises, and
 - The nutrient sampling on one August cruise and the second June cruise in 2014.
- MD is considering cutting shallow water monitoring (CON MON/Data Flow) after finishing the 3-year rotation.

Virginia Tidal Monitoring Program Comments:

- VA is considering cutting phytoplankton and/or DIN – both would inhibit C. Buchanan's PHI work.
- Meeting participant wants to note that where segments are listed as impaired due to benthos, benthic monitoring is required to delist streams and rivers.
- VA believes that funding cuts above 10-12% would mean the loss of programs and personnel.

Options for the Tidal Monitoring Network to discuss with STAR:

When making decisions about cuts for the overall network TMAW wants to emphasize:

- Equitable cuts between both Tidal and Nontidal networks
 - To include support by matched [grant] funds
- Maintain the ability of the monitoring networks to meet the Chesapeake Bay Program near-term and long-term goals.
- Avoid hindering the marketability of the long-term monitoring program for current and future consumers.
- The need for water quality assessments to determine the effectiveness of BMP and WIP implementation.
- The possible inclusion of other federal partners
- Backfilling funds from states to fill federal funding gaps are at the states discretion.

Maryland Tidal Monitoring Program potential cuts:

- Cutting \$300K from program or less by a mix and match the following:
 - Reduce three winter cruises including staffing (\$120K), the negative impacts to the program include:
 - Eliminate monitoring of winter high flow storms (i.e. Hurricane Sandy)
 - Assessing WQ criteria in all segments and tracking progress
 - Reduction of additional state funds
 - Cutting the nutrients for second cruises in June and August and the January (winter) cruise (\$27K – for just nutrient and boat costs, staffing not included), the negative impacts to the program include:
 - Ability to understand summer algal blooms
 - Cut the nutrients on the lateral edges of main Bay, cut nutrient assessments (March –October), the negative impacts to the program include:
 - Trends for outer areas of the Bay
 - How will changes to the monitoring program effect the army corps of engineers grant work for 2017 assessment target?
 - Collecting bare minimum of nutrients (i.e. TN (as it's measured currently), TP, TSS, chlorophyll a), the negative impacts to the program include:
 - Difficult to make trend linkages
 - Eliminating the monitoring of SAV habitat requirements
 - Difficult to see affects of atmospheric deposition

- Difficult to calculate PHI (C. Buchanan presented)
- Impact the ability to maintain lab staff and the current rate of cost per sample due to a decrease in sample quantity (i.e. economy of size)
- Cutting every other cruise for a two year period, this would not be a long-term solution.

Virginia Tidal Monitoring Program potential cuts:

- Option 1) Four winter cruises (\$75K)
- Options 2) Two winter cruises and nutrient parameters (\$70K)
- Option 3) Only Summer WQ cruises measuring limited parameters and sustaining benthic cruises (\$136K), the negative impacts to the program include:
 - Reduction in cruises would demand a reduction of staff which would hinder the ability to maintain regular cruises throughout the year and the expertise that lead to high quality data. Could incur more costs in training new staff.
- Under \$100K there are options for the funding cuts that would preserve the foundation of the program, but greater than \$100K in cuts will impact staffing and the ability to do Bay-wide assessments.

For the development of long-term recommendations, STAR will initiate a review process working with STAC and others to look at options for sustaining the networks in the future.

Water Quality Indicator – L. Hernandez (UMCES-CBPO)

[Attachment: Chesapeake Bay Water Quality Indicator: Development and Utility](#)

L. Hernandez presented on the development of a combined water quality standards based indicator, combining DO, SAV/Water clarity, and Chlorophyll a standards attainment specific to designated use segments. This Indicator was developed to track performance as directed by the WQ GIT.

Improvements to the Tidal Indicator Framework – L. Hernandez (UMCES-CBPO)

[Attachment: L. Hernandez – Improvements to the Tidal Indicator Framework](#)

L. Hernandez presented options for change to the current indicator framework considering Partnership priorities. Her recommendation is to stop calculating the Chlorophyll a and Clarity through the CBPO since the indicators will be calculated by other sources.

Feedback on next steps and continued guidance:

- A Workgroup member proposed a division of indicators by organization as follows: Bay health (UMCES), regulatory (CBPO), and citizens and management (CBF).
- Workgroup members feel uncomfortable with the CBP not reporting Chlorophyll a and Clarity Indicators, and the message that may send to the public (i.e. only water quality standards focused).

- Important to note: Chlorophyll a and Clarity Indicators would not be lost, UMCES would continue to calculate those Indicators. The CBPO website could direct web traffic to the UMCES report card.
 - **ACTION:** Send a written summary of the Improvements to Tidal Indicators Framework presentation to the TMAW workgroup (*L. Hernandez*)
-

NEXT TMAW MEETING:

Joe Macknis memorial Conference Room (Fish Shack), Annapolis, MD

September 5, 2013

10:00AM-3:00PM