

To: Chris Judy  
Director, Shellfish Division, Maryland Department of Natural Resources (DNR)  
From: Advocates for Herring Bay  
Date: July 14, 2023 – **Redacted version**  
Re: Investing mitigation funds from the Evergreen Marine Corporation in the Herring Bay Oyster Sanctuary

The Advocates for Herring Bay (AHB) appreciate this opportunity to share information about the benefits of investing funds received from the Evergreen Marine Corporation (Evergreen) for oyster restoration in the Herring Bay Oyster Sanctuary. As summarized below and illustrated in the attachments, Herring Bay has several promising locations for planting spat-on-shell and the conditions needed to support oyster growth. [REDACTED]

The following materials highlight our findings and recommendations:

**Recent and historical data confirm bottom characteristics suitable for spat-on-shell:**

- As shown in Map 1, DNR planted shell, spat-on-shell, and wild seed in the Herring Bay sanctuary from the 1960s through 2000. Some remnants of those plantings may provide “cultch” for future restoration efforts.
- In May 2023, DNR planted spat-on-shell on 3.5 acres on the Holland Point bar.
- In 2021, the Oyster Recovery Partnership (ORP) conducted a patent-tong survey for the Chesapeake Bay Foundation (CBF) to “groundtruth” the suitability of two sites on the Holland Point Yates bar: a 20-acre site near the 2023 planting site, and a separate 10-acre site. Approximately 90 percent of both areas were rated as having potential for restoration (or a total of about 27 acres, see Map 2).<sup>1</sup>
- In June 2023, AHB used a probing pole to assess the hardness of the bottom in four areas in the Herring Bay sanctuary identified by DNR (see Map 3). We found:

[REDACTED]

- muddy bottom on a 27-acre site located between (but not on) two Yates bars across from the historic Old Colony Cove farm.

[REDACTED] The geologic characteristics of the Herring Bay sanctuary differ from most other areas in the Anne Arundel Complex, as shown in sediment-layer maps by the Maryland Geological Survey (see Map 4). [REDACTED]

<sup>1</sup> Oyster Recovery Partnership, *Patent Tong Survey to Groundtruth Potential Restorable Oyster Habitat for Restoration Planning in the South River and Herring Bay*, February 2022.

### **Additional investments are needed to restore oyster habitat in Herring Bay**

- DNR has not yet established restoration goals for the Herring Bay Oyster Sanctuary. However, applying DNR’s oyster restoration metrics<sup>2</sup> to currently available information appears to support a high restoration target:

- At 50% to 100% of the acreage recently evaluated by AHB and ORP  
= 75% X (27+ 3.5 + 30 + 10 = 70.5) = about 53 acres.<sup>3</sup>

- Restoration to date represents a small fraction of such goals:
  - DNR planted spat-on-shell on about 3.5 acres on the Holland Point bar
  - With permission from DNR, AHB planted over 1 million spat-on-shell on a quarter-acre site on the Fairhaven Yates bar over the 2019-2021 period.
  - The Chesapeake Beach Oyster Cultivation Society has planted over 1 million spat-on-shell on a 3-acre area south of the Holland Point bar as part of the Maryland Grows Oysters program.
  - CBF planted spat on oyster reef balls on 0.68 acres on a MIRA site in the Chesapeake Beach section of the Herring Bay sanctuary.

### **Prospects for oyster restoration in Herring Bay are favorable**

- Oysters are growing well on the Fairhaven Yates bar being restored by AHB. Divers found an average of 236 live oysters per square meter on the quarter-acre site in a survey conducted in the fall of 2022.<sup>4</sup>
- The water quality of Herring Bay should be as favorable for oyster restoration as the sanctuary areas in other regions in Anne Arundel County. As shown in Graph 1, the average salinity and dissolved oxygen levels at Horseshoe Point (which is about 6.5 miles north of Herring Bay) are higher than the levels reported by DNR’s “Eyes on the Bay” program for the Magothy, Severn, and South Rivers.

### **DNR has underinvested in Herring Bay relative to other Anne Arundel Sanctuaries**

- In its 2022 summary of its support for restoration of the Anne Arundel Complex, DNR reported that the department planted 62.4 million spat-on-shell in the Severn River sanctuary in 2022.<sup>5</sup>
- Although the final numbers may have changed, the Oyster Recovery Partnership’s “Request for bids” for Transport and Planting activities funded by DNR for 2023 estimated planting:<sup>6</sup>
  - 7,200 bushels of spat-on-shell in the South River
  - 2,400 bushels in the Severn River
  - 2,400 bushels in the Magothy River
  - 1,200 bushels in Herring Bay.

<sup>2</sup> See Christopher Judy, [Oyster Habitat & Population Enhancement in Maryland](#), November 3, 2022.

<sup>3</sup> This total includes the 3.5 acres that DNR planted in 2023 but excludes a few acres within the “Lower Area” that are outside of the perimeter examined by ORP/CBF.

<sup>4</sup> See report [AHB oyster restoration monitoring report](#), January 13, 2023.

<sup>5</sup> See [DNR 2022 report on Anne Arundel Complex Restoration](#).

<sup>6</sup> See [ORP March 20, 2023 bid request for sanctuary plantings](#).

**Priority areas for investing the Evergreen mitigation funds**

Taken together, the recent AHB and ORP surveys identified roughly 70 acres on Yates bars in the Herring Bay Oyster Sanctuary that may be suitable for future oyster restoration efforts. The department may want to consider the following information when setting priorities for use of the mitigation funding:

[REDACTED]

- The 27-acre site located across from Old Colony Cove farm had significant levels of mud (12 inches or more in some places), suggesting that it is not a good candidate for planting spat-on-shell (see Map 8). The depth of the probes at this site averaged 14.1 feet.

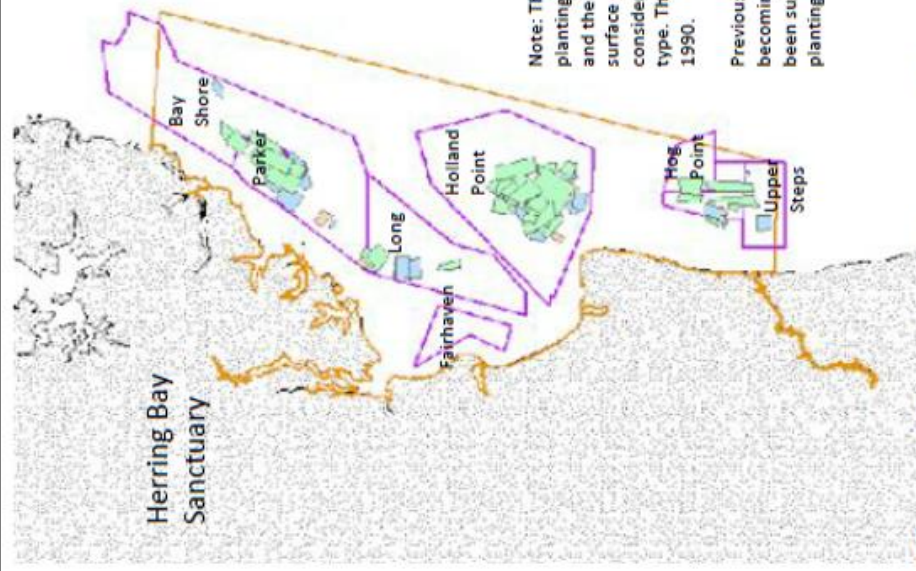
Given its extensive acreage of hard bottom, favorable water quality, and track record of success, the Herring Bay Oyster Sanctuary is a prime candidate for investments of the Evergreen mitigation money.

[REDACTED]

Thank you for considering our recommendations. If you have any questions or need additional information, please do not hesitate to contact Kathy Gramp, Birgit Sharp, and Mike Zuralow at [herringbay@gmail.com](mailto:herringbay@gmail.com).

# Map 1

## DNR's Past Plantings in the Herring Bay Oyster Sanctuary



Note: The majority of these shell plantings are greater than 10 years old and the amount of shell remaining on the surface of the bay bottom can vary considerably by location and bottom type. The last shell planting occurred in 1990.

Previous seed plantings prior to the area becoming a sanctuary may be already subjected to harvest. The last seed planting occurred in 2000.

Planting Year	Planting Type	Site Name	Harvesting Year	Planting Type	Site Name
1961	WILD SEED PLANTING	HOLLAND POINT	1975	SHEDGED SHELL ADDITION	HOLLAND POINT
1962	WILD SEED PLANTING	BAY SHORE	1975	SHEDGED SHELL ADDITION	UPPER STEPS ADD 1
1963	SHEDGED SHELL ADDITION	UPPER STEPS ADD 1	1975	WILD SEED PLANTING	HOLLAND POINT
1964	WILD SEED PLANTING	HOLLAND POINT	1976	SHEDGED SHELL ADDITION	BAY SHORE
1964	WILD SEED PLANTING	LONG	1976	SHEDGED SHELL ADDITION	HOLLAND POINT
1965	WILD SEED PLANTING	HOLLAND POINT	1976	WILD SEED PLANTING	HOLLAND POINT
1965	WILD SEED PLANTING	HOLLAND POINT	1977	FRESH SHELL ADDITION	BAY SHORE
1966	WILD SEED PLANTING	BAY SHORE	1977	FRESH SHELL ADDITION	BAY SHORE
1967	WILD SEED PLANTING	HOG POINT	1977	FRESH SHELL ADDITION	LONG
1967	WILD SEED PLANTING	BAY SHORE	1978	SHEDGED SHELL ADDITION	BAY SHORE
1967	WILD SEED PLANTING	BAY SHORE	1978	SHEDGED SHELL ADDITION	PARKER
1967	WILD SEED PLANTING	HOG POINT ADD 1	1978	WILD SEED PLANTING	HOLLAND POINT
1968	WILD SEED PLANTING	BAY SHORE	1979	FRESH SHELL ADDITION	HOLLAND POINT
1968	WILD SEED PLANTING	HOLLAND POINT	1979	WILD SEED PLANTING	HOLLAND POINT
1969	WILD SEED PLANTING	BAY SHORE	1980	FRESH SHELL ADDITION	HOLLAND POINT
1969	WILD SEED PLANTING	HOLLAND POINT	1981	WILD SEED PLANTING	HOLLAND POINT
1970	SHEDGED SHELL ADDITION	HOLLAND POINT	1981	WILD SEED PLANTING	HOLLAND POINT
1970	WILD SEED PLANTING	BAY SHORE	1982	FRESH SHELL ADDITION	LONG
1970	WILD SEED PLANTING	HOLLAND POINT	1982	WILD SEED PLANTING	HOLLAND POINT
1970	WILD SEED PLANTING	HOLLAND POINT	1982	WILD SEED PLANTING	HOG POINT ADD 1
1971	SHEDGED SHELL ADDITION	LONG	1985	SHEDGED SHELL ADDITION	HOLLAND POINT
1971	SHEDGED SHELL ADDITION	HOG POINT ADD 1	1985	WILD SEED PLANTING	HOLLAND POINT
1971	WILD SEED PLANTING	HOLLAND POINT	1986	WILD SEED PLANTING	HOG POINT ADD 1
1971	WILD SEED PLANTING	HOLLAND POINT	1986	WILD SEED PLANTING	HOLLAND POINT
1972	WILD SEED PLANTING	HOLLAND POINT	1988	SHEDGED SHELL ADDITION	BAY SHORE
1972	SHEDGED SHELL ADDITION	BAY SHORE	1988	WILD SEED PLANTING	HOLLAND POINT
1972	SHEDGED SHELL ADDITION	LONG	1989	SHEDGED SHELL ADDITION	BAY SHORE
1972	WILD SEED PLANTING	HOLLAND POINT	1989	WILD SEED PLANTING	HOLLAND POINT
1972	WILD SEED PLANTING	PARKER	1990	SHEDGED SHELL ADDITION	HOG POINT ADD 1
1973	SHEDGED SHELL ADDITION	HOLLAND POINT	1990	SHEDGED SHELL ADDITION	HOLLAND POINT
1973	WILD SEED PLANTING	BAY SHORE	1990	WILD SEED PLANTING	HOLLAND POINT
1973	WILD SEED PLANTING	HOLLAND POINT	1991	WILD SEED PLANTING	HOLLAND POINT
1974	SHEDGED SHELL ADDITION	BAY SHORE	1992	WILD SEED PLANTING	HOLLAND POINT
1974	SHEDGED SHELL ADDITION	HOLLAND POINT	1999	WILD SEED PLANTING	HOLLAND POINT
1975	SHEDGED SHELL ADDITION	BAY SHORE	1000	HATCHERY SEED PLANTING	BAY SHORE

- Sanctuary
- Oyster Bar
- Dredged Shell
- Fresh Shell
- Hatchery Spat-on-Shell
- Wild Seed

Source: Maryland DNR

# Map 2

## Findings of “Groundtruthing” by Oyster Recovery Partnership in 2021 Areas Reviewed on the Holland Point Yates Bar

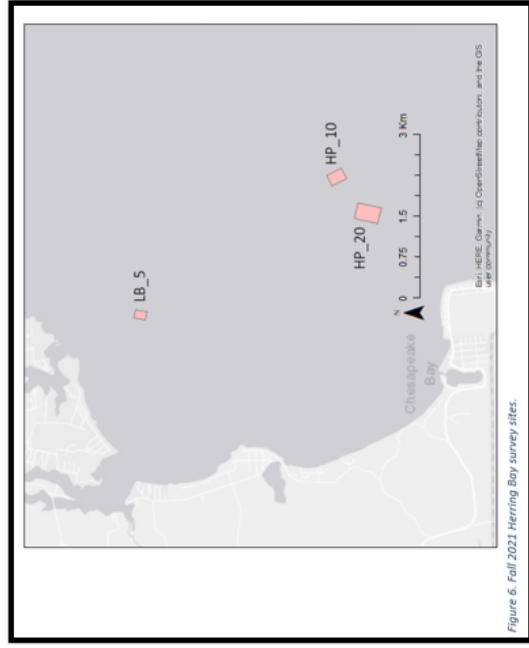


Figure 6. Fall 2021 Herring Bay survey sites.

Location of sites within the Herring Bay Sanctuary

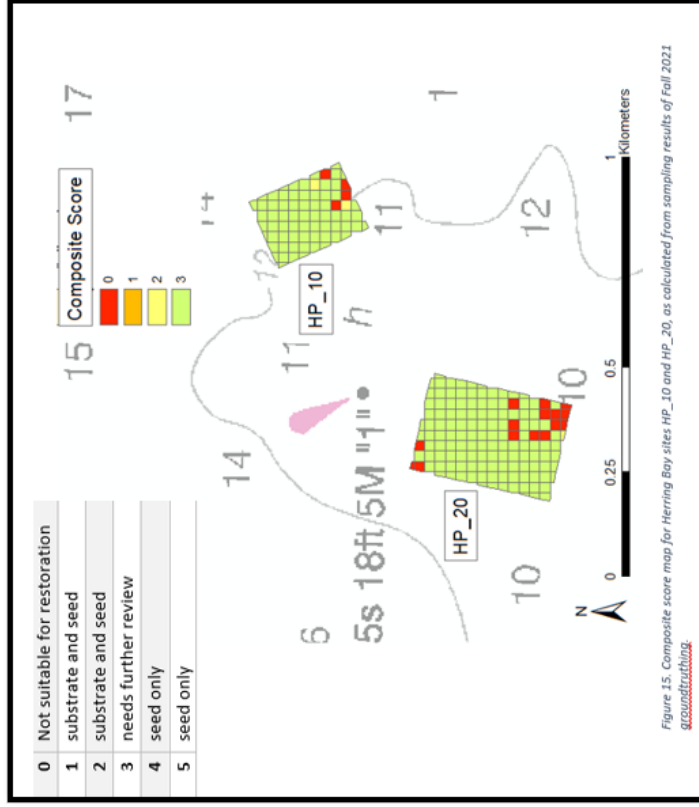


Figure 15. Composite score map for Herring Bay sites HP\_10 and HP\_20, as calculated from sampling results of Fall 2021 groundtruthing.

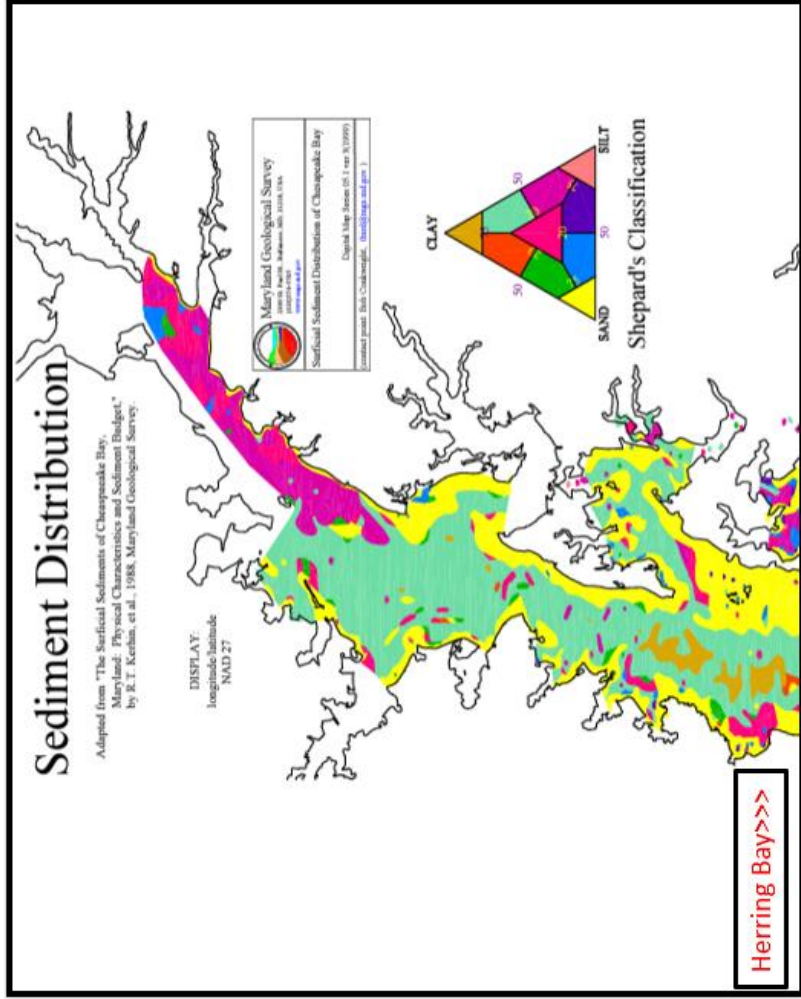
Source: Oyster Recovery Partnership, *Patent Tong Survey to Groundtruth Potential Restorable Oyster Habitat for Restoration Planning in the South River and Herring Bay*, February 2022, pages 4, 10, and 21.

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Map 3 has been redacted because it includes confidential information

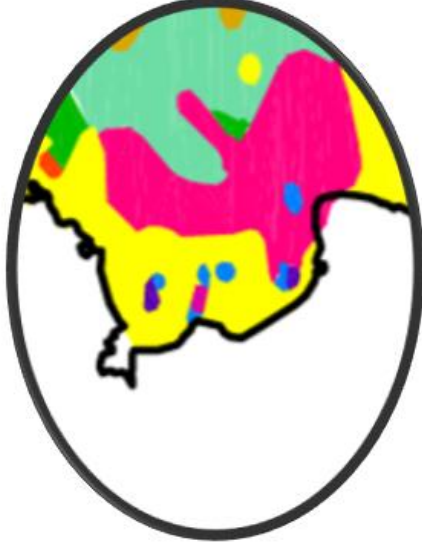


# Map 4 Sediment Characteristics of Herring Bay

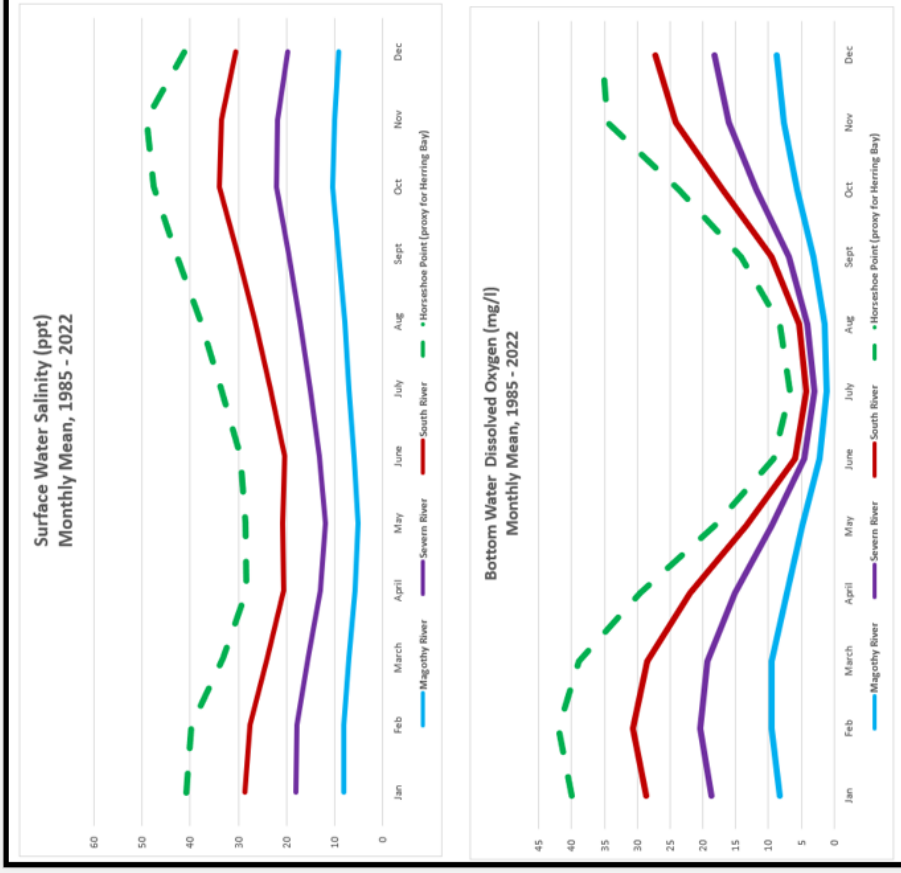


Source: Maryland Geological Survey

Herring Bay



# Graph 1 Trends in Salinity and Dissolved Oxygen in waters near oyster sanctuaries in Anne Arundel County



Source: Advocates for Herring Bay, using data from DNR's "Eyes on the Bay" Fixed Station Monthly Monitoring, extracted July 6, 2023



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Exhibit 1 and maps 5 through 8 have been redacted because they include confidential information