



Responding to the PSC Request to Improve the CBP Monitoring Networks- Update

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Lee McDonnell, Denice Wardrop

Chesapeake Bay Program

STAR Meeting

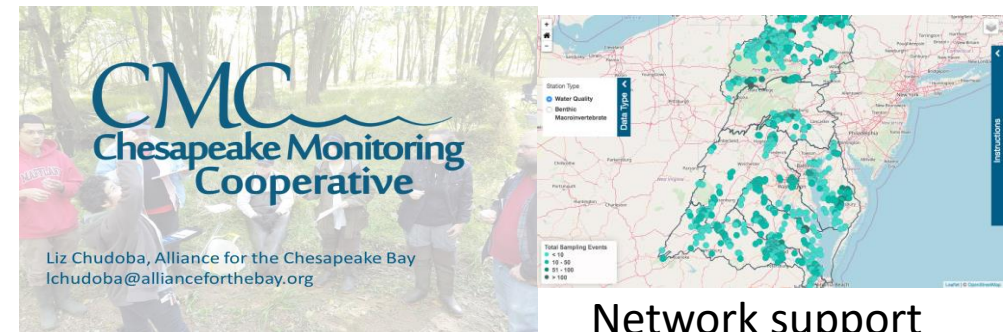
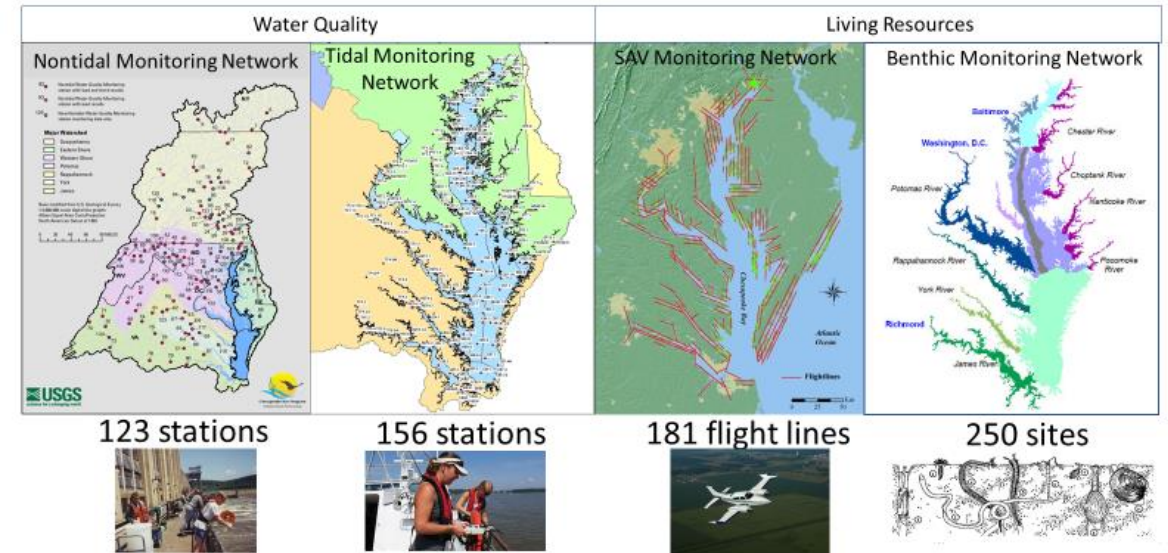
October 28, 2021

REMINDER: Monitoring Presentation to the Principal Staff Committee



- Lee McDonnell provided monitoring presentation on March 2
- Help them better understand CBP budget and funding for monitoring
- CBP networks:
 - Tidal water quality
 - Nontidal nutrients and sediment
 - SAV
 - Tidal Benthic organisms
 - Citizen Monitoring
- Current Funding:
 - CBP \$5M and partners >\$7M

CBP Partnership Monitoring Networks: Annual Monitoring

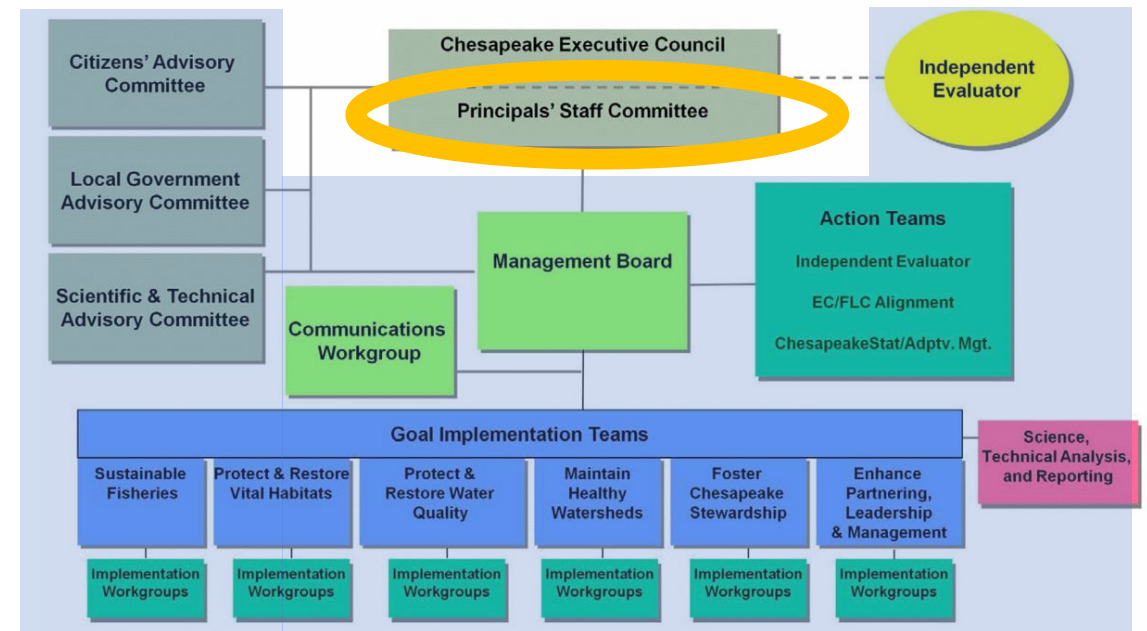


Principal Staff Committee Request



- Provide information needed to improve CBP monitoring networks, including:
 - (1) Current status and threats to the networks,
 - (2) what is needed to improve the monitoring sustainability, and
 - (3) what is already available to address monitoring and assessment capacity shortfalls.
- STAR will Coordinate Response
 - Deliver network assessment and recommendations by January (FEBRUARY) 2022

CBP Organizational Structure and Leadership 09-20-10





The diagram consists of a top header bar with three colored segments: blue, dark grey, and light grey. The word 'Process' is centered in the dark grey segment. Below this is a large light grey rectangular area containing three overlapping blue-outlined boxes. Each box has a light blue background and contains text. The first box says '9 months start to finish', the second says '8 questions to answer', and the third says 'Provide a short synthesis to address the questions, vision going forward.'.

Process

9 months start to
finish

8 questions to
answer

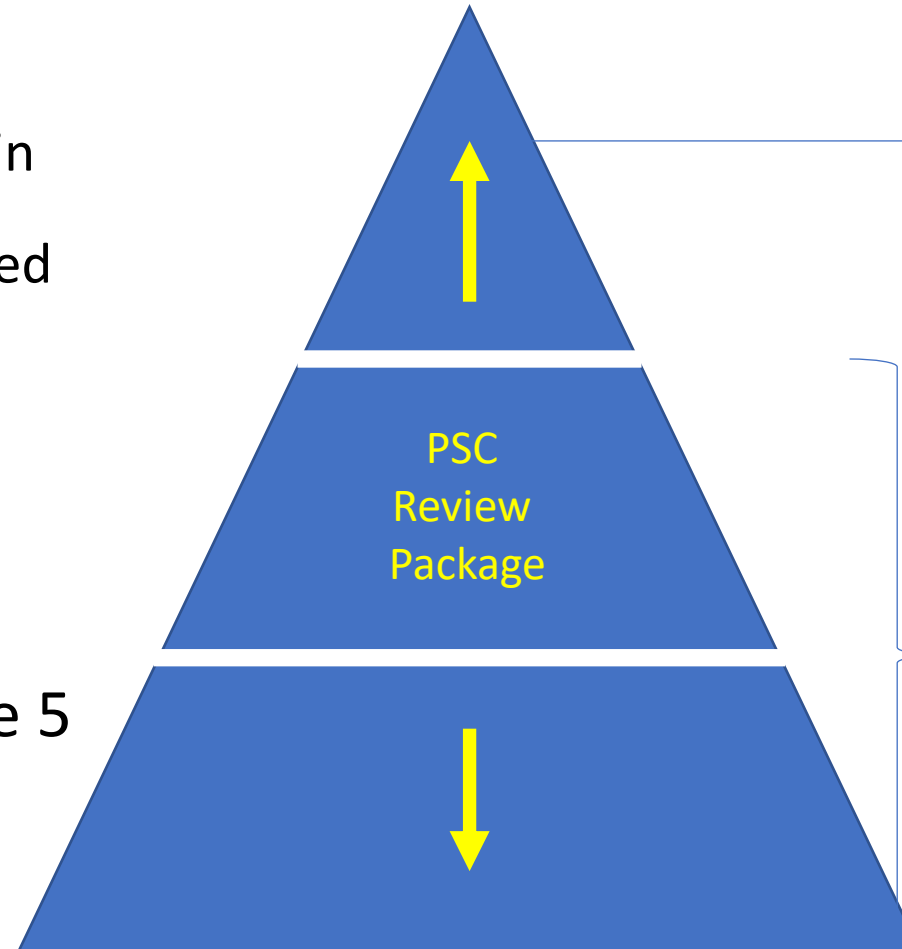
Provide a short
synthesis to address
the questions, vision
going forward.

Delivering a final product: Tiered communication

- Section 1: Executive summary
 - recommendations to sustain and grow networks:
 - strategies, resources needed

- Section 2: 5 network portfolio summaries

- Section 3: Network and program needs beyond the 5 networks



Section 1 Exec Summary

Example Product Target:
Network portfolios with recommendations

Recommendations

- Partner with ABCD organizations to finalize protocols on satellite-based monitoring
- Adopt satellite-based monitoring for SAV, light, chl-a
- Adopt AI algorithm interpretation for satellite-derived data for cost effective assessments
- Increase 117 to budget to augment losses on core monitoring SX

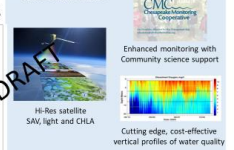
Vulnerabilities

Category	Issue	Explained
Inflation	Rising power	Lost time
Level funding	CSLA impact	Lost time
Aging infrastructure	Replacement cost	Resource distribution
Contractor viability	Discontinuity of service	Mixed sampling
Pandemic	Safety	Mixed sampling
Staffing	Capacity	Missing capacity

Status

The current tidal monitoring network was established in 1984, its first full year was 1985. There are 154 active stations sampled for physical, chemical, and biological measures throughout the water column with a consistent set of collection and analysis protocols.

Innovations



Financials

- 2021 – level funding at \$X x M
- Projected program changes include X% Z

Gaps

- Short duration D.O. criteria
- Efficient CHLA coverage
- Efficient light limitation coverage

Section 2 and Section 3



**How Are We
Doing?**

Teams/Groups	April 2021	May	June	July	Aug	Sept	Oct	Nov	Dec	2022
	General path of recommendations development for PSC: 9 months									Winter
NTN	<div>SPRING</div> <div>Status and vulnerabilities of existing network</div> <div></div>			<div>SUMMER</div> <div>Innovation Assessment, Financials of Sustaining networks</div> <div></div>			<div>In Progress</div> <div>FALL</div> <div>Innovation Assessment continues, Evaluate limitations, Financials for adopting innovations, recommendations</div>			Consolidate recommendations, financials for PSC Presentation
CAP WG with DIWG										
Hypoxia Collaborative										
Cit Sci										
Fish Forage/Black Duck/117e grants										
Fish Habitat										
SAV										
4-D Interpolator										
STAC Workshop				Planning		ase	In Progress too	Early Themed Workshop meetings		Continue
STAR/WQGIT updates							Input from all GITs	Presentation prep STAC Workshop panels, meeting support as targeted		Early PSC material PPT and review
PSC Presentation										
STAC input					In progress: STAR presents at STAC					



Key findings to date

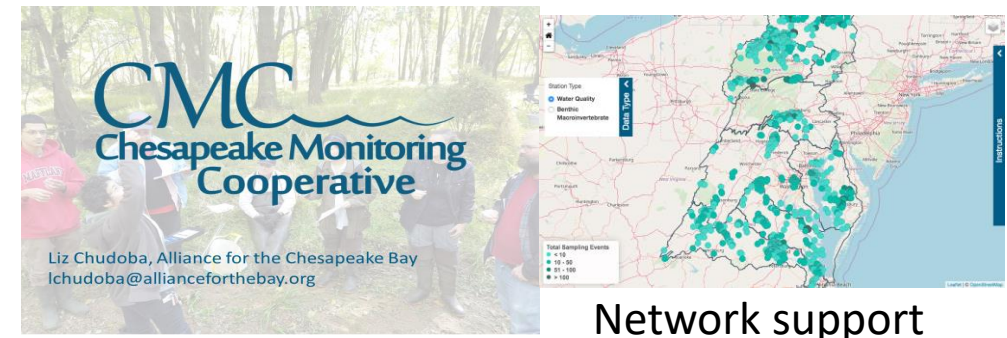
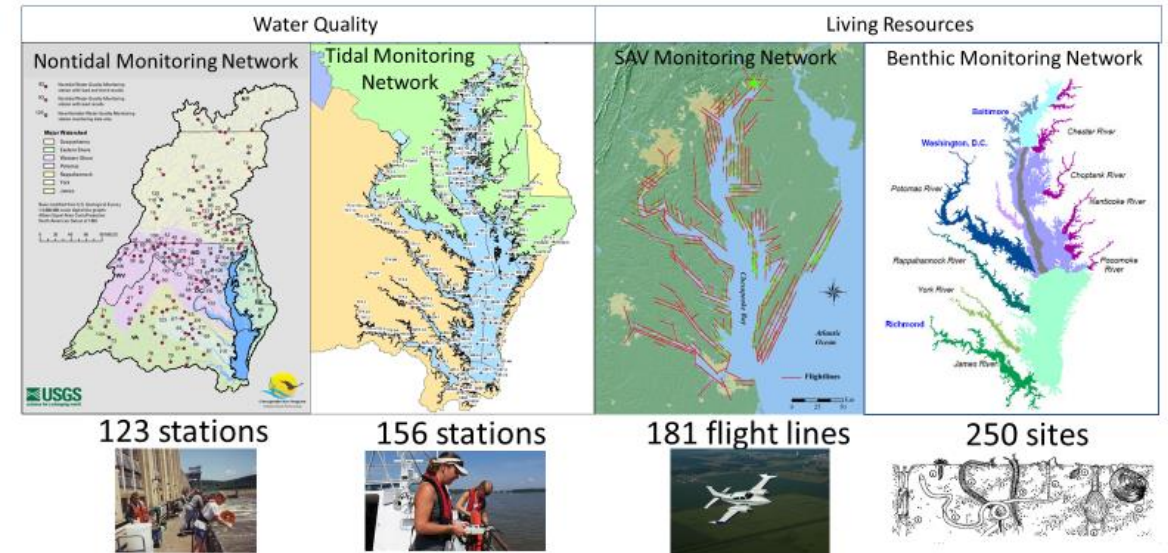


Networks Status, Vulnerabilities, Program Management, Financial Perspectives



CBP Network	Short-term	Long-term
Tidal	Immediate stress on existing program & gap filling growth	Challenge of annual COLAs impacts New gap filling investments planned
Nontidal	Annual shortfalls	Cost of living growth to be covered, annual shortfall needs to be covered, options for growth and support for analysis
SAV	Stable	Research advances toward incorporating satellite support
Benthic	Stable	COLA support needed
Community Science	Stable and leveraging well	More leveraging of existing investments planned

CBP Partnership Monitoring Networks: Annual Monitoring



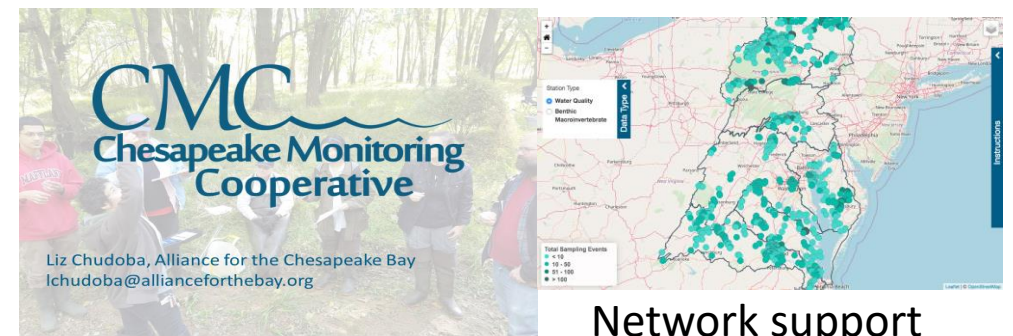
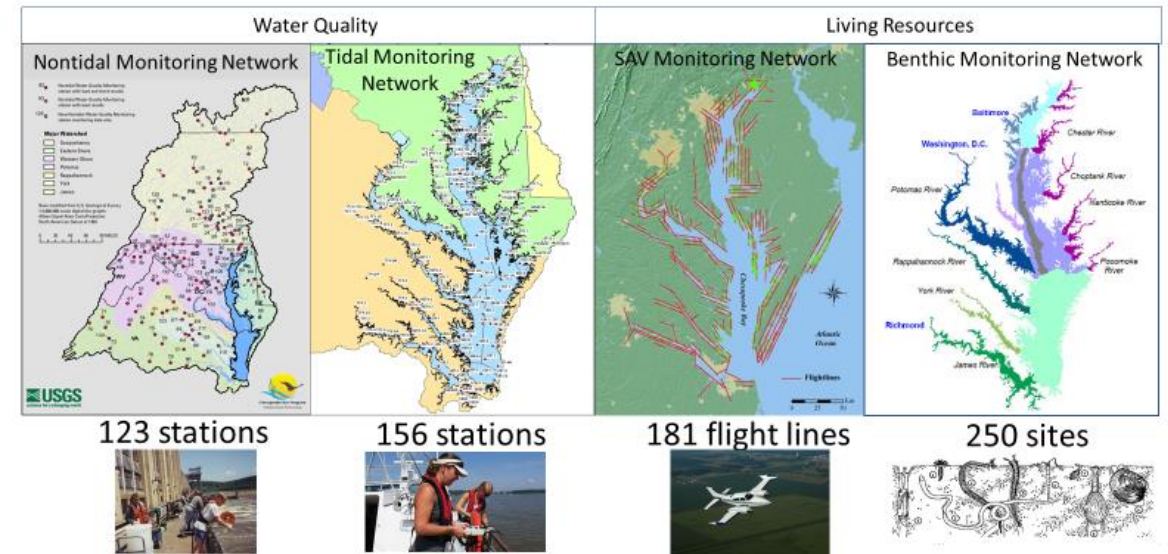
Network support

Monitoring gaps, options and innovations



CBP Network	Gaps	Options & Innovations
Tidal Network	Sustain existing networks Shallow water Open water high frequency	4D interpolator Community Science and Sensor arrays Vertical arrays
Nontidal Network	Continuous monitoring key loads Coastal Plain stations	Strategic investment of new resources
SAV	Intra-annual uncertainty assessments	Repeated satellite imagery, Community Science protocols
Benthic	None	COLA support needed
Community Science	None	Strategic expansion under discussion

CBP Partnership Monitoring Networks: Annual Monitoring



Network support

Section 3

Addressing needs beyond the WQ Networks

- **Coincident monitoring programming needs have been identified during many workgroup meetings related to a variety of 2014 Watershed Agreement Outcomes including:**

- **Carbonate chemistry (Ocean/Estuarine Acidification) monitoring**
 - local and regional efforts to understand assets and gaps for investment
- **Temperature – STAC Workshop insights**
 - Indicator development support
 - hot-spot temperature monitoring (Air temperature) of heat islands
 - tracking management impact of local efforts (e.g., urban tree plantings)
 - Groundwater temperature? (STAC Temperature Workshop) – **Emails shared from NTN WG (8/2021)**

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Section 3

Addressing needs beyond WQ Networks

- * **Coincident monitoring programming needs have been identified including:**
 - **Indicator support**
 - Field monitoring data needs for indicator support include
 - wetlands – Brian Lamb PhD work – mid Atlantic.
 - brook trout – NFWF support, **August 2021 – GIT funding proposal on monitoring strategy development support with Habitat GIT, BT WG, CRWG and STAR in discussion.**
 - black duck
 - stream health.
 - 2020-21 CMC received funding for program support
 - USGS modeling efforts of BIBI to fill monitoring information gaps

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Addressing needs beyond WQ Networks (continued)

- **PCBs**
 - 6/9/21 Toxics:
 - See S. Phillips STAR presentation 8/2021.
- **Microplastics**
 - 6/24 Microplastics Monitoring and Science Strategy – monitoring details TBD, extensive program development needs require focused objectives, unified protocols/analysis and reporting
- **Living resources**
 - Zooplankton, Phytoplankton (SSRF database) – ongoing need expressed, needs details
- **Baywide shoreline characterization**
 - Shoreline hardening/ adjacent and aquatic habitat characterization –
 - Discussion with Fish Habitat Action Team - A variety of communities are taking aim at this

Addressing needs beyond WQ Networks (continued)

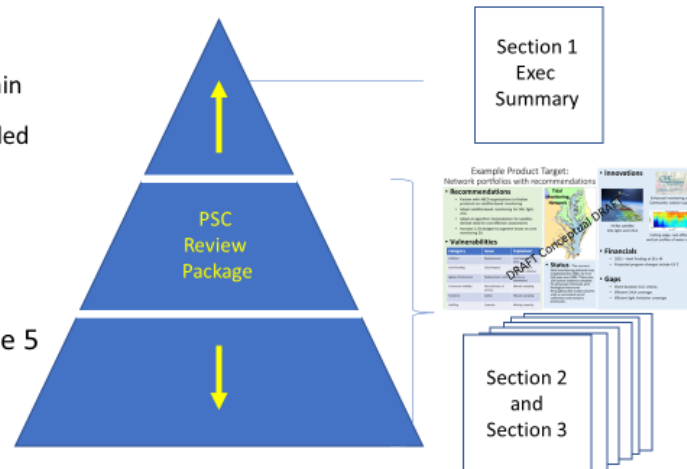
- **Non-network operation-related gaps in the monitoring programs**
- **Data Management**
 - Living Resource Analyst position
- **Research**
 - Describe patterns in bay and watershed health
 - Improve understanding in SAV, water quality, living resources response to climate change and management actions
 - Understand SAV, fish, wildlife habitat requirements (OA, Temperature thresholds, etc.)
 - Forecasting future habitat availability
 - Assess impact of expanding aquaculture, climate change effects in the bay on SAV goals
- **Analysis**
 - Update tidal and nontidal water quality trends, criteria assessments
 - Related changes in habitat to BMP effectiveness
- **Reporting and Communications**

Report Under Construction

We will need your review in November, December

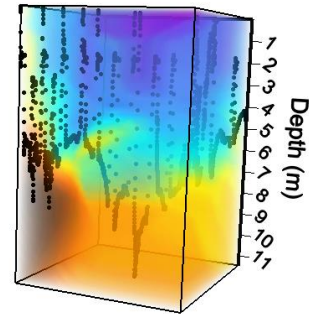
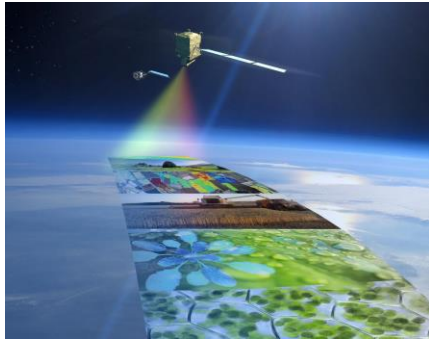
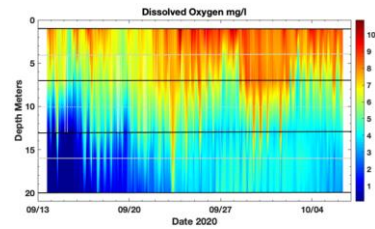
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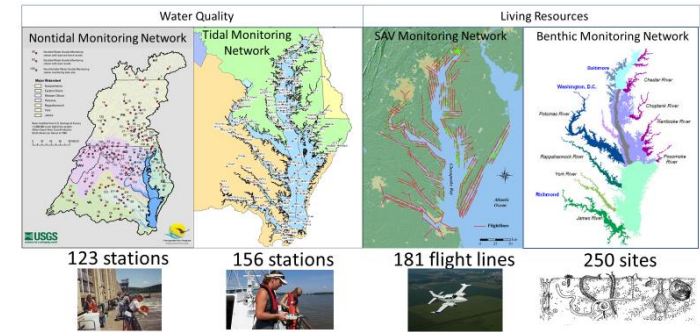


Calendar

- November: Report Sections drafted for review
- December: Finalizing recommendations for PSC
- January 2022: Management Board presentation, final tweaks to report and PSC presentation
- February 2022: PSC presentation



CBP Partnership Monitoring Networks: Annual Monitoring



Thank you and Discussion