Spring QUARTERLY MEETING – May 7th, 2025

*Chesapeake Bay Program*

# Submerged Aquatic Vegetation Workgroup Updates

*Brooke Landry*
*Maryland DNR and*
*Chair, SAV Workgroup*

Chesapeake Bay Program
Science. Restoration. Partnership.

1750 Forest Drive, Suite 130, Annapolis, MD 21401

**SAV Workgroup Spring Meeting 2025 Agenda**
**05.07.25**
**1:00 pm – 4:30 pm**
**Online Only**
**Click here to join the Microsoft Teams meeting**
**Meeting ID:** 262 927 372 71
**Passcode:** QpMTNk

**1:00** Welcome and Introductions
**1:15** SAV Workgroup Updates (including survey on field trip)
**1:45** Review of SAV Workgroup Mitigation and Monitoring Recommendations to Regulatory Partners
**2:15** Beyond 2025 and the SAV Outcome
**2:30** **Break**
**2:45** Member Research and Otherwise Updates
**2:50 – 3:10** Aly Hall (VIMS): Seagrass Storage Wars: How meadow characteristics shape carbon stocks

**3:10 – 3:30** Victoria Hill (ODU): Update on SAV mapping via Planet satellite

**3:30 – 3:50** Stephanie Letourneau (VIMS): Growing and Improving: Recommendations for Chesapeake Bay SAV Watchers, a Volunteer Monitoring Program

**4:00 – 4:20** Presenter questions and additional discussion
**4:20** Wrap up
**4:30** **Adjourn**

# GIT-funded Project UPDATES

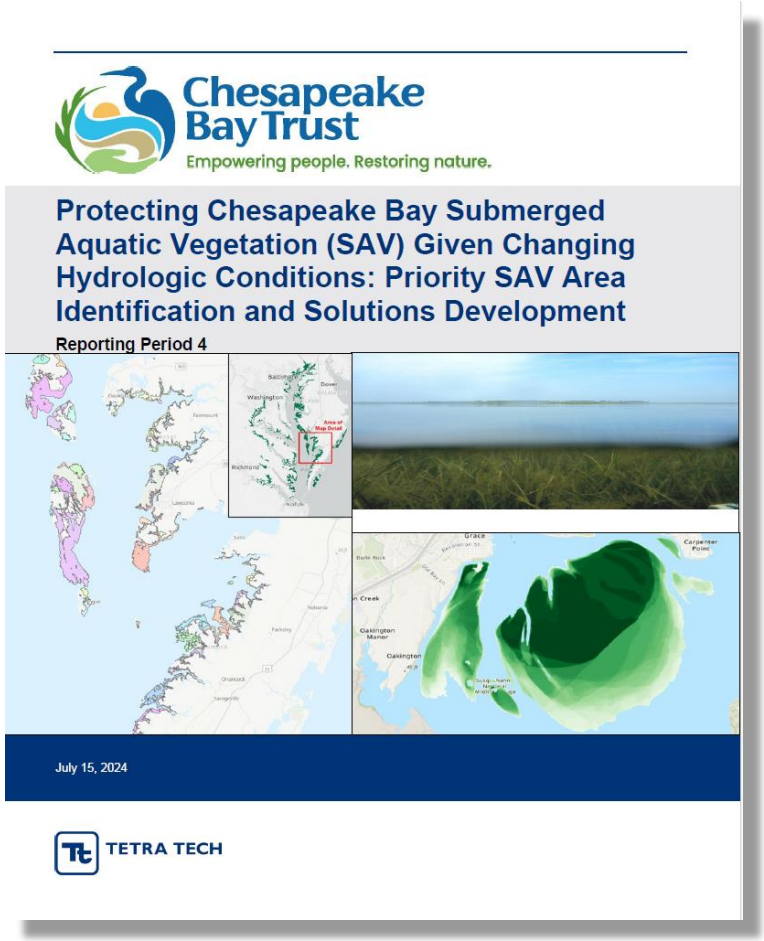
1.

# 2022 GIT-Funded Project Lead: SAV Workgroup

## *Protecting Chesapeake Bay SAV Given Changing Hydrologic Conditions: Priority SAV Area Identification and Solutions Development*

### Project Objective

This project will identify high-priority SAV areas within the Chesapeake Bay Watershed and determine which BMPs could be most effective in protecting those areas from loss during high-flow events/years using GIS spatial analysis/modeling and existing SAV, flow, land-use, and water quality data. With this information, steps can be taken to target high-priority SAV areas for implementation of BMPs and land management policies that will protect or restore those priority SAV habitats.



1.

# 2022 GIT-Funded Project Lead: SAV Workgroup

***Protecting Chesapeake Bay SAV Given Changing Hydrologic Conditions: Priority SAV Area Identification and Solutions Development***

COMPLETE

## Project Objective

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**Final report and presentation on our SAV Workgroup page at: [https://www.chesapeakebay.net/who/group/submerged-aquatic-vegetation-workgroup](https://www.chesapeakebay.net/who/group/submerged-aquatic-vegetation-workgroup)**

2.

# 2022 GIT-Funded Project Lead: Comms Workgroup

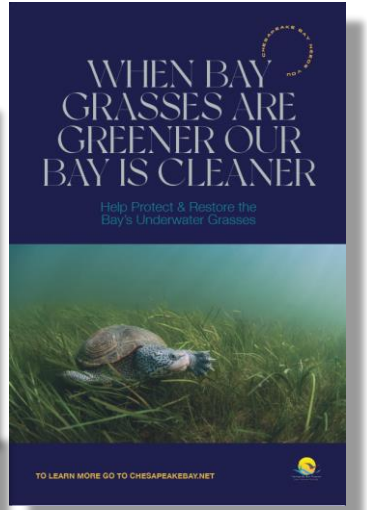
**Advancing Social Marketing Through Two Pilot Programs – meeting schedule to review updates soon.**

### Proposed Project Outcomes

This project is developing pilot programs for existing community-based social marketing (CBSM) campaigns that have been developed over the past few years, SAV being one.







## Contracted to: OpinionWorks

2.

# 2022 GIT-Funded Project
# Lead: Comms Workgroup

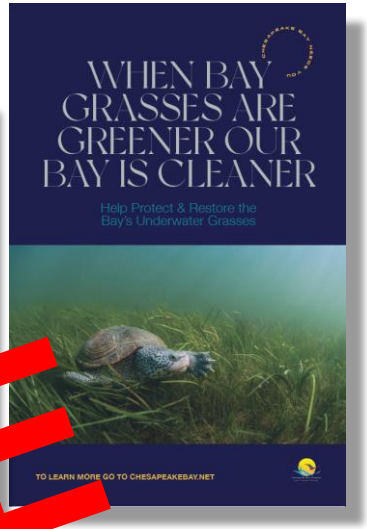
ALMOST COMPLETE

## Advancing Social Marketing through Two Pilot Programs – Meeting schedule to review updates soon.

### Proposed Project Outcomes

This project is developing pilot programs leveraging community-based social marketing (CBSM) campaigns that have been developed over the past few years (SAV being one.







**Contracted to: OpinionWorks;**
**Will be piloted by ShoreRivers this summer**

3.

# Shallow Water Habitat Sentinel Site Program Development

**Project Outcomes**

This project will include developing a comprehensive Shallow Water Habitat Sentinel Site Program for the Chesapeake Bay. We will gather multi-parameter, detailed data on a scale that is accessible and relevant to decision-making and information gathering. This effort will include creating a protocol for the monitoring of multiple living resources and water quality measures, as well as climate impacts on the functional value of shallow water habitats in the Chesapeake Bay and its watershed. The goal of this effort is to also develop a protocol to monitor the effectiveness of measures taken by the Chesapeake Bay Program Partnership beyond 2025. Developing a Shallow Water Habitat Sentinel Site Program will fill identified data gaps and provide the data necessary to track changes in response to climate change and management actions, assess environmental conditions, provide early warning signals for potential issues, and enhance modeling and forecasting capabilities in shallow water habitats.

**Key Tasks**

1. Creation and approval of a Quality Assurance Project Plan (QAPP)
2. Literature and Existing Program Review
3. Scoping Workshop
4. Full Shallow Water Habitat Sentinel Site Program Development

**Project Members**

***Steering Committee***

Brooke Landry, MD DNR, CBP SAV Workgroup
Peter Tango, USGS
Kathy Boomer, Foundation for Food & Agriculture Research
Taryn Sudol, MD Sea Grant
Joel Carr, USGS
Jeremy Hanson, CRC
Kenneth Hyer, USGS
Gina Hunt, MD DNR
Denice Wardrop, CRC
David Parrish, VIMS
Chris Patrick, VIMS
Ryan Woodland, UMCES

***Green Fin Studio***

David Jasinski
Lauren Huey
Macon Thompson
Allison Burbach

## Contracted to: Green Fin Studio

3.

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**Key Tasks**

1. Creation and approval of a Quality Assurance Project Plan (QAPP)
2. Literature and Existing Program Review → **Happening Now!**
3. Scoping Workshop → **Will take place the first half of December, TBD. Please let me know if you would like to attend.**
4. Full Shallow Water Habitat Sentinel Site Program Development

## Contracted to: Green Fin Studio

# SAV Monitoring in Chesapeake Bay

https://www.chesapeakebay.net/what/programs/monitoring/sav-monitoring-program

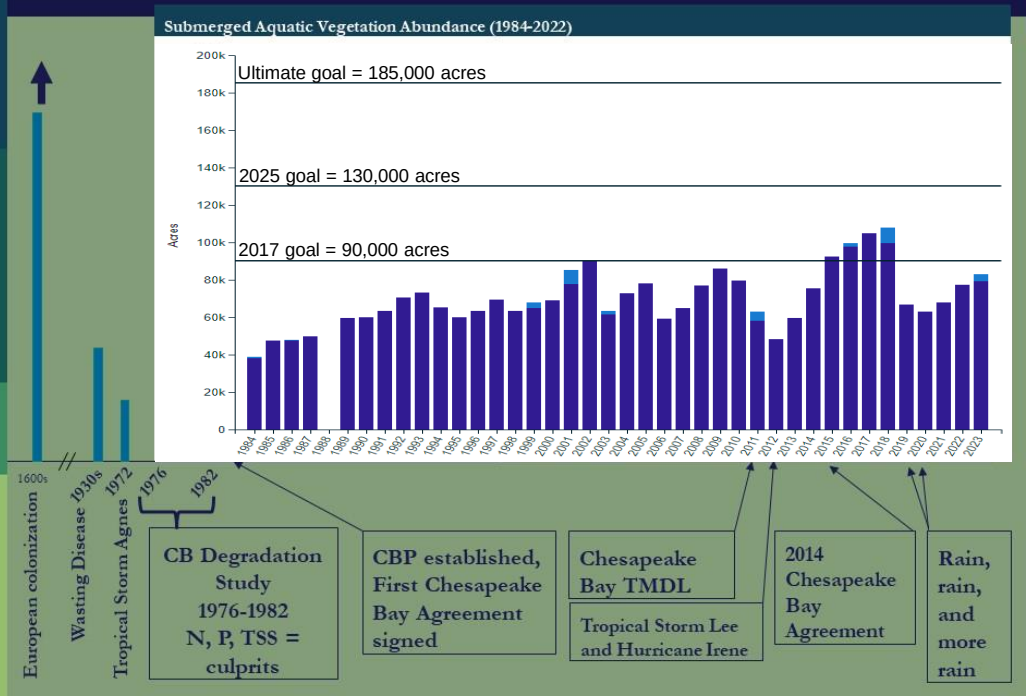
Tier 1

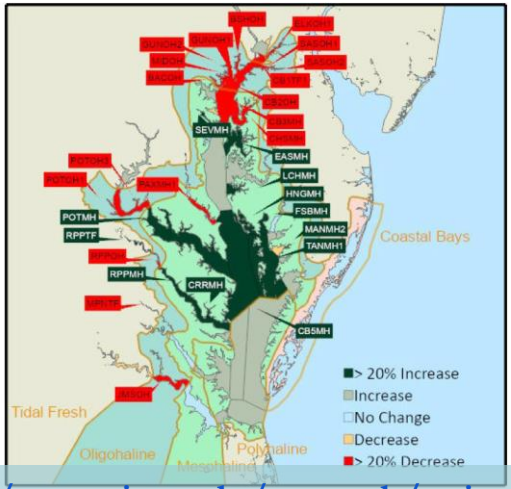
# VIMS Bay-wide Aerial Survey

## FINAL SAV #s were up in 2023:

- 79,716 acres were mapped in 2023.
- 3,703 additional acres of SAV are estimated for a portion of the Potomac that was not mapped.
- 83,419 total acres of SAV estimated for 2023(+8%).
- This is 61% of the 2025 target and 45% of the ultimate 185,000-acre outcome.

## Progress towards the Bay-wide SAV goal




https://www.vims.edu/research/units/programs/sav/access/maps/index.php

https://www.chesapeakeprogress.com/abundant-life/sav

Tier 1

# VIMS Bay-wide Aerial Survey

## 2024 Updates from VIMS?

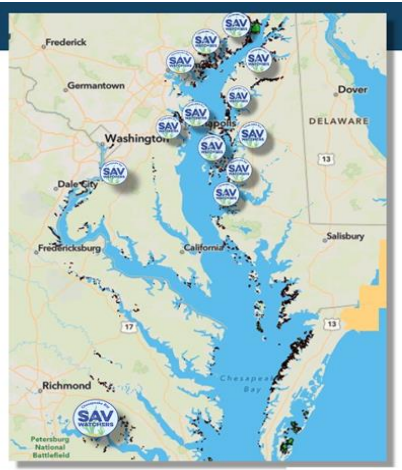
Tier 2

# Chesapeake Bay SAV Watchers Program

**SAV Watcher Trainer Certification Events in 2025:**

Annapolis Maritime Museum
Marshy Point Nature Center?
St. Mary's Watershed Association/SMCM
Virginia Commonwealth University/TNC
VIMS

"Train the trainer" certification events offered each summer




ShoreRivers
Havre de Grace Maritime Museum and Environmental Center
James River Association
Severn River Association — America's Oldest River Group
Magothy River Association — Saving our river for future generations
The Gunston School — Centreville, MD — 1911
Baltimore County Public Schools — Raising the bar. Closing gaps. Preparing for our future.
Marshy Point Nature Center
Chesapeake Bay National Estuarine Research Reserve Maryland — Using Sound Science...Finding Solutions...Promoting Wise Decisions
Arundel Rivers Federation
Accokeek Foundation at Piscataway Park
The Nature Conservancy

www.chesapeakebaysavwatchers.com OR https://www.chesapeakebay.net/what/programs/monitoring/sav-monitoring-program

Tier 2

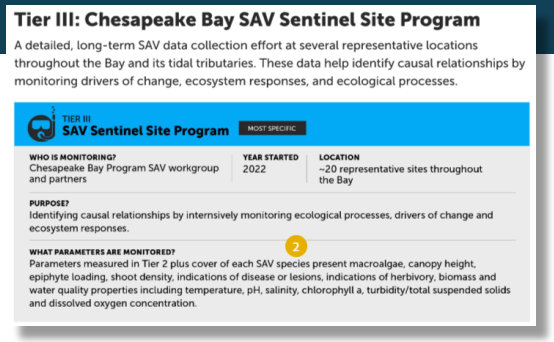
# SAV Watchers Newsletter


Subscribe to our Newsletter here:
https://forms.gle/yYwkDPShvBjFCiby5

www.chesapeakebaysavwatchers.com OR https://www.chesapeakebay.net/what/programs/monitoring/sav-monitoring-program

Tier 3

# SAV Sentinel Site Program – continuing in 2025!



**Tier III: Chesapeake Bay SAV Sentinel Site Program**

A detailed, long-term SAV data collection effort at several representative locations throughout the Bay and its tidal tributaries. These data help identify causal relationships by monitoring drivers of change, ecosystem responses, and ecological processes.

TIER III
**SAV Sentinel Site Program** MOST SPECIFIC

**WHO IS MONITORING?**
Chesapeake Bay Program SAV workgroup and partners

**YEAR STARTED**
2022

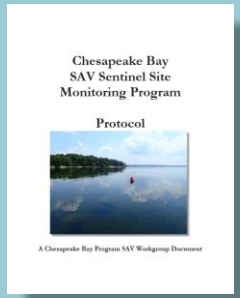
**LOCATION**
~20 representative sites throughout the Bay

**PURPOSE?**
Identifying causal relationships by intensively monitoring ecological processes, drivers of change and ecosystem responses.

**WHAT PARAMETERS ARE MONITORED?**
Parameters measured in Tier 2 plus cover of each SAV species present macroalgae, canopy height, epiphyte loading, shoot density, indications of disease or lesions, indications of herbivory, biomass and water quality properties including temperature, pH, salinity, chlorophyll a, turbidity/total suspended solids and dissolved oxygen concentration.

**Sites that will be installed and/or continued in 2025:**

- Severn River
- Susquehanna Flats
- Smith Island
- Marshy Creek
- Dundee Creek
- St. Mary's
- VIMS sites
- CB- NERR sites



Chesapeake Bay SAV Sentinel Site Monitoring Program

Protocol

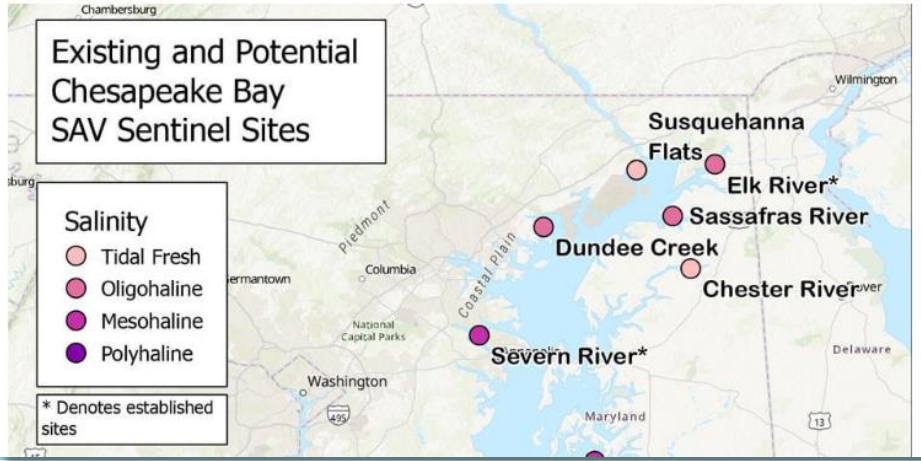
A Chesapeake Bay Program SAV Workgroup Document

## Tier III: SAV Sentinel Site Program

The SAV Sentinel Site Program is a monitoring effort conducted by Bay scientists

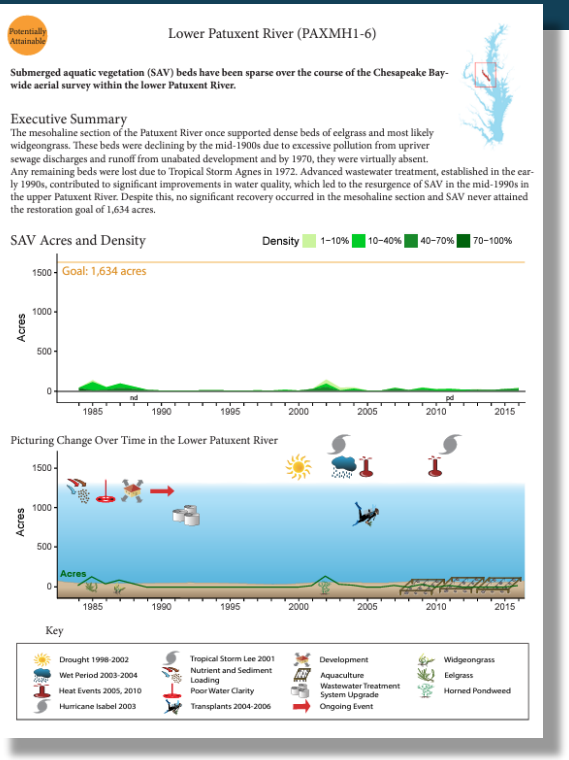
### What is the Chesapeake Bay SAV Sentinel Site Program?

The Chesapeake Bay SAV Sentinel Site Program forms the third tier of the Chesapeake Bay SAV Monitoring effort. SAV sentinel sites are located in each of the Bay's four salinity zones (tidal fresh, oligohaline, mesohaline and polyhaline) and are monitored using a standardized, in-depth data collection protocol. These sentinel sites are a combination of existing, long-term sites and new sites where Bay scientists monitor changes in SAV habitat characteristics and resilience indicators. This program is coordinated by the Bay Program's SAV Workgroup. If you are interested in adopting and managing an SAV Sentinel Site, contact the program coordinator at brooke.landry@maryland.gov.



# SAV Workgroup
# News and Happenings

# SAV Data Dashboard is getting updated!



Potentially Attainable

Lower Patuxent River (PAXMH1-6)

**Submerged aquatic vegetation (SAV) beds have been sparse over the course of the Chesapeake Bay-wide aerial survey within the lower Patuxent River.**

Executive Summary

The mesohaline section of the Patuxent River once supported dense beds of eelgrass and most likely widgeongrass. These beds were declining by the mid-1900s due to excessive pollution from upriver sewage discharges and runoff from unabated development and by 1970, they were virtually absent. Any remaining beds were lost due to Tropical Storm Agnes in 1972. Advanced wastewater treatment, established in the early 1990s, contributed to significant improvements in water quality, which led to the resurgence of SAV in the mid-1990s in the upper Patuxent River. Despite this, no significant recovery occurred in the mesohaline section and SAV never attained the restoration goal of 1,634 acres.

SAV Acres and Density

Density 1–10% 10–40% 40–70% 70–100%

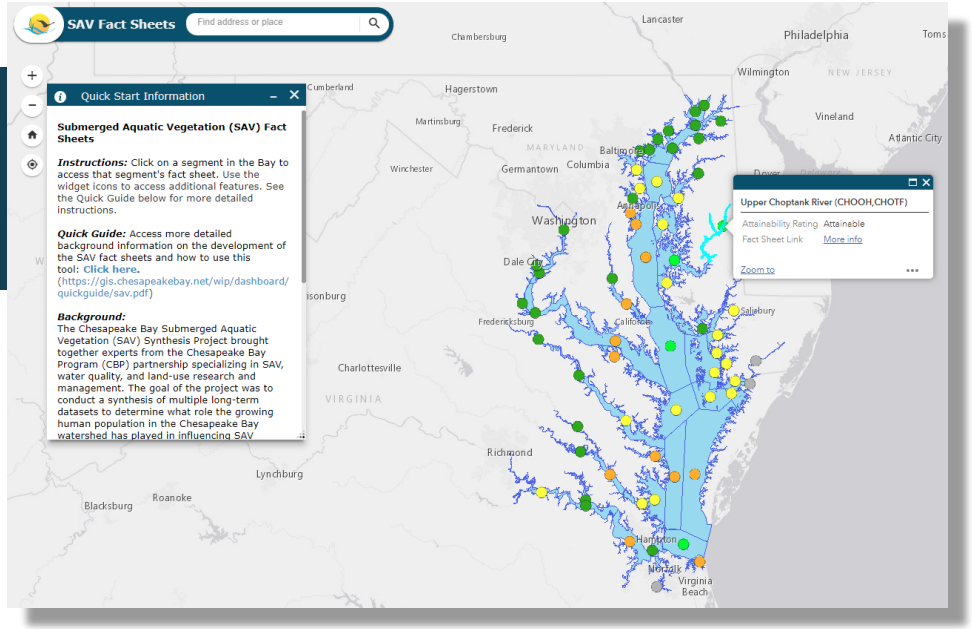


Picturing Change Over Time in the Lower Patuxent River



Key

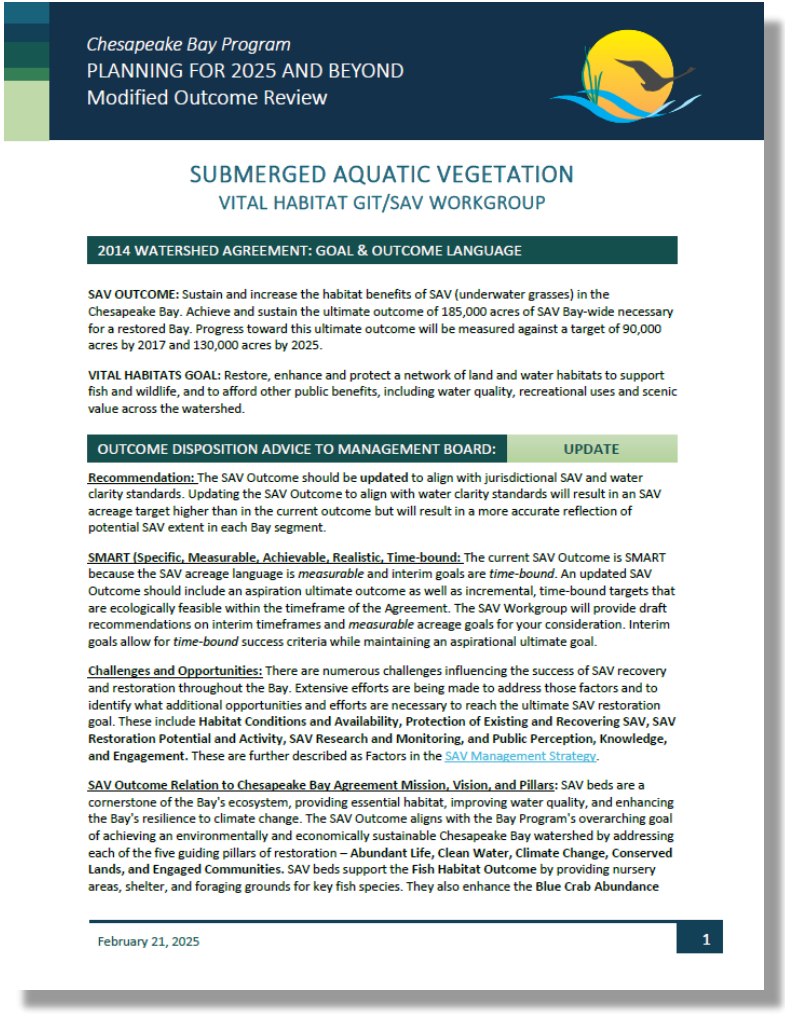





Data Dashboard: [https://gis.chesapeakebay.net/wdd](https://gis.chesapeakebay.net/wdd)

# SAV Outcome Assessment

## More Later.....



*Chesapeake Bay Program*
PLANNING FOR 2025 AND BEYOND
Modified Outcome Review

### SUBMERGED AQUATIC VEGETATION
VITAL HABITAT GIT/SAV WORKGROUP

**2014 WATERSHED AGREEMENT: GOAL & OUTCOME LANGUAGE**

**SAV OUTCOME:** Sustain and increase the habitat benefits of SAV (underwater grasses) in the Chesapeake Bay. Achieve and sustain the ultimate outcome of 185,000 acres of SAV Bay-wide necessary for a restored Bay. Progress toward this ultimate outcome will be measured against a target of 90,000 acres by 2017 and 130,000 acres by 2025.

**VITAL HABITATS GOAL:** Restore, enhance and protect a network of land and water habitats to support fish and wildlife, and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed.

**OUTCOME DISPOSITION ADVICE TO MANAGEMENT BOARD:** **UPDATE**

**Recommendation:** The SAV Outcome should be **updated** to align with jurisdictional SAV and water clarity standards. Updating the SAV Outcome to align with water clarity standards will result in an SAV acreage target higher than in the current outcome but will result in a more accurate reflection of potential SAV extent in each Bay segment.

**SMART (Specific, Measurable, Achievable, Realistic, Time-bound:** The current SAV Outcome is SMART because the SAV acreage language is *measurable* and interim goals are *time-bound*. An updated SAV Outcome should include an aspiration ultimate outcome as well as incremental, time-bound targets that are ecologically feasible within the timeframe of the Agreement. The SAV Workgroup will provide draft recommendations on interim timeframes and *measurable* acreage goals for your consideration. Interim goals allow for *time-bound* success criteria while maintaining an aspirational ultimate goal.

**Challenges and Opportunities:** There are numerous challenges influencing the success of SAV recovery and restoration throughout the Bay. Extensive efforts are being made to address those factors and to identify what additional opportunities and efforts are necessary to reach the ultimate SAV restoration goal. These include **Habitat Conditions and Availability, Protection of Existing and Recovering SAV, SAV Restoration Potential and Activity, SAV Research and Monitoring, and Public Perception, Knowledge, and Engagement.** These are further described as Factors in the SAV Management Strategy.

**SAV Outcome Relation to Chesapeake Bay Agreement Mission, Vision, and Pillars:** SAV beds are a cornerstone of the Bay's ecosystem, providing essential habitat, improving water quality, and enhancing the Bay's resilience to climate change. The SAV Outcome aligns with the Bay Program's overarching goal of achieving an environmentally and economically sustainable Chesapeake Bay watershed by addressing each of the five guiding pillars of restoration – **Abundant Life, Clean Water, Climate Change, Conserved Lands, and Engaged Communities.** SAV beds support the **Fish Habitat Outcome** by providing nursery areas, shelter, and foraging grounds for key fish species. They also enhance the **Blue Crab Abundance**

# SAV Mitigation and Monitoring Workshop

**More Later…..**

## *Workshop Purpose:*

**Convene the SAV workgroup and regulatory partners to identify in-kind SAV mitigation and monitoring requirements, success criteria, and performance standards for SAV mitigation projects.**

# SAV Workgroup Fieldtrip to the Susquehanna Flats

**In lieu of our Summer Meeting on** August 20th , 12-5pm, though date may have to change based on availability.

## 2025 Meeting Schedule

# Mark Your Calendars*

**Winter Meeting:** February 26th, 1-4pm

**Spring Meeting:** May 7th, 1-5pm

**Summer Meeting:** August 20th , 12-5pm

**Fall Meeting:** November 12th, 9-5pm

# Questions?

# SAV Mitigation and Monitoring Workshop

## *BACKGROUND*

- **Increase in MD projects where in-kind SAV mitigation is required.**
- **In MD, SAV mitigation currently based on MDE's Guidance on Tidal Wetland Mitigation, but performance standards and success criteria have been determined on a case-by-case basis largely.**
- **Regulatory agencies want consistency but flexibility for adaptive management and to accommodate regional trends.**

***Request from Regulatory Agencies:*** Develop and recommend mitigation and monitoring requirements, success criteria, and performance standards for in-kind SAV mitigation.

***SAV Workgroup Response 1:*** Attempt to figure it out ourselves without input from regulatory partners – Did NOT Work!

***SAV Workgroup Response 2: Workshop that INCLUDED regulatory partners***

- Convene the SAV workgroup **and regulatory partners** to identify in-kind SAV mitigation and monitoring requirements, success criteria, and performance standards for SAV mitigation projects.
- Use a Facilitator!

# SAV Mitigation Workshop Agenda

**9:00** Welcome and Introductions

**9:15** Overview of Workshop Objectives

**9:30** Presentations by state regulatory agencies and partners Part 1

**10:30** Break

**10:45** Presentations by state regulatory agencies and partners Part 2

**11:25** Panel Discussion with Presenters

**12:15** Lunch break

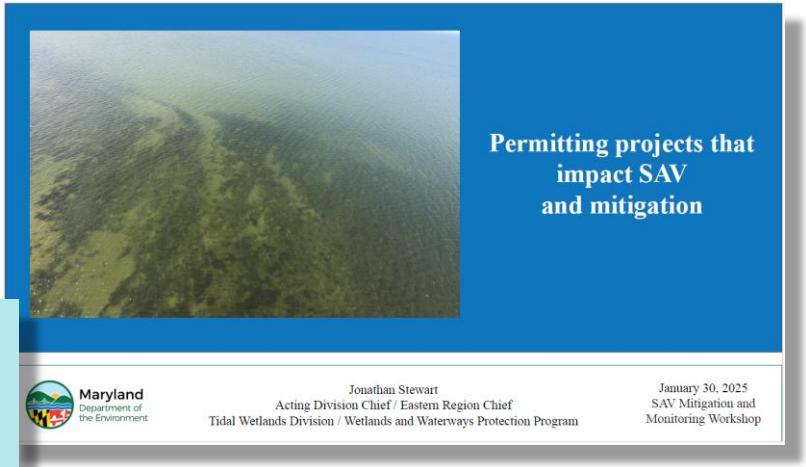
**1:00** Discussion – Developing Answers to Many Questions

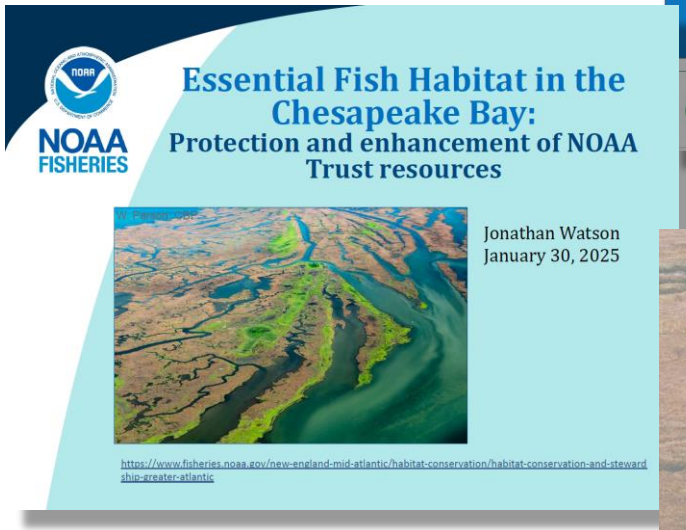
**2:00** Break

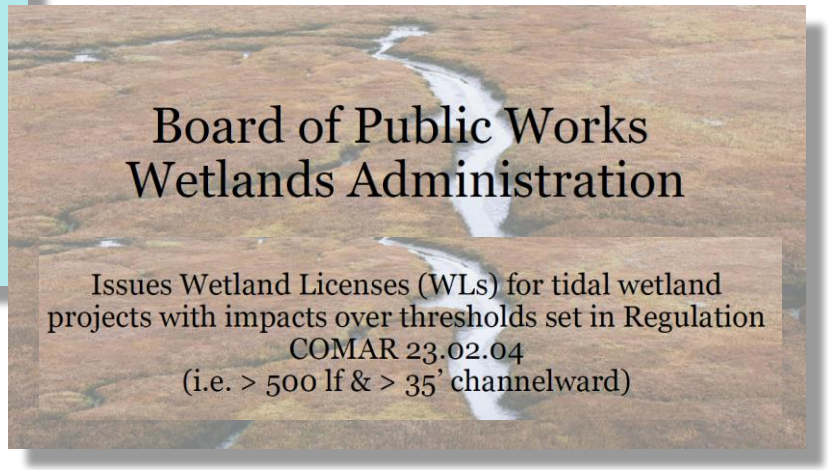
**2:15** Consensus Building and Products

**4:15** Wrap up and Adjourn

# MD/Federal Regulatory Agencies – Presented how SAV mitigation works now



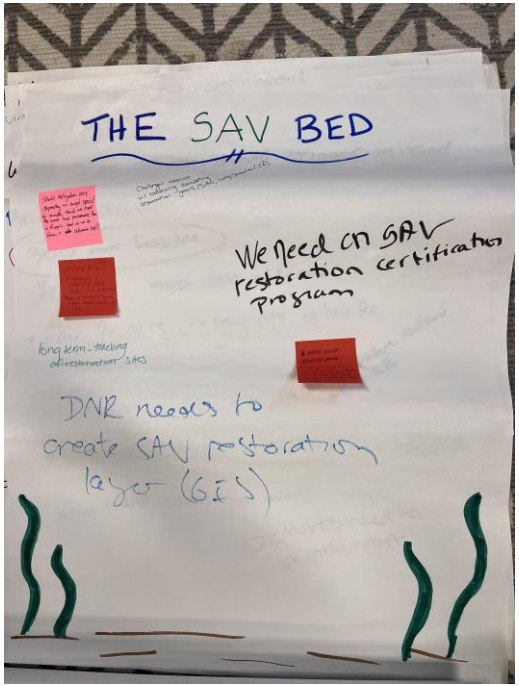

*The USACE also weighs in and is responsible for permitting. Representatives participated but did not present.

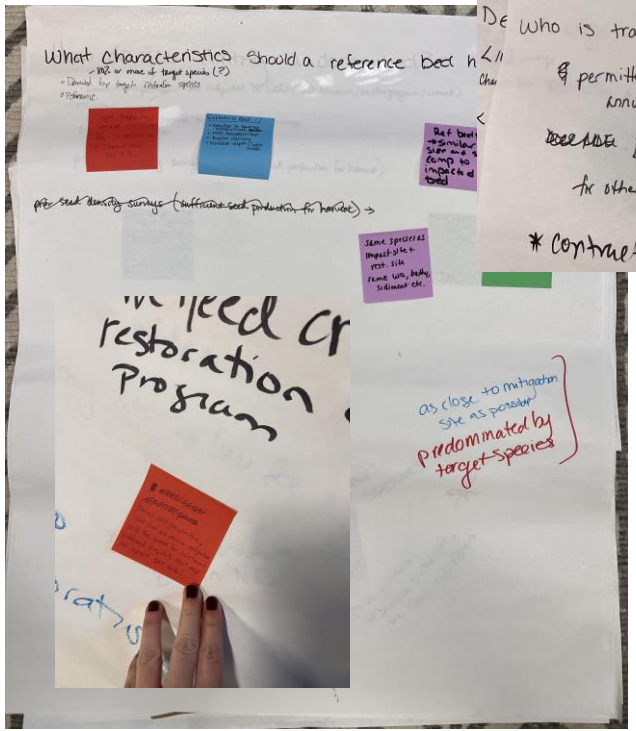
# Presentation of Questions

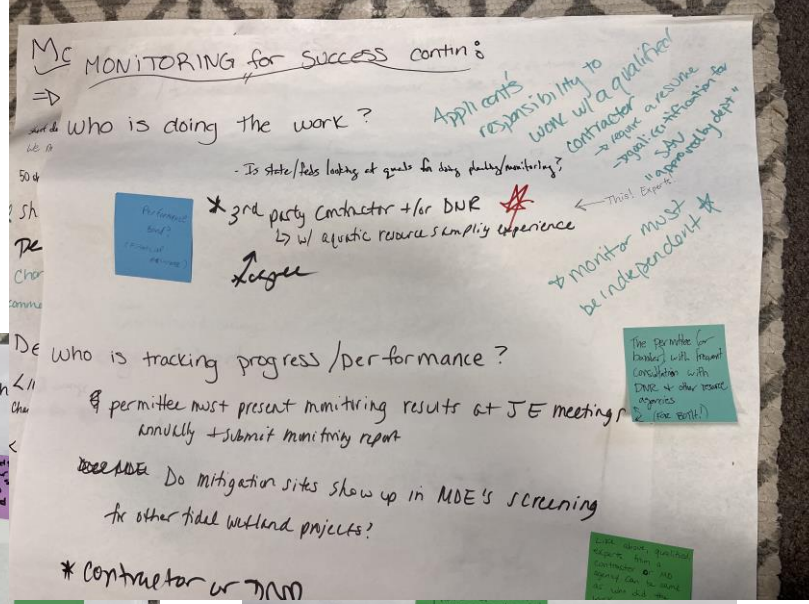
1. What size impact should trigger SAV mitigation?
2. How do we determine if in-kind SAV mitigation is appropriate at that time?

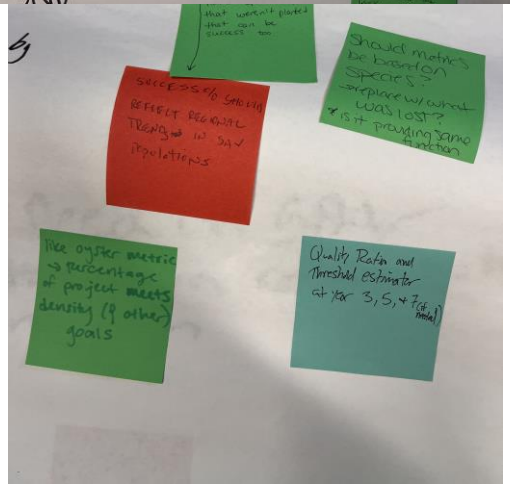
    Ie. If SAV is trending down in the area, should it be required, postponed?
3. What characteristics make for a suitable SAV mitigation project site?
4. How far away from the impact site is allowable for the mitigation site?
5. How far away from the mitigation site is allowable for a reference site?
6. What characteristics should a reference bed have?
7. How do you identify a donor bed?
8. Monitoring metrics and frequency?
9. How should mitigation projects be tracked and for how long, and who is responsible?
10. What should be required for long-term maintenance? Who is responsible?
11. How should we determine project success?
12. Should we require financial assurances?

# Giant Post-it Notes for Responses



# SAV Workgroup
# SAV Mitigation and Monitoring Guidance Document

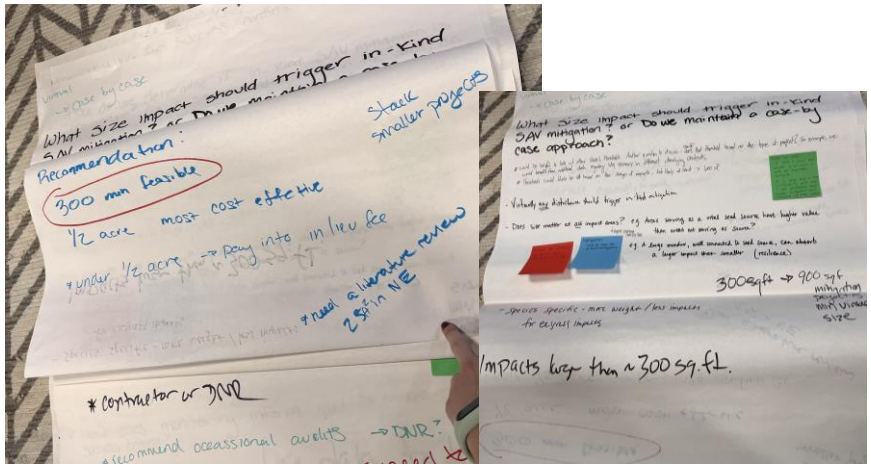

**Submerged Aquatic Vegetation Mitigation and Monitoring Requirement Recommendations**

Provided to the Chesapeake Bay Watershed Federal and State Regulatory Agencies by The Chesapeake Bay Program's SAV Workgroup

April 1, 2025

# ? 1. What size impact should trigger SAV mitigation?

**Recommendation**: 300 sf minimum impact triggers SAV mitigation requirement

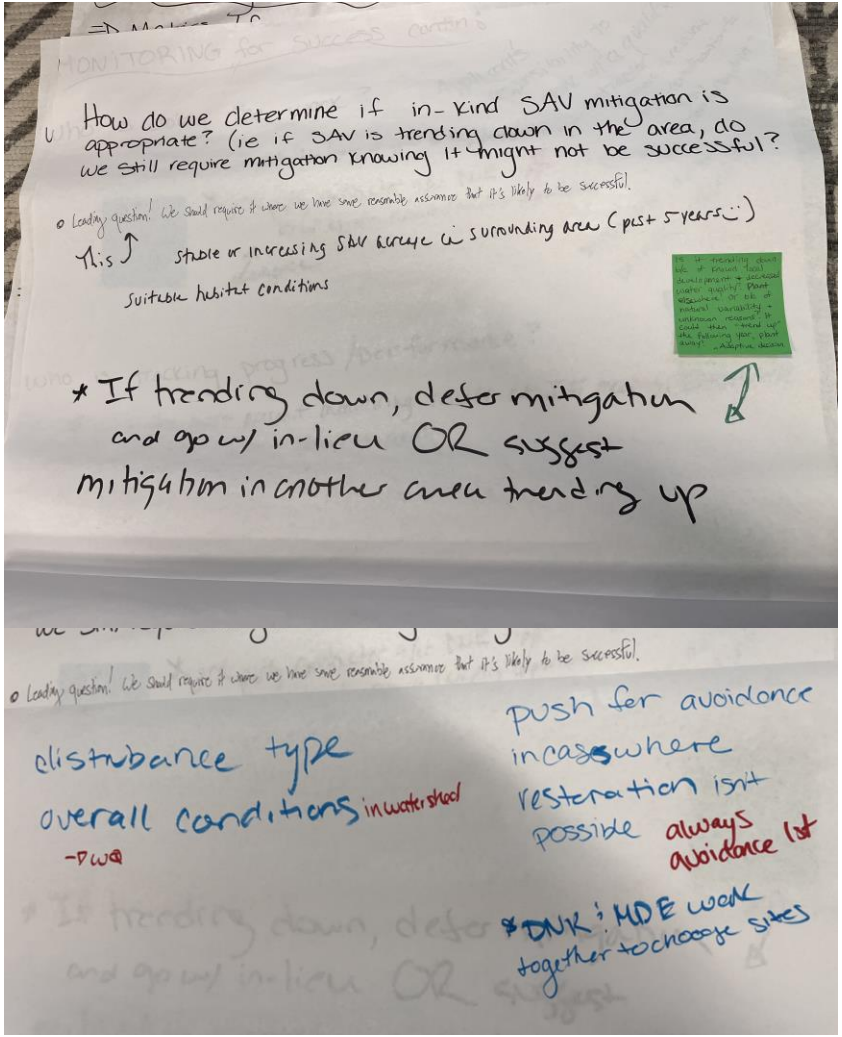



| State | Minimum Mitigation Requirement | Source |
|---|---|---|
| New Jersey | 1 acre | NJAC |
| Louisiana | 1 acre | LA DNR |
| Oregon | Case by case (.2 acres) | OR Dept of State Lands |
| Alaska | .1 acre | USACE Alaska District |
| Virginia | .1 acre | DEQ |
| Delaware | .1 acre | DNREC |
| California | 10m$^2$ | CEMP |
| Massachusetts | 15ft$^2$ | DFG |
| Washington | >0 acres | WAC |
| New Hampshire | >0 acres | DES |
| Florida | Currently being determined | 2024 FL Statute |
| Connecticut | Currently being determined | CDEEP |
| Maryland | Currently being determined | |
| Hawaii | None found | |
| Texas | None found | |
| Mississippi | None found | |
| Alabama | None found | |
| Georgia | None found | |
| South Carolina | None found | |
| North Carolina | None found | |
| New York | None found | |
| Rhode Island | None found | |
| Maine | None found | |

Thank you, Julie L. for doing this lit/reg search!

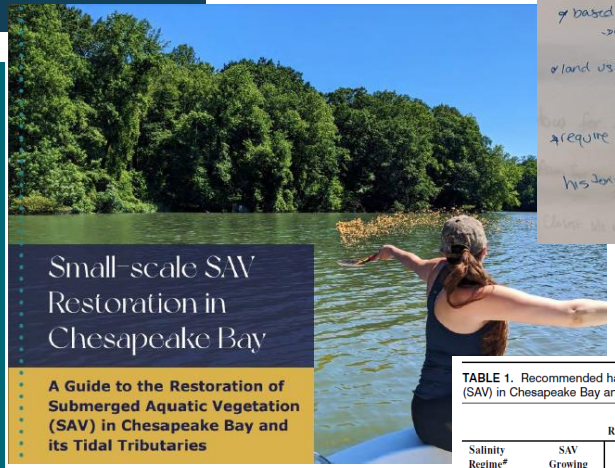
# 2. How do we determine if in-kind SAV mitigation is appropriate at the time?

**Recommendation**: Avoid impacts. If you can't avoid impacts, minimize, and if you must still, mitigate. If conditions are trending down in trib, mitigate within region/salinity zone. If conditions are trending down in region/zone, defer mitigation and explore in-lieu fee payments instead.



# 3. What characteristics make for a suitable SAV mitigation project site?

**Recommendation**: Prioritize sites based on meeting and exceeding SAV habitat requirements (WQ: light, chl a, etc.), low wave energy but some movement, shoreline and land use conducive to SAV (natural for both preferred), low boat traffic. Site should have historical presence of SAV but none or low density only present currently. Follow restoration guidance in *Small-scale SAV Restoration in Chesapeake Bay: A Guide to the Restoration of SAV in Chesapeake Bay and its Tidal Tributaries.*



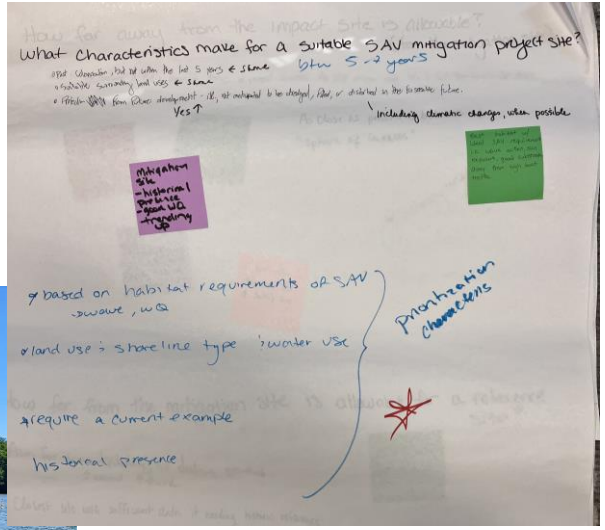
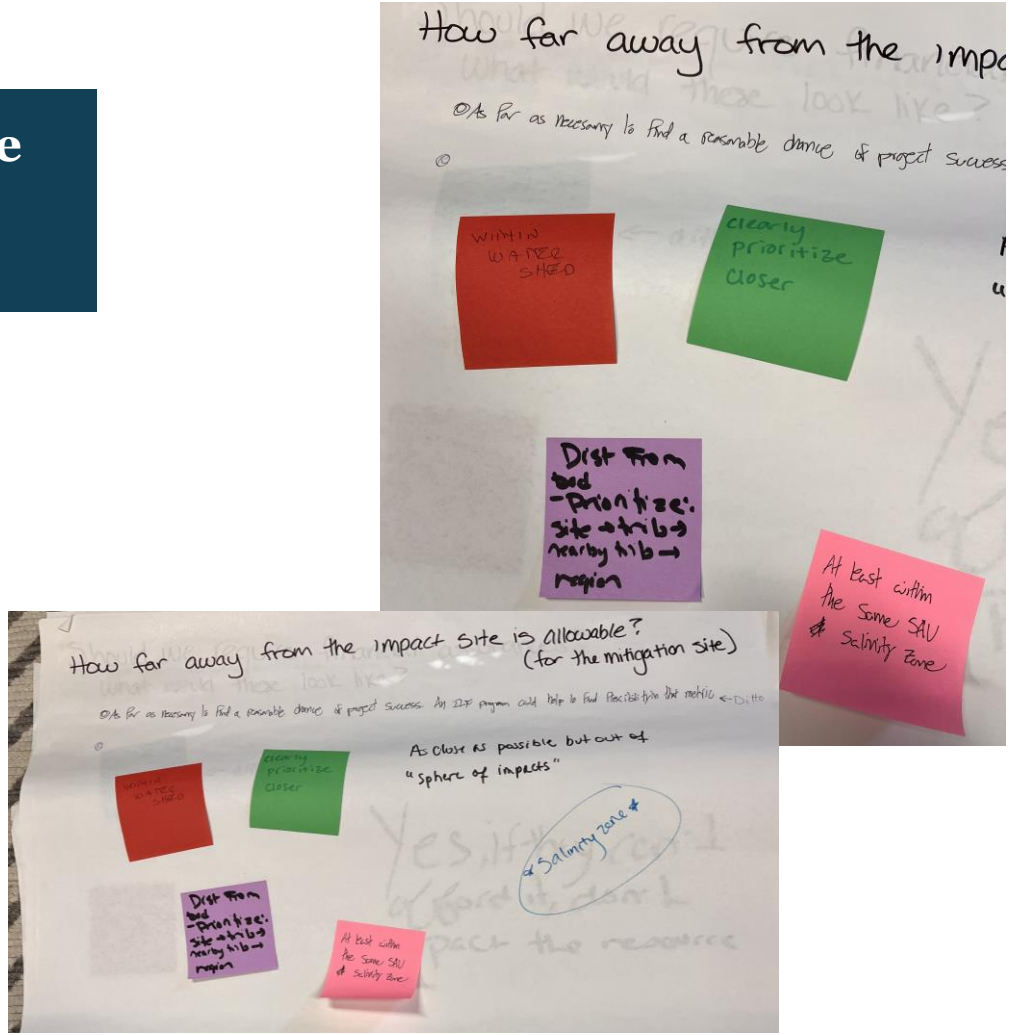




**TABLE 1.** Recommended habitat requirements for growth and survival of submerged aquatic vegetation (SAV) in Chesapeake Bay and its tidal tributaries.

| | | Primary Requirements† | | Secondary Requirements** (Diagnostic Tools) | | | |
|---|---|---|---|---|---|---|---|
| Salinity Regime# | SAV Growing Season* | Minimum Light Requirement (%) | Water Column Light Requirement (%) | Total Suspended Solids (mg/l) | Plankton Chlorophyll-*a* (µg/l) | Dissolved Inorganic Nitrogen (mg/l) | Dissolved Inorganic Phosphorus (mg/l) |
| Tidal Fresh | April-October | >9 | >13 | <15 | <15 | — | <0.02 |
| Oligohaline | April-October | >9 | >13 | <15 | <15 | — | <0.02 |
| Mesohaline | April-October | >15 | >22 | <15 | <15 | <0.15 | <0.01 |
| Polyhaline | March-May Sept.-Nov. | >15 | <22 | <15 | <15 | <0.15 | <0.02 |

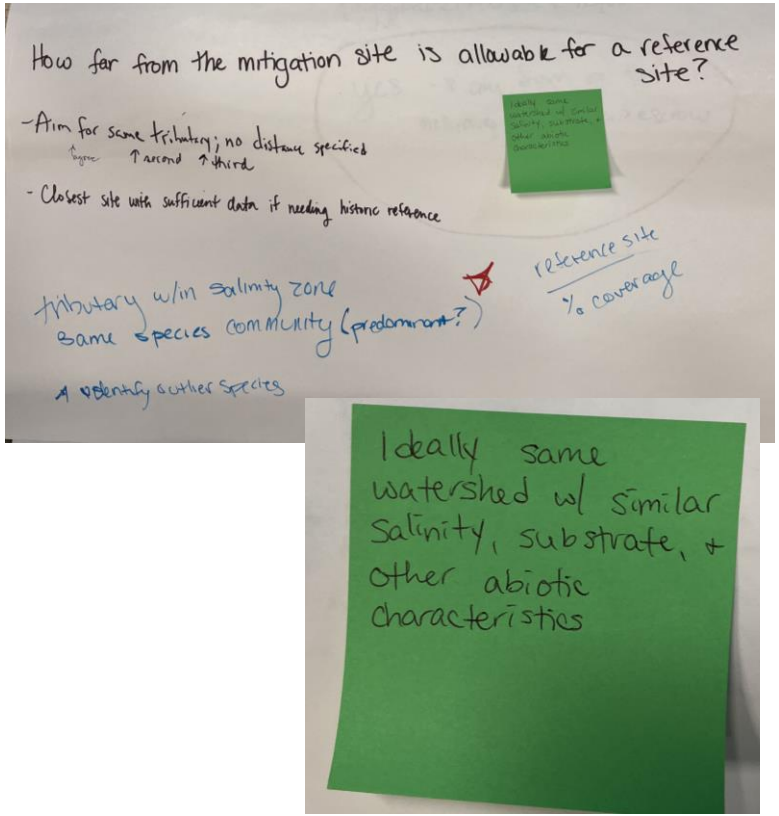
# 4. How far away from the impact site is allowable for the mitigation site?

**Recommendation**: An SAV mitigation site must be as close as possible to the impact site without risk of impact from the project. Prioritize as follows: near site->tributary->nearby tributary->region.



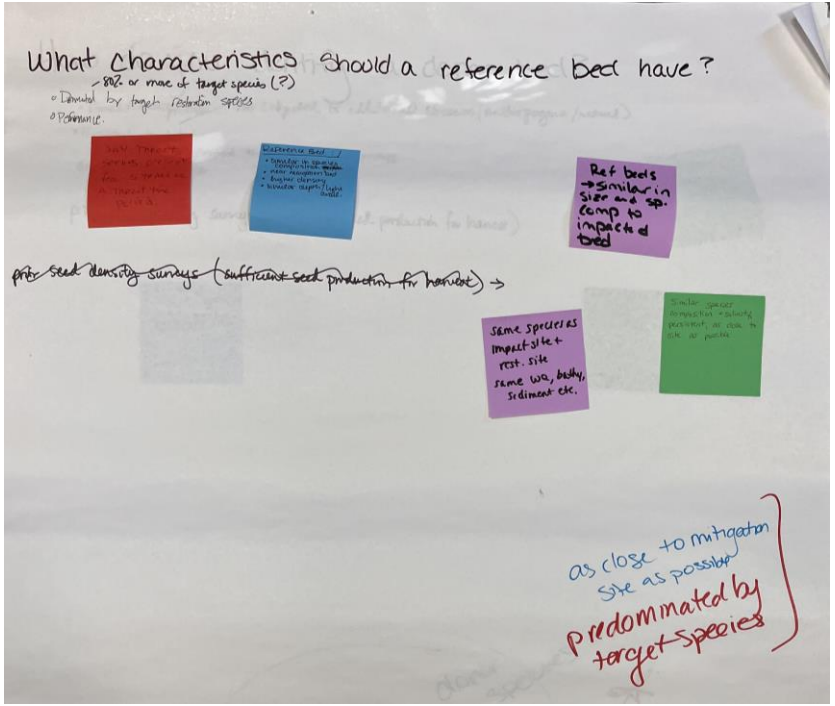
# ? 5. How far away from the mitigation is allowable for the reference site?

**Recommendation**: Reference sites should be within the same tributary and if not possible, nearby within same salinity zone. Reference sites should support the same species community/dominant species and have overall similar characteristics including salinity, substrate, and other abiotic characteristics.



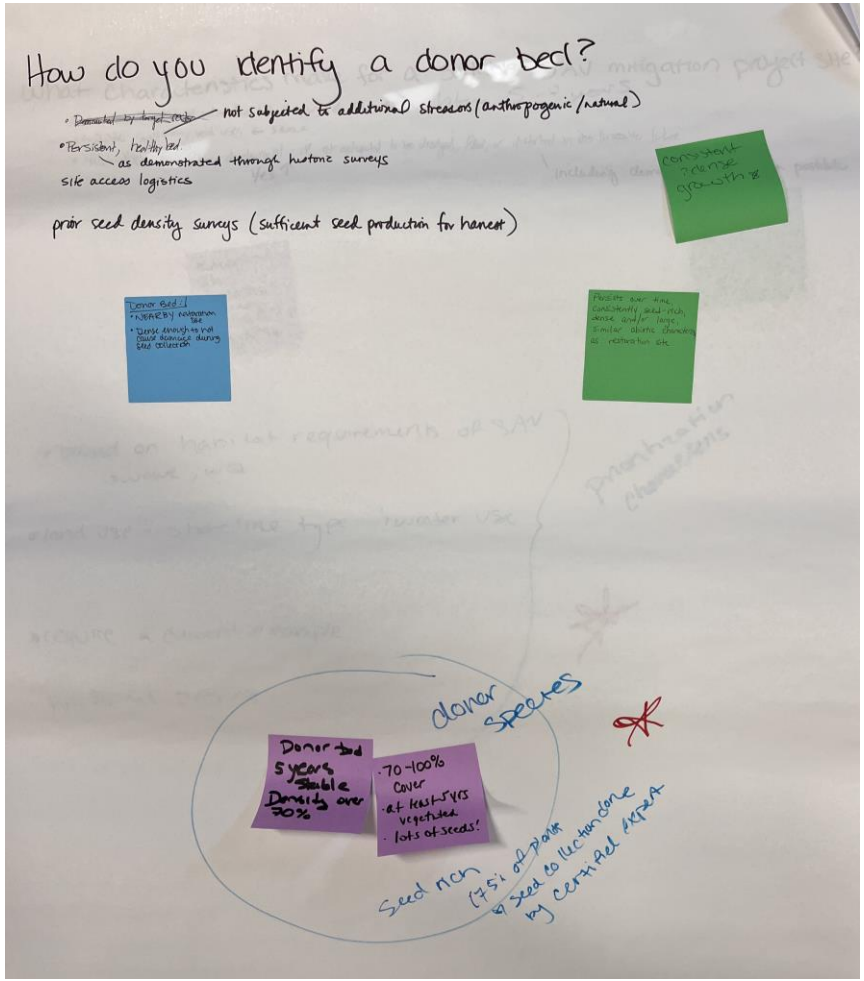
# ? 6. What characteristics should a reference bed have?

**Recommendation**: Reference beds should be as close as possible to mitigation site with similar overall characteristics, including species composition (to what is used for mitigation), WQ, depth, sediment, etc. Prioritize similarity over distance as long as in the same tributary and salinity zone.



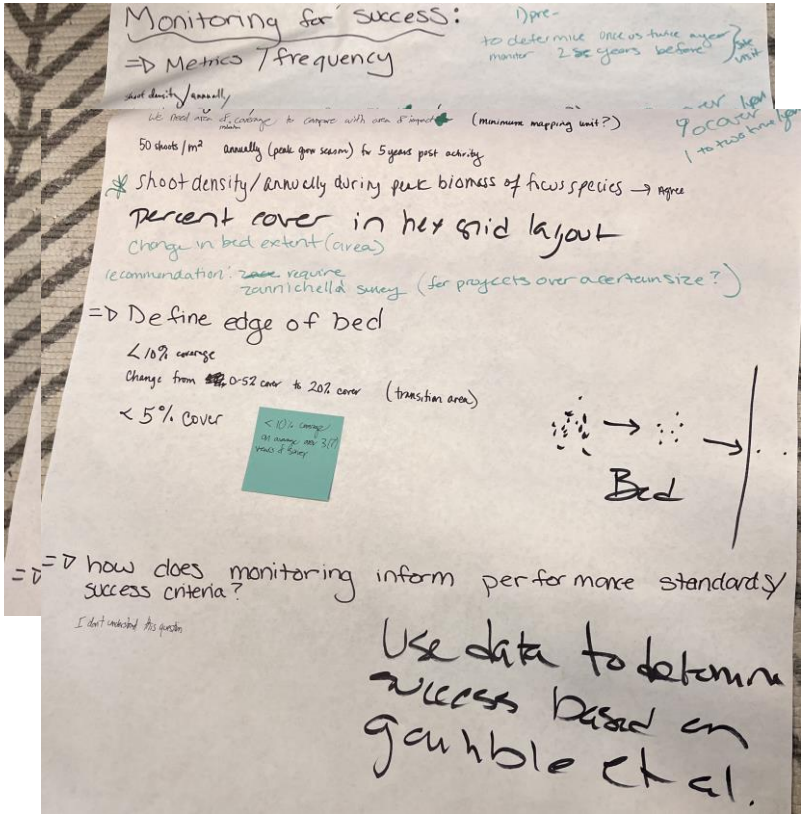
# ? 7. How do you identify a donor bed?

**Recommendation**: Donor beds should be rich with seeds as indicated by harvest-time surveys. If less than 75% of plants are reproductive, find another bed. Donor beds should be class four density (70-100%) and be large and at least 5 years old. Notify applicant that an SAV harvest permit is required and may be obtained by Maryland DNR at https://dnr.maryland.gov/waters/bay/pages/sav/sav-permits-and-regulations.aspx



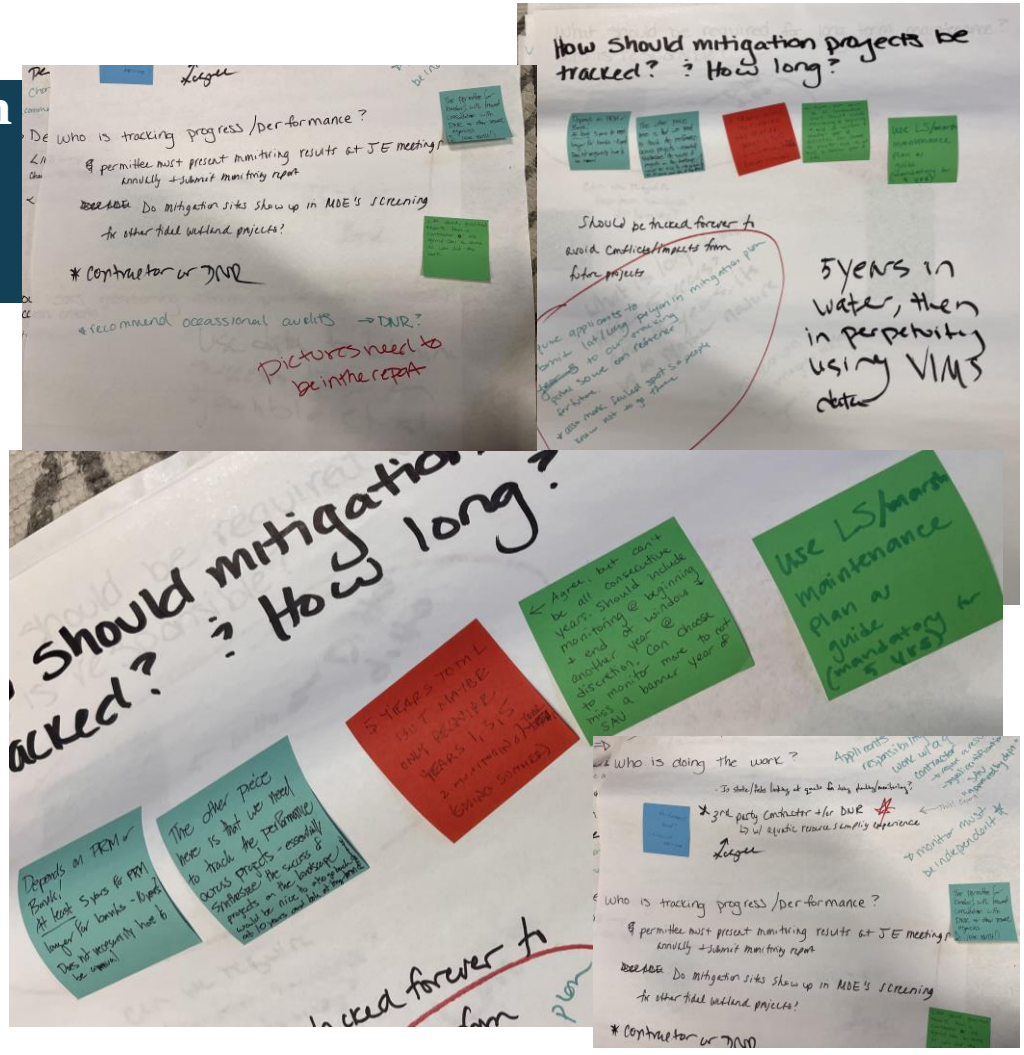
# ? 8. Monitoring metrics and frequency?

**Recommendation**: Survey cover, shoot count, and restored bed size. In GIS, lay hex grid over restoration area with at least 30 grid cells over area. Select random points within each hex. Within 0.25m2 quadrat at each point, record percent cover and shoot count. ID species (sometimes another species volunteers at restoration sites). Find edge of bed and determine bed size. Edge of bed is where cover transitions from more than 10% cover to less than 5% cover. Survey annually during peak biomass at a minimum. More frequent monitoring may behoove applicant to ensure presence is captured.



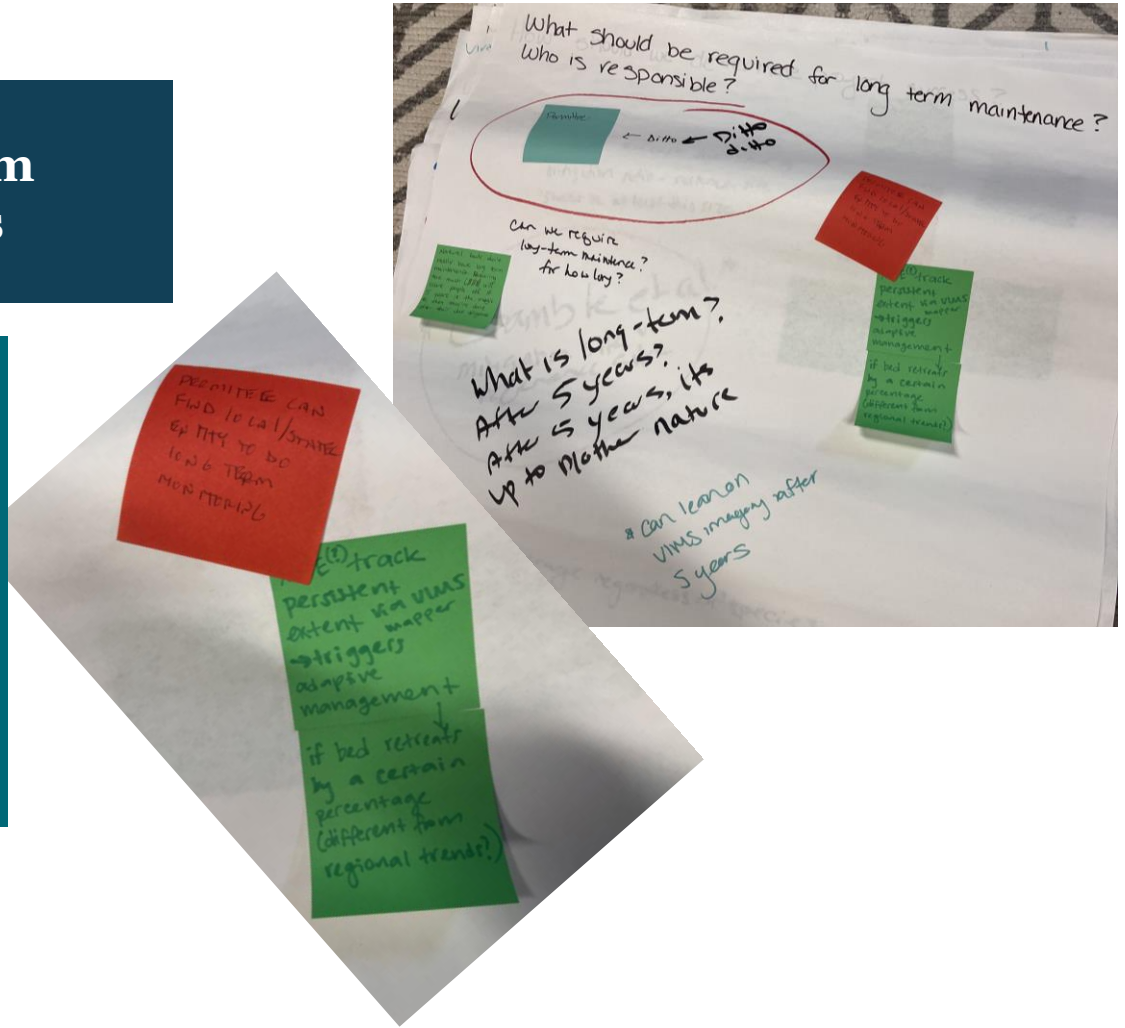
# ? 9. How should mitigation projects be tracked and for low long, who is responsible?

**Recommendation**: SAV mitigation monitoring should be conducted by a qualified, third party and independent contractor for at least 5 years in water, and in perpetuity using VIMS data. All spatial data and survey data should be submitted to DNR. Must submit time-stamped pictures to assure validity and accuracy of monitoring results.



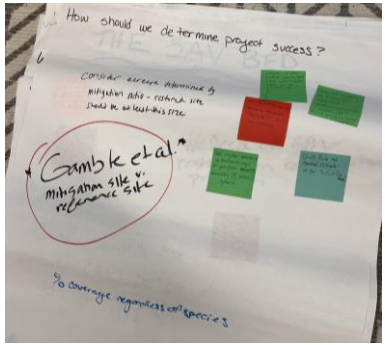
# 10. What should be required for long-term maintenance? Who is responsible?

**Recommendation**: The permittee is responsible for long-term maintenance, with long-term maintenance being up to the 5 years recommended for monitoring. If the project is considered a success at year 5, the permittee is free of obligation after that. If not successful after year 5, contingency plan.



# ? 11. How do you determine project success?

**Recommendation**: Follow guidance by Gamble et al. (2021) comparing restored bed to reference bed. This takes into account regional trends and doesn't hold permittee accountable to impossible standards.




**BOX 4.2:** HOW TO MEASURE SUCCESS USING THRESHOLD VALUE AND QUALITY RATIO

For example, shoot density per $m^2$ in the restored bed can be compared with the reference bed(s) using a minimum of 10 randomly placed quadrats in each bed. Shoot density in the restored bed after five years was averaged to 515 shoots per $m^2$.

The shoot density of the reference beds was measured at an average of 560 ± 102 (mean ± SD) shoots per $m^2$. Thus, the quality ratio is 515/560 = 0.92. Threshold value = (560-102) / 560 = 0.82.

Quality ratio > threshold value (0.92 > 0.82). This means that the restoration was successful.

The threshold value can also be used to determine whether there have been increases in (i) biomass, (ii) maximum depth distribution (iii) sediment variables, and (iv) the abundance and diversity of fish and invertebrates.

A threshold value is a point at which a significant change has occurred within the restored bed:

Threshold value = (average of parameter *a* – 1 SD in reference beds) / (average of parameter *a* in reference beds). Note: parameter *a* can be any parameter (e.g. shoot density or extent).

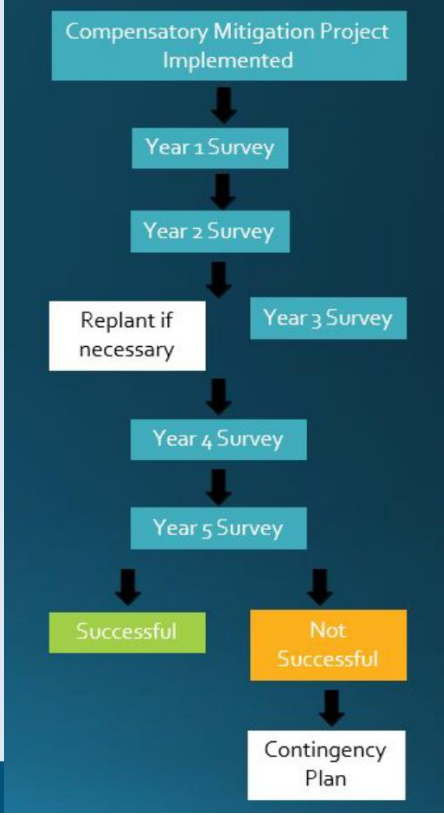
*Where SD is the standard deviation.*

Quality ratio = (average of parameter *a* in the restored bed) / (average of parameter *a* in the reference bed)

If the quality ratio is greater than the threshold value, the restoration project has been a success.

Quality ratio > threshold value. Project successful

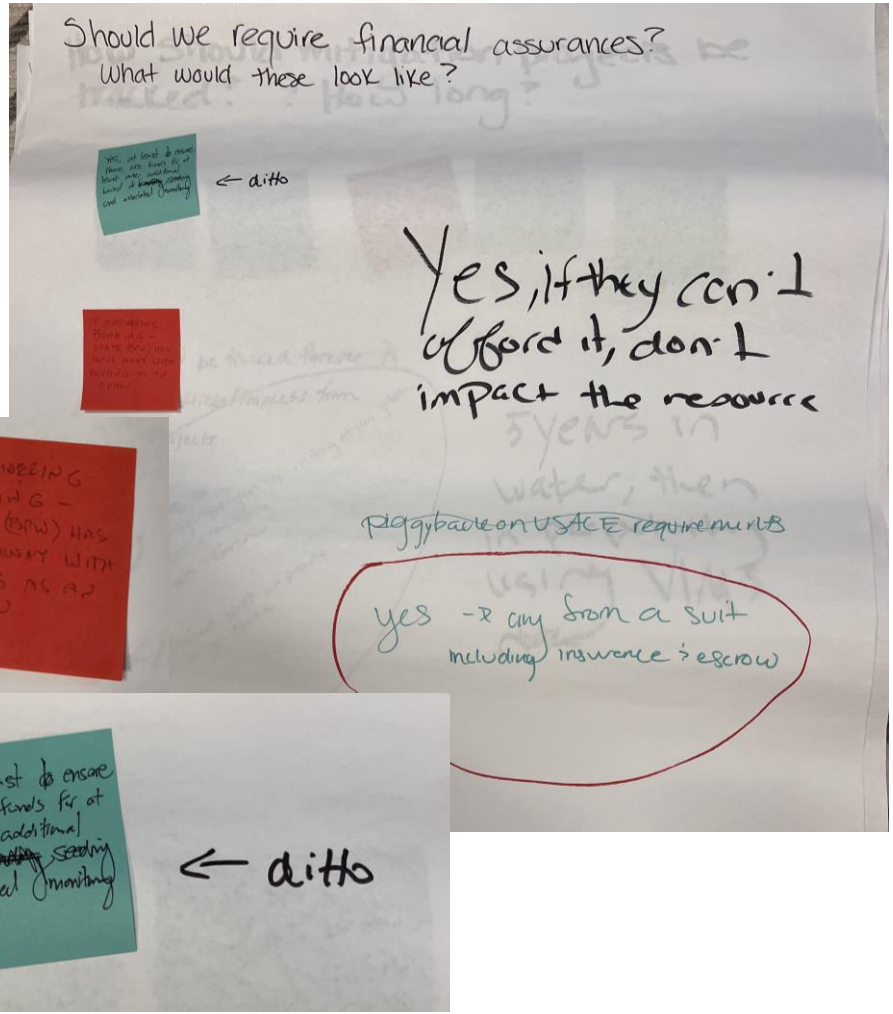
Gamble et al. (2021)




- Monitor both restoration and reference sites for 5 years
- Success each year will be determined using the Threshold Value and Quality Ratio defined by Gamble et al. 2021.
  - If at Year 2 of monitoring the Quality Ratio is < the Threshold Value, the permittee may replant/reseed during the spring of Year 3
- After 5 year of monitoring:
  - If the Quality Ratio > the Threshold Value, the project is successful and no further monitoring is required.
  - If the Quality Ratio < the Threshold Value, the project is NOT successful and requires contingency.

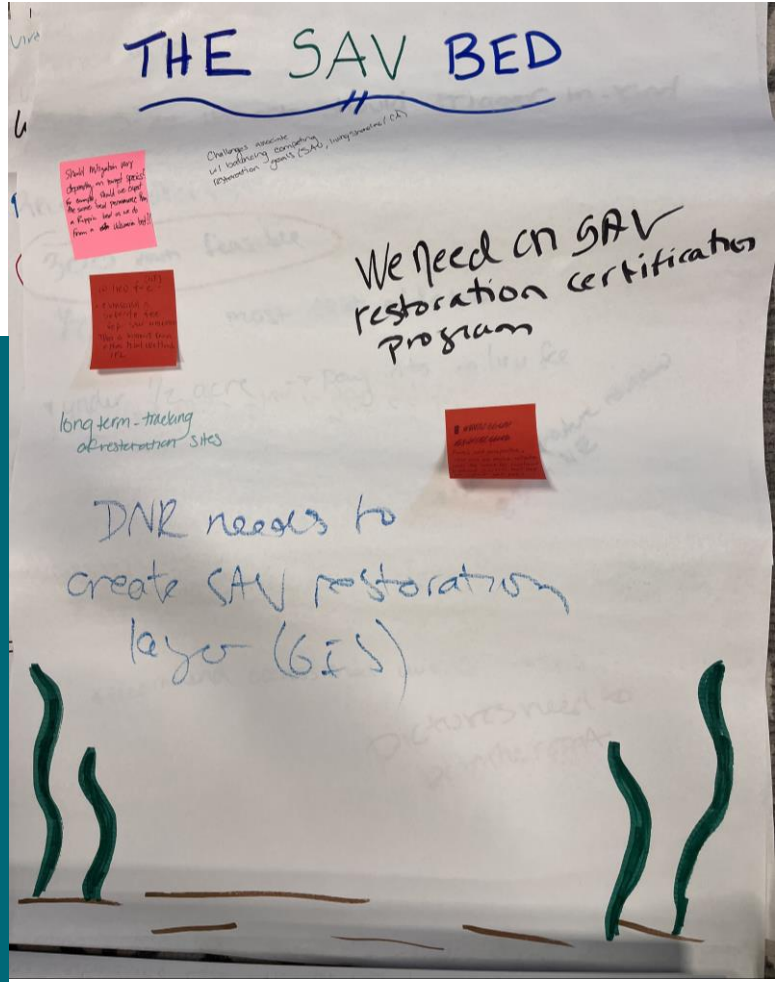
# ? 12. Should you require financial assurances?

**Recommendation**: Some sort of financial assurance should be provided that the applicant/permittee can perform at least one additional round of seeding if the project is not initially successful. If financial assurance is impossible, a letter of commitment/agreement should be required to ensure follow up or contingency plan.



# ? 13. The SAV Bed (aka the parking lot)

- We need as SAV restoration certification program
- We need an SAV restoration layer in GIS that tracks both failed and successful mitigation and restoration projects and the donor beds used for those projects.
- We need long-term tracking of restoration sites.
- We need to establish official in-lieu fee specific to SAV mitigation that is distinct from the TWCF.
- We need to make mitigation cheaper.
- There are challenges associated with balancing competing restoration goals (SAV) and shoreline protection (living shorelines).
- Should mitigation vary depending on target species? For example, should we expect the same bed performance from a Ruppia bed as we do from a Vallisneria bed?
- Natural beds don't' really have long-term maintenance. Requiring too much money will scare people off (from doing living shorelines). If 5 years is the magic #, then they're done after their due diligence.



# Questions/Comments

# SAV Outcome Assessment Updates

*Through the* Chesapeake Bay Watershed Agreement*, the Chesapeake Bay Program has committed to…*

# Goal: ***Vital Habitats***

## Outcome:

Sustain and increase the habitat benefits of SAV in the Chesapeake Bay. Achieve and sustain the ultimate outcome of 185,000 acres of SAV Bay-wide necessary for a restored Bay. Progress toward this ultimate outcome will be measured against a target of 90,000 acres by 2017 and 130,000 acres by 2025.

# SUBMERGED AQUATIC VEGETATION

Habitat GIT

SAV Workgroup

Presenter: Brooke Landry

## PROPOSED DRAFT OUTCOME LANGUAGE:

Sustain and increase the habitat and ecosystem benefits of SAV in the Chesapeake Bay. Achieve and sustain the ultimate outcome of 196,000 acres of SAV Bay-wide necessary for a restored Bay.

## EXISTING 2014 AGREEMENT OUTCOME LANGUAGE:

Sustain and increase the habitat benefits of submerged aquatic vegetation (SAV) in the Chesapeake Bay. Achieve and sustain the ultimate outcome of 185,000 acres of SAV Bay-wide necessary for a restored Bay. Progress toward this ultimate outcome will be measured against a target of 90,000 acres by 2017 and 130,000 acres by 2025.

# SUBMERGED AQUATIC VEGETATION

Habitat GIT

SAV Workgroup

Presenter: Brooke Landry

| PROPOSED TARGET | New Target / Update of Existing Target | Date estimate for target being developed |
|---|---|---|
| **Progress toward this ultimate outcome will be measured against a target of 90,000 acres by 2030 and 95,000 acres by 2035.** | Update of existing | May 2025 |
| **Progress will also be measured against the following targets for each salinity zone:**<br>**•Tidal Fresh: 21,330 acres**<br>**•Oligohaline: 13,094 acres**<br>**•Mesohaline: 126,032 acres**<br>**•Polyhaline: 35,790 acres** | New | May 2025 |

# SUBMERGED AQUATIC VEGETATION

Habitat GIT

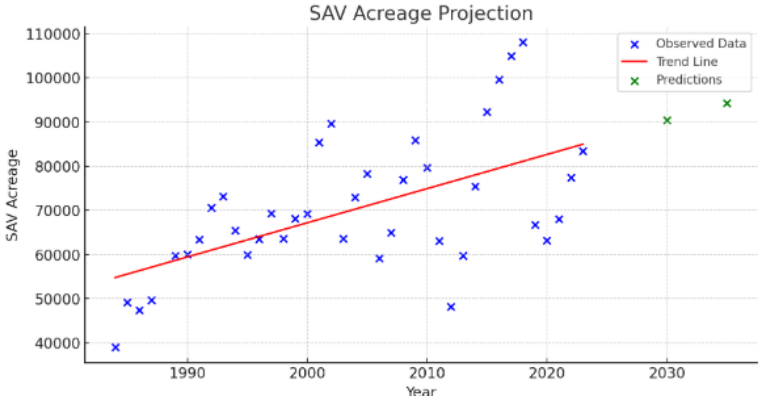
SAV Workgroup

Presenter: Brooke Landry

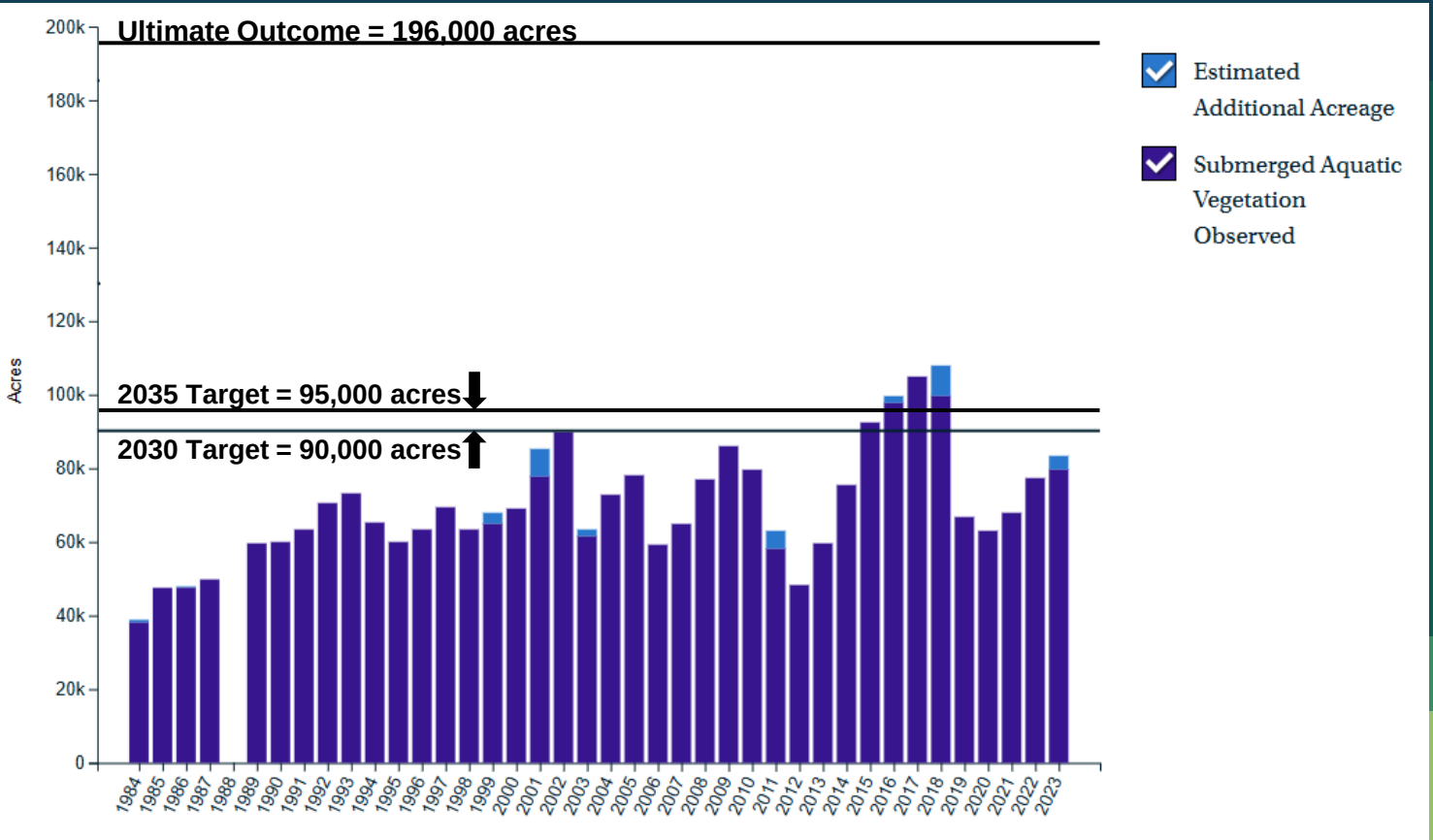
- Increasing the ultimate SAV goal to 196,000 acres will align the outcome with water clarity standards and will results in a more accurate reflection of potential SAV extent in each Bay segment.

- Interim targets were determined using linear regression on the Bay-wide totals and assume steady growth.

- The forecasted acreage targets for 2030 and 2035 are based on an average 1.1% growth exhibited per year.




- Including specific SAV acreage targets for each salinity zone accommodates the variability in SAV community trends in different parts of the Bay.


Ultimate Outcome = 196,000 acres
2035 Target = 95,000 acres
2030 Target = 90,000 acres
Acres
200k
180k
160k
140k
120k
100k
80k
60k
40k
20k
0
1984
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Estimated Additional Acreage
Submerged Aquatic Vegetation Observed

# Questions?