

Indicators, Monitoring and Analysis: Supporting the 2014 CBWA

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CBP STAC Meeting
Annapolis Sheraton Hotel
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STAR IA Team

Indicator Assessment (IA) Team

- The 2014 Chesapeake Bay Watershed Agreement tasks the CBP with developing indicators to track progress toward the goals and outcomes.
- A set of existing indicators need revising and new ones need to be added.
- Monitoring and analysis programs need to be maintained, grown, adjusted, or new programs established to support tracking status and change.

CBP Decision Framework

1. goals – clear articulation
2. factors affecting attainment
3. current efforts and gaps
4. strategies – detailed and justified
5. monitoring – outputs and outcomes
6. assessment – evaluate progress toward time-bound goals
7. manage adaptively – short-term or long-term adjustments

IA Team Objectives

- Document the following:
 - Indicator status
 - Indicator development needs
 - Monitoring support of the tracking indicator
 - Gaps in the monitoring support
 - Analysis of the indicator data
 - Gaps in analysis support
- Products Development

IA Team Outcome Support Process

- Review the appropriate management strategy for indicator status
- Pending indicator status findings
 - Meet with Management Strategy Coordinator
 - Review needs, gaps
- Summarize findings
- Document Action Items
- Establish timelines for addressing needs, gaps, initiating/updating indicator Framework documentation

IA Meetings Schedule

<i>Date</i>	<i>Outcome</i>
2/2/2015	Oyster
2/9/2015	Protected Lands
2/23/2015	Water Quality
3/2/2015	Local Leadership Diversity
3/9/2015	Tree Canopy Forest Buffer
3/23/2015	Forage Fish Fish Habitat

Example 1. Oyster Outcome

Bruce Vogt & Emilie Frank

Continually increase finfish and shellfish habitat and water quality benefits from restored oyster populations. Restore native oyster habitat and populations in 10 tributaries by 2025 and ensure their protection.

Indicator: Restored tributary



Oyster Outcome

Definition of a Restored Tributary: Allen et al. 2011

Restored Tributary =

1) Operational Goals
(Reef Level + Tributary Level)

+

2) Functional Goals
(Reef Level + Tributary Level)



Oyster Outcome

Definition of a Restored
Tributary: Allen et al. 2011



1) Operational Goals

Reef Level: Substrate should cover a minimum of 30% coverage throughout the reef area

Tributary Level: A minimum of 50% of currently restorable area that constitutes at least 8% of historic oyster habitat within a given tributary also meeting the reef level goals

2) Functional Goals

Reef Level: f (mean density, grams dry weight, 3-dimensional reef structure, age structure, +shell budget, time)

Tributary Level: f (evidence of expanding reef beyond restored reefs, oyster population with a stable state, enhanced ecosystem services)

Oyster Outcome

Goal	Success Metric	Assessment Protocol	Minimum Assessment Frequency	Monitoring Support
Operational				<p>“Contingent upon adequate funding and human resources each year. ”</p> <p>MD and VA Oyster Restoration interagency WG partners.</p> <p>Biennial workplans will be developed by December 2015.</p>
Reef-level				
Amt substrate Presence in area	30% coverage	Tong or diver grabs	6-12 months post restoration activity	
Tributary-Level				
Reef area	50% restorable bottom/8% historic area	GIS analysis	Annual	
Functional				
Reef-level Mean density with grams dry weight, coverage, age class, reef structure, time,	Mean density with grams dry weight, coverage, age class, reef structure, time,	Tong or diver grabs Area estimation Sonar/direct measure, aerial photography	1,3,6 yrs post-restoration	
Tributary-Level: Expansion, stable state population, ecosystem services	TBD	TBD	TBD	

Oyster Outcome

Actions Required:

- Under the Functional Goals, restoration indicators still require metrics development
- Discussion and decisions needed on interim tracking indicators to report on progress while tributaries are being restored
- Pursue establishment of a sustained monitoring program to support tracking and reporting

Ex. 2. Protected Lands Outcome

Renee Thompson

By 2025, protect an additional two million acres of lands throughout the watershed- currently identified as high conservation priorities at the federal, state and local level- including 225,00 acres of wetlands and 695,000 acres of forest land of highest value for maintaining water quality.

Definition of protected lands in place as an indicator? Yes

Baseline for monitoring? 7.8 million acres protected in 2010. (21% of the watershed)

Monitoring program in place? Yes, coordinated effort between NPS, USGS and NatureServe



Ex. 2. Protected Lands Outcome

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Definition of protected lands in place as an indicator? Yes

Baseline for monitoring? 7.8 million acres protected in 2010. (21% of the watershed)

Monitoring program in place? Yes, coordinated effort between NPS, USGS and NatureServe, **but... there is work to do.**



Protected Lands Outcome

Renee Thompson

By 2025, protect an additional two million acres of lands throughout the watershed currently identified as high conservation priorities at the federal, state and local level including 225,00 acres of wetlands and 695,000 acres of forest land of highest value for maintaining water quality.

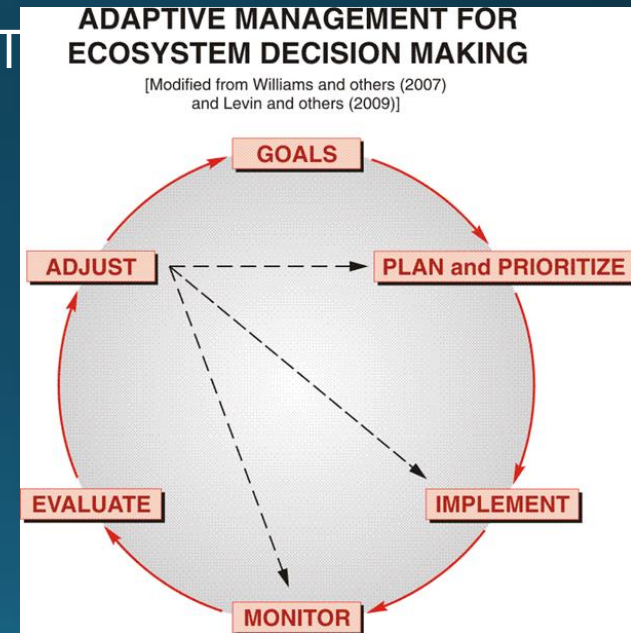
Resolution issues:

- Data format is not yet consistent,
 - States adopted the PAD_US standards now
 - *States, partners need funding and capacity to implement PAD_US standards for the 2016 formal reporting and beyond.*
- Wetland and forest acre accounting is not yet resolved.
- Some local and regional conservation priority data sets lack accuracy, have not been digitized and may not exist in the LandScope data set.
 - Data gaps exist on smaller/county level lands.
 - It is estimated that 80-95% of protected lands are accounted for.
- Protected lands definition as applied to DoD lands needs to be resolved.
- A measure of uncertainty in the acreage estimate should be developed and reported.

IA Team Product Development

Issues List for Resolution from the Outcome Meetings

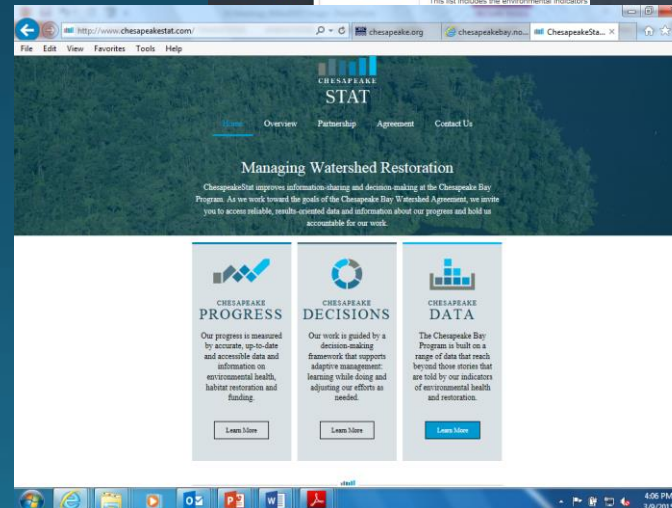
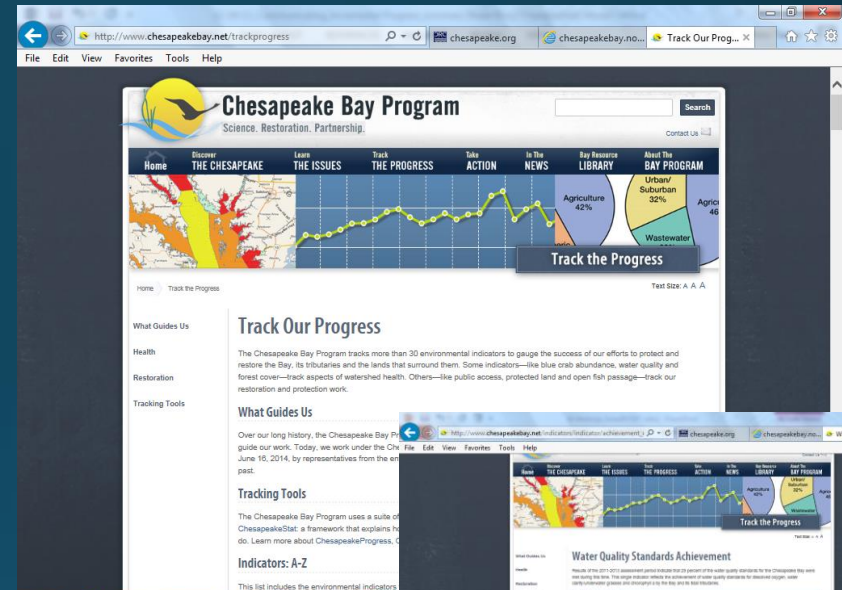
- Provides an agenda setting basis for STAR, STGITs and their WGs
- Aid to targeting resources
 - Indicator development
 - Highlight cross cutting data uses
 - Monitoring capacity establishment, maintenance and growth
 - Tool box development supporting status, change assessments



IA Team Product Development

Accountability Product Documentation

- Indicator Support Documentation
 - Indicator Selection
 - Monitoring, Analysis and Reporting
- Ties in with Communications Framework
 - Chesapeake STAT
 - Chesapeake DATA
 - Chesapeake PROGRESS
 - Chesapeake DECISIONS



Next Steps:

- IA Team Meeting Schedule Continues

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- Evolving Product Development with the GITs documenting Indicators, Monitoring and Analysis
- Begin setting up STAR/STAC meetings on issues resolutions

The End...



Diversity Outcome

Reggie Parrish

Local Leadership Outcome

Mary Gattis (*Alliance for the Chesapeake Bay*) &
Reggie Parrish

Indicators: In search of or under development

Baselines: No

Monitoring Programs: TBD

Water Quality Outcome

Lucinda Power

<p>The WQ Outcomes are based on the TMDL and WIPs.</p> <p>Well established monitoring program in place. Numerous measurements taken throughout the watershed.</p> <p>Having set indicators would be new/foreign to the management strategy.</p> <p>Attainment is a static measure. If we just look at attainment as an indicator, we could report %attainment/non-attainment. There is currently a combined indicator of dissolved oxygen, water clarity/underwater grasses and chlorophyll a.</p> <p>The WQ GIT and the local jurisdictions would have a better idea of potential areas lacking monitoring, and this is of high interest to Lucinda.</p>	<p>Indicator: Many but exact ones need to be determined/ approved</p>
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Current Indicator Documentation

Indicator Analysis and Methods

A. Category/Name/Source/Contact

- (1) Category of Indicator (Factors Impacting Bay and Watershed Health, Restoration and Protection Efforts, Watershed Health, or Bay Health)
- (2) Name of Indicator
- (3) Description of Dataset used:
- (4) Source(s) of Data:
- (5) Custodian of Source Data (and Indicator, if different):
- (6) CBPO Contact

B. Communication Questions

Restoration and Protection Efforts indicators only

(7a) How much has been completed since 1985 (or baseline year)? How much has been completed since 2000?

(8a) How much was done last year? Minor increase

(9a) What is the current status in relation to a goal?

(10a) What is the key story told by this indicator?

(11a) Why is it important to report this information?

(12a) What detail and/or diagnostic indicators are related to this reporting level indicator? (Detail and diagnostic indicators can be spatially-specific, parameter-specific, temporally-specific information, etc.)

Bay Health or Watershed Health indicators only

(7b) What is the long-term trend? (since start of data collection)

(8b) What is the short-term trend? (10-year trend)

(9b) What is the current status in relation to a goal?

(10b) What does this indicator tell us?

(11b) Why is it important to report this information?

(12b) What detail and/or diagnostic indicators are related to this reporting level indicator?

Factors Impacting Bay and Watershed Health indicators only

(7c) What is the long-term trend? (since start of data collection)

(8c) What is the short-term trend? (3 to 5 year trend)

(9c) What is the current status?

(10c) What is the key story told by this indicator?

(11c) Why is it important to report this information?

(12c) What detail and/or diagnostic indicators are related to this reporting level indicator?

All indicators

(7d) What did the most recent data show compared to the previous year?

(8d) If this was a significant increase/decrease

(9d) What is the goal, target, threshold or expected outcome for this indicator?

(10d) Was a new goal, target, threshold or expected outcome established since last reporting?

(11d) Did the methodology of data collection or analysis change from previous year(s)?

C. Temporal Considerations

(13) Data Collection Date(s):

(14) Planned Update Frequency (e.g. - annual, bi-annual):

(15) For annual reporting, month spatial data is available for reporting

D. Spatial Considerations

(16) Type of Geography of Source Data (point, line polygon, other):

(17) Acceptable Level of Spatial Aggregation (e.g. - county, state, major basin, tributary basin, HUC):

(18) Are there geographic areas with missing data?

(19) The spatial extent of this indicator best described as:

- (a) Chesapeake Bay (estuary)
- (b) Chesapeake Bay Watershed
- (c) Other

(20) Can appropriate diagnostic indicators be represented geographically?

D. Data Analysis and Interpretation

(21) Is the conceptual model used to transform these measurements into an indicator widely accepted as a scientifically sound representation of the phenomenon it indicates? (i.e., how well do the data represent the phenomenon?)

(22) What is the process by which the raw data is summarized for development and presentation of the indicator?

(23) Are any tools required to generate the indicator data (e.g. - Interpolator, watershed model)

(24) Are the computations widely accepted as a scientifically sound?

(25) Have appropriate statistical methods been used to generalize or portray data beyond the time or spatial locations where measurements were made (e.g., statistical survey inference, no generalization is possible)?

(26) Are there established reference points, thresholds or ranges of values for this indicator that unambiguously reflect the desired state of the environment?

E. Data Quality

- (27) Were the data collected according to an EPA-approved Quality Assurance Plan?
- (28a) Are the sampling design, monitoring plan and/or tracking system used to collect the data over time and space based on sound scientific principles?
- (28b) What documentation clearly and completely describes the underlying sampling and analytical procedures used.
- (28c) Are the sampling and analytical procedures widely accepted as scientifically and technically valid?
- (28d) To what extent are the procedures for quality assurance and quality control of the data documented and accessible?
- (29) Are the descriptions of the study or survey design clear, complete and sufficient to enable the study or survey to be reproduced?
- (30) Were the sampling and analysis methods performed consistently throughout the data record?
- (31) If datasets from two or more agencies are merged, are their sampling designs and methods comparable?
- (32) Are uncertainty measurements or estimates available for the indicator and/or the underlying data set?
- (33) (Do the uncertainty and variability impact the conclusions that can be inferred from the data and the utility of the indicator?
- (34) Are there noteworthy limitations or gaps in the data record?

Diversity Outcome

Reggie Parrish

No existing indicator and baseline data.

Baseline of programs in place to reach diversity, and these could be assessed for changes in numbers with time. We could also look at the money going toward these programs.

Hiring considerations could be part of assessing diversity.

The Green 2.0 website discusses diversity and the environment, and this could be a starting point.

Local Leadership Outcome

Mary Gattis (*Alliance for the Chesapeake Bay*) & Reggie Parrish

<p>Currently there is no baseline data or data being collected on the environment and local leadership.</p> <p>Mary would like to see an indicator that indicates that the leaders are taking “action”. We could potentially look at how funds are being used.</p> <p>Other methods of collecting data could be surveys, counting the number of environmental programs and attendees, and examining how funds for public works are distributed.</p> <p>Some sources to look into include:</p> <ul style="list-style-type: none">-Harry R. Hughes Center for Agro-Ecology did something with surveying local government.-Jamie Baxter has a baseline survey for citizen stewardship in the works.-Johns Hopkins looked at local government capacity.-Water Environment _____ may have surveys. <p>We could potentially work with the Land Conservation Goal to bring in more of the local level data for protected lands</p>	<p>Indicator: None</p>
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