Update: 2024 GIT funding proposal supporting monitoring strategy work approved! Next steps.

CAP WG

6/18/2024

Peter Tango

CBP-GIT Funding Projects 2024

- 2023 – no GIT funding project support
- 2024
  - 21 proposals submitted by the CBP GITs/WGs
  - EPA leadership review and approval process
  - 9 proposals were approved for funding
    - STAR Workgroups received support for 2 of 3 proposals submitted
      - Monitoring Strategy proposal approved with suggested guidance for work needed to create the scope of work

Brief proposal overview concepts

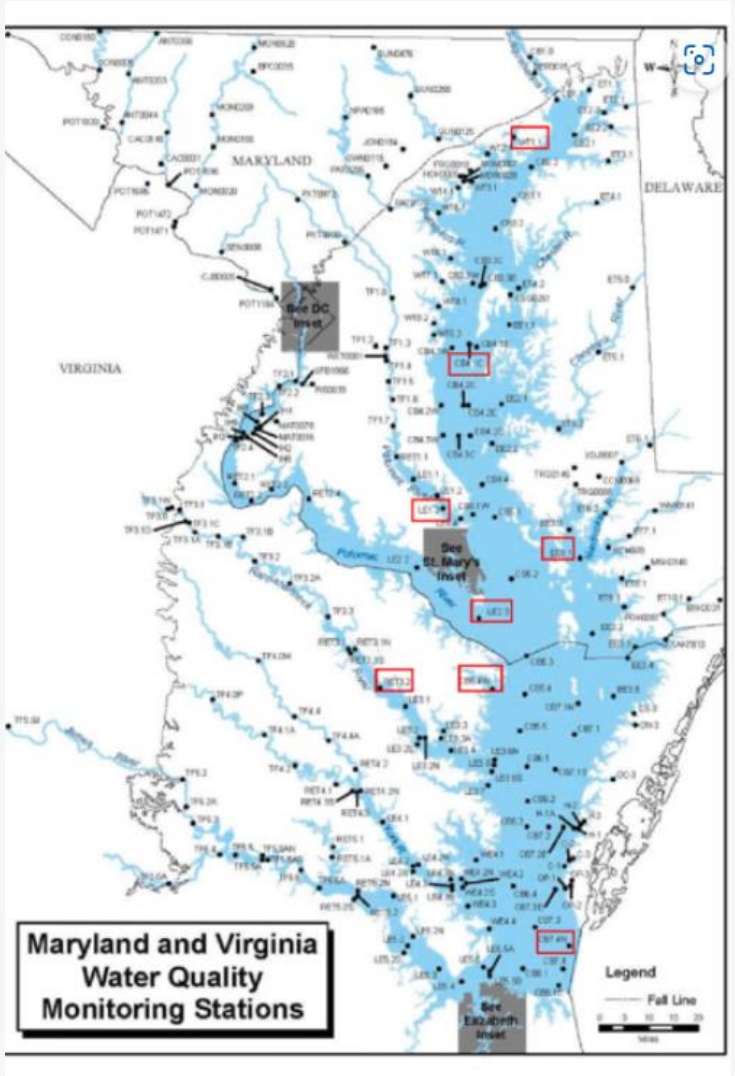
- Optimizing sampling designs for 12 segments – initially, fundamentally, how do we distribute our new vertical array resources to support habitat assessments/criteria assessments
  - In space (bay segments)
  - Across years/time
- Pre-assess the limitations influencing site selection (e.g., offshore: not being able to place a fixed site array in the middle of a shipping channel, nearshore: dock or piling infrastructure to deploy fixed site continuous monitors in shallow water)
- provides sufficient insight for 3 consecutive 3 year deployments (duration needed for water quality standards attainment assessment) with 2 to 3 arrays in each segment.

USEPA 2003 Monitoring: Implementation guidance for criteria assessment (Chapter VI)

- DISSOLVED OXYGEN CRITERIA ASSESSMENT
- '**Recommended**' Level of Monitoring

- **'Adequate'** Level of Monitoring

- **'Marginal'** Level of Monitoring



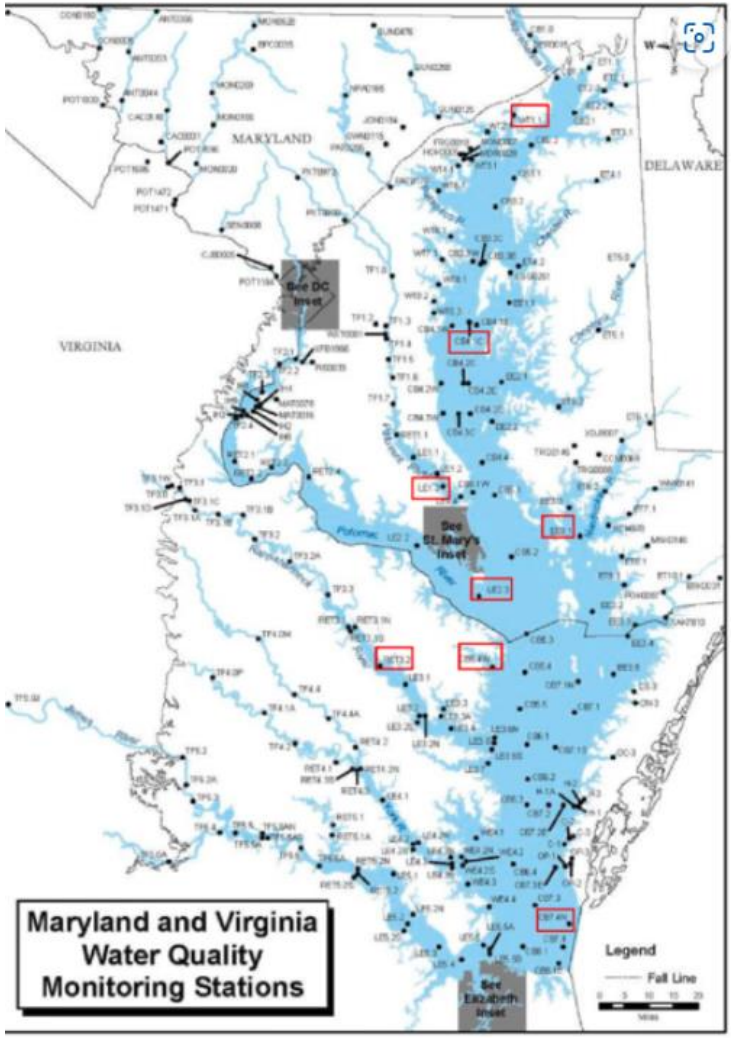
156 stations

USEPA 2003 Monitoring: Implementation guidance for criteria assessment (Chapter VI)

- DISSOLVED OXYGEN CRITERIA ASSESSMENT
- '**Recommended**' Level of Monitoring

- **'Adequate'** Level of Monitoring

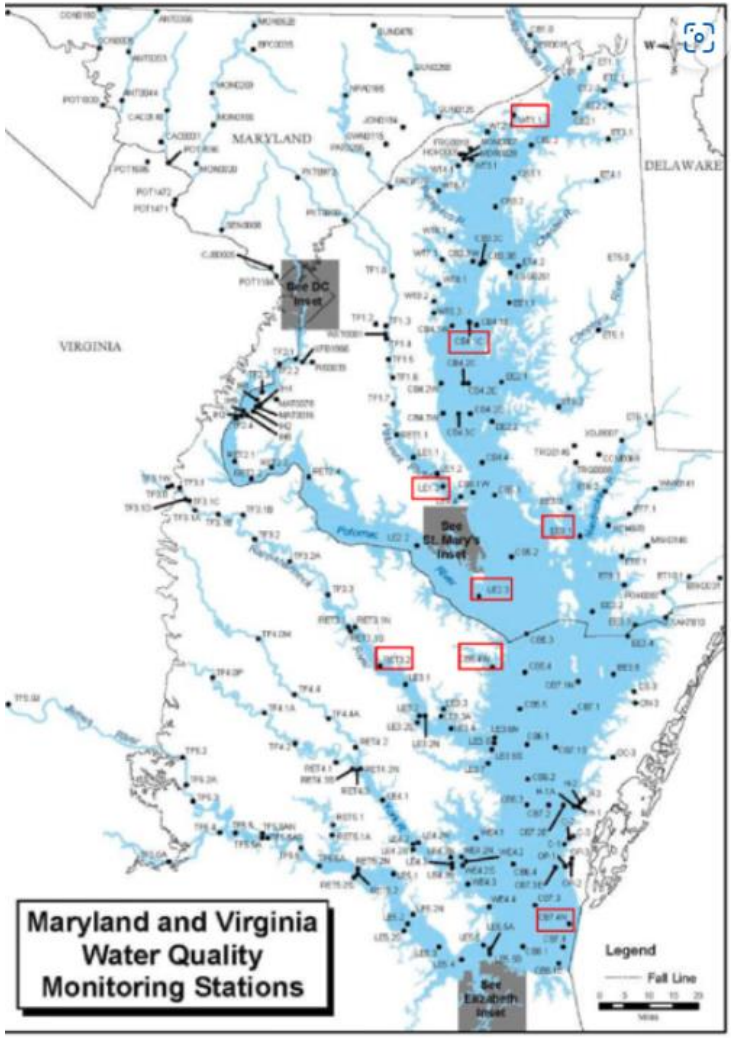
- **'Marginal'** Level of Monitoring – long term water quality monitoring program without enhancements



156 stations

USEPA 2003 Monitoring: Implementation guidance for criteria assessment (Chapter VI)

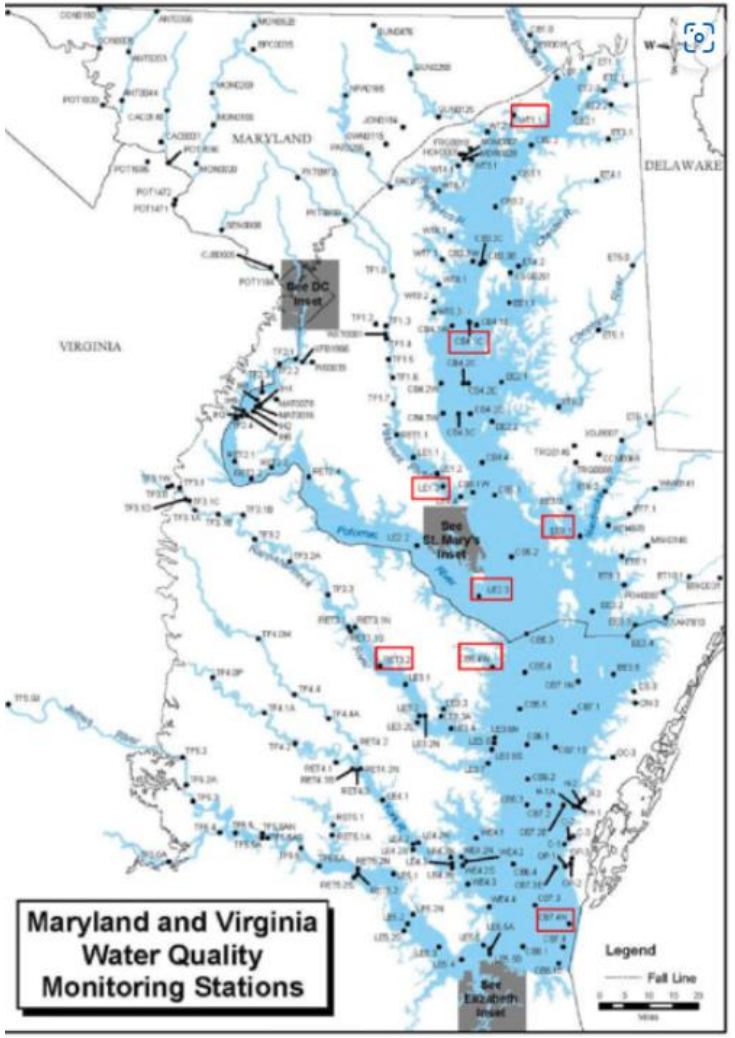
- DISSOLVED OXYGEN CRITERIA ASSESSMENT
- '**Recommended**' Level of Monitoring:
  - "The current fixed-station monitoring program is designed to provide a long-term record of dissolved oxygen concentrations that reflect seasonal and interannual variation"
  - "At least one continuous monitor should be located at each assessment location".



156 stations

USEPA 2003 Monitoring: Implementation guidance for criteria assessment (Chapter VI)

- DISSOLVED OXYGEN CRITERIA ASSESSMENT
- 'Adequate' Level of Monitoring:
  - Assuming that funding will not be available for the 'recommended' monitoring approach, an alternative would be to place a limited number of continuous monitors at representative locations in the Chesapeake Bay and tidal tributaries.
  - The number of continuous monitors would be relatively small, but the number would be established to characterize different types of settings in the Chesapeake Bay



156 stations

Reminder 2019 GIT funded proposal – can we get the data to support DO criteria assessment?

- Inspirations:
  - Bever et al. 2014, 2018 publications on alternative monitoring options for data collection needs
  - States inability to assess Water Quality Standards for dissolved oxygen in the Bay
  - Fisheries habitat needs
  - Modelers data needs

- Funded proposal (2nd or 3rd time is a charm ☺)
  - Successful testing of infrastructure
  - 2020-2021

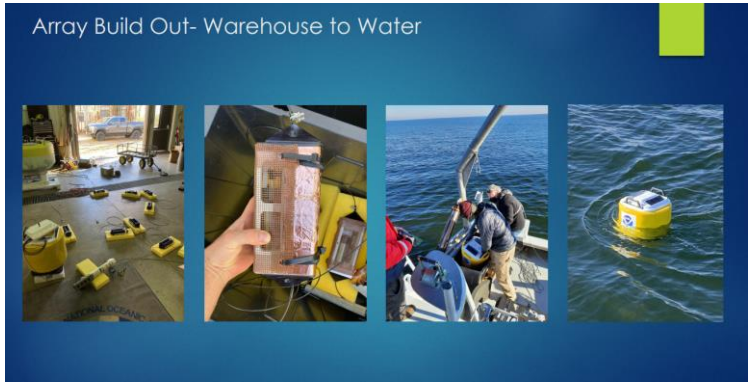
JGR Oceans

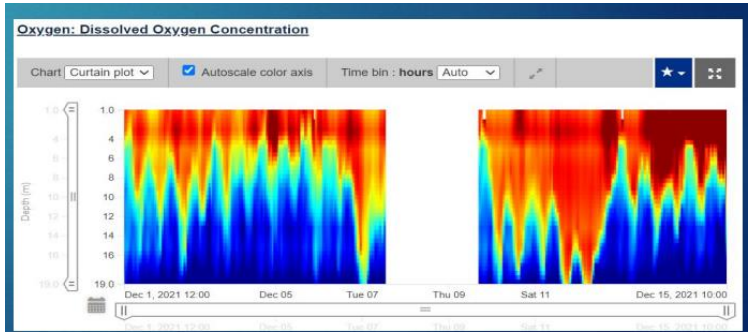
Research Article | Open Access

Estimating Hypoxic Volume in the Chesapeake Bay Using Two Continuously Sampled Oxygen Profiles

Aaron J. Bever, Marjorie A. M. Friedrichs, Carl T. Friedrichs, Malcolm E. Scully

First published: 27 August 2018 | https://doi.org/10.1029/2018JC014129 | Citations: 10





Recommendations on monitoring enhancements 2021-22 from the PSC Monitoring Review report & STAC Workshop

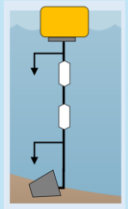
Enhancing the Chesapeake Bay Program Monitoring Networks
A Report to the Principals' Staff Committee

Chesapeake Bay Program
Science. Restoration. Partnership.

1

Options and Opportunities with Advanced Water Quality Monitoring Using Remote Sensing:
A Summary of a 2022 Chesapeake Bay Program Scientific Technical Advisory Committee Workshop

Peter Tango
USGS@CBPO
CCRS
June 11, 2024

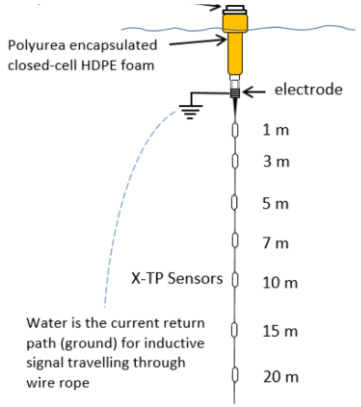


Session 10: Applications of remote sensing for water quality management

Table 1.2. Recommendations to improve Chesapeake Bay Program monitoring with line-item cost projections for a 5-year planning horizon.

CBP Network	Recommendation	Category	Funding				
			Year 1	Year 2	Year 3	Year 4	Year 5
Tidal	Equipment and Supplies for 8 advanced vertical sensor array stations.	Capital Cost	$500,000				
Tidal	Support operation and maintenance of vertical sensor arrays	Operation & Maintenance	$300,000	$315,000	$330,750	$347,288	$364,652
Funder							
Tidal	Sustain Existing Tidal Water Quality Program	Operation & Maintenance	$304,000	$394,000	$484,000	$584,000	$684,000
Funder							
Tidal	4D Interpolator Development	Operation & Maintenance	$60,000	$60,000	$60,000	$60,000	$60,000
Funder							

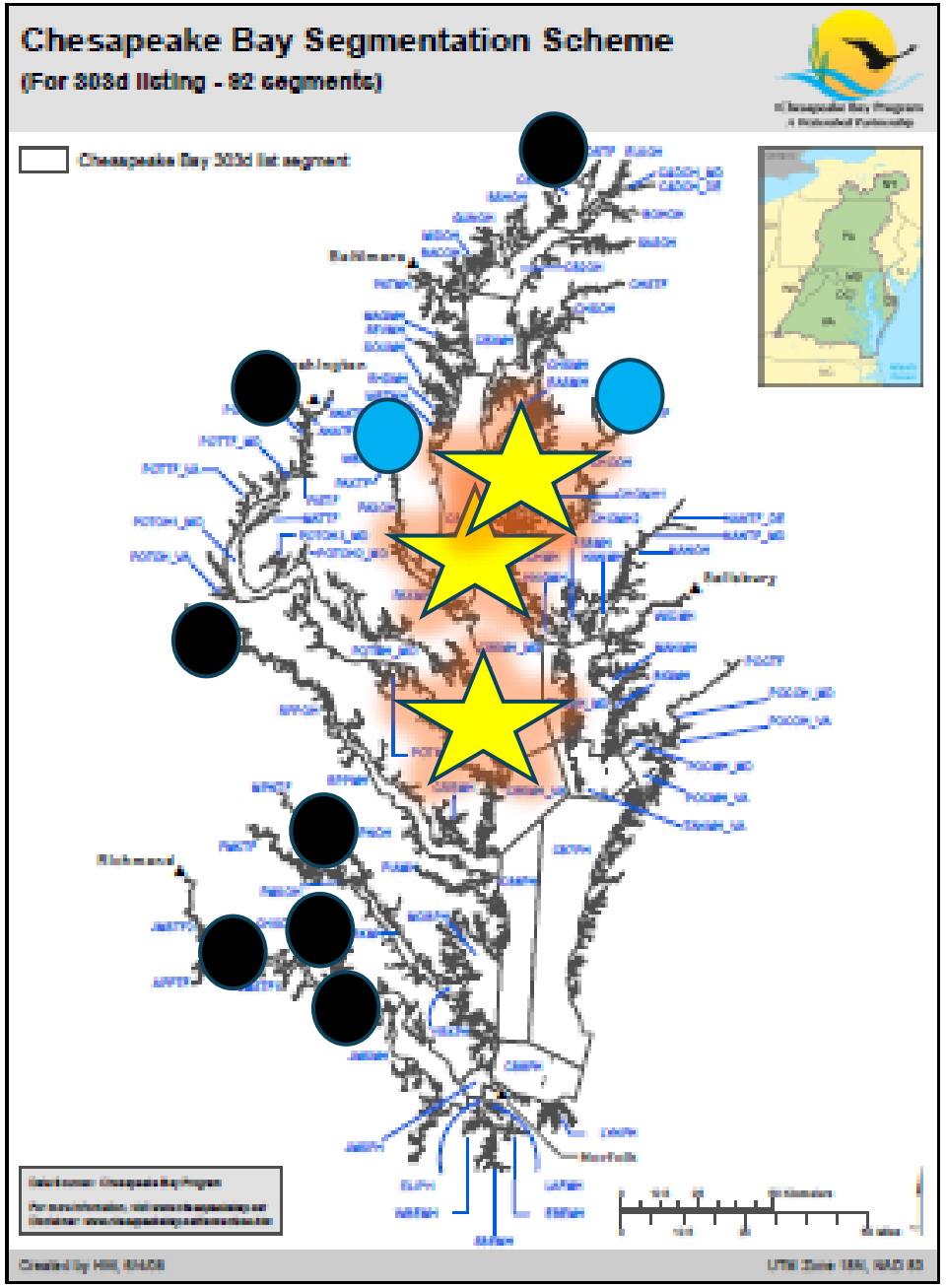
2023 Habitat assessment update: New infrastructure
Dissolved Oxygen, Salinity, Temperature



NOAA Deployments of 3 vertical arrays:

- Lower Potomac
- Mainstem Bay
- Lower Choptank River

- River input monitoring sites
  - 2023: 2 new deployments - river input water quality continuous monitoring sites



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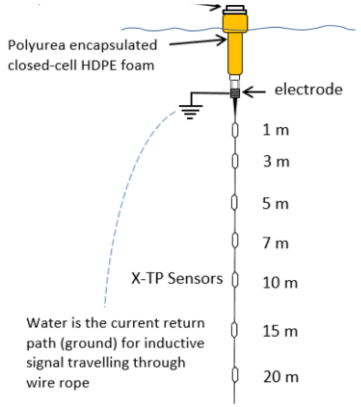

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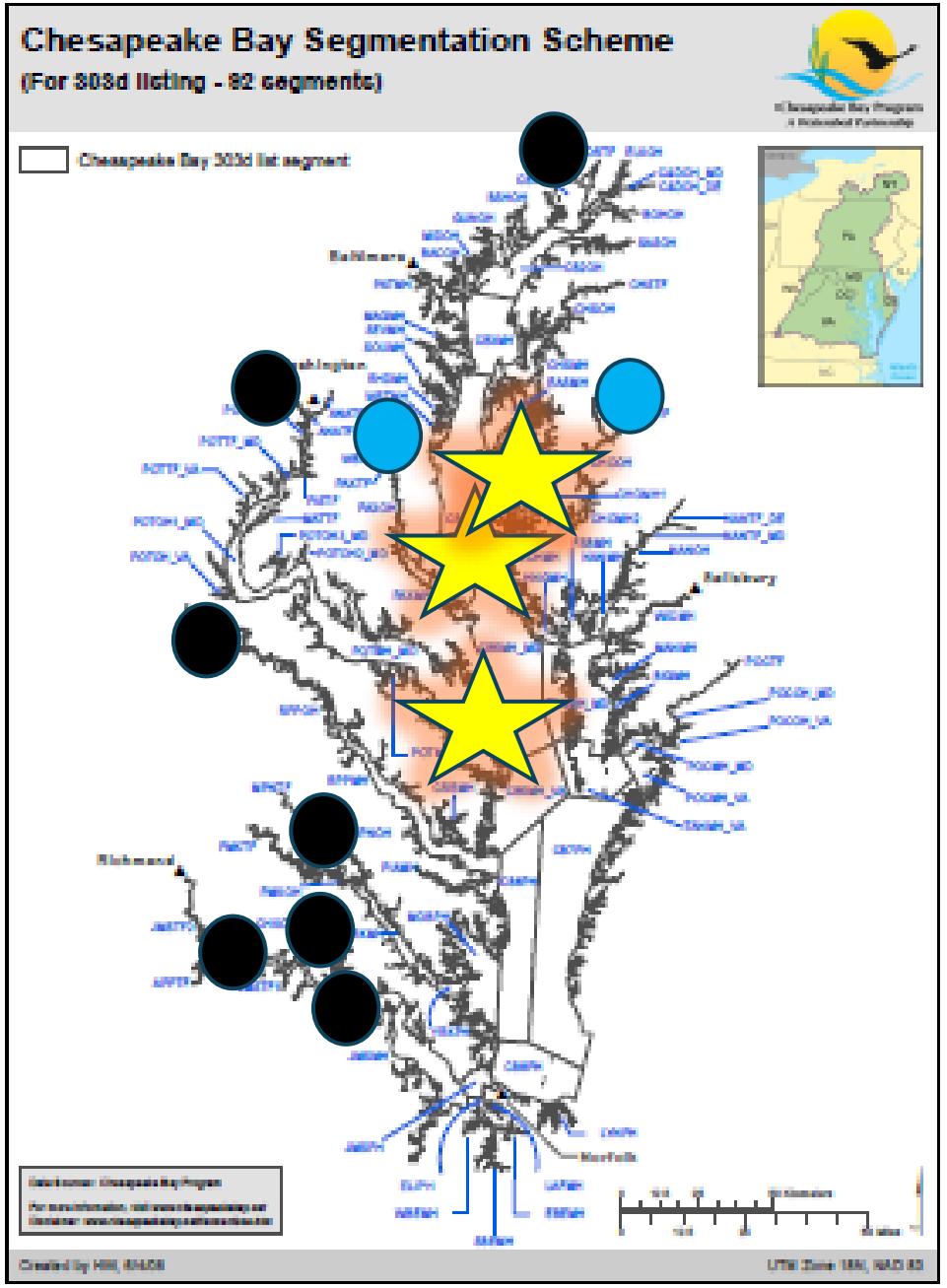

- 2024 – 6 sensors in the same systems
- 2025 plans – Expansion to VA, Rappahannock

Questions from the community in monitoring strategy planning for 2024 and beyond

- Where and how do we invest our resources for shallow water monitoring to complement, leverage other monitoring work?
- Are there priority places for engaging the riverkeepers?
- How many vertical arrays do we deploy in a segment?
- Where can we deploy arrays in a segment knowing we cannot be in the mid-channel due to shipping constraints?
- Do we cluster arrays in one geography or distribute them widely?
- How long are deployments?
- Do we have a reference site?
- Are there priority segments for fisheries, modelers?

Beyond the basic guidance in USEPA 2003, there is no clear strategy for guiding monitoring site distribution, duration, intent on a yearly basis to support needed planning details by the partnership.

Community input has been critical for the roll out of the development of the array network to deploy in mutually beneficial regions for fisheries, water quality, modeling.

The proposal was seeking support for 1) defining a decade of guidance on coordination of monitoring asset deployments , 2) outlining the logic of site selection to further guide asset distribution in the beyond 10 year time horizon.

Next steps

- Pulling together a scoping team
- Meeting with Lee McDonnell for coordination on the scope
- Competing the work (request for proposals)