

Oak Bluffs Harbor

2020

M.V.C. SAMPLING SUMMARY

Nature of the Harbor

Oak Bluffs Harbor is a simple estuary system that lies entirely within the Town of Oak Bluffs. The watershed for the harbor is also entirely within Oak Bluffs. The harbor is permanently tidal and is open to the Vineyard/Nantucket Sound via a single, large, constructed inlet. This body of water is a harbor and accommodates many moorings and large boats, especially during the summer months. The harbor is connected to a smaller embayment known as Sunset Lake via a culvert under Lake Avenue.

Summary for 2020

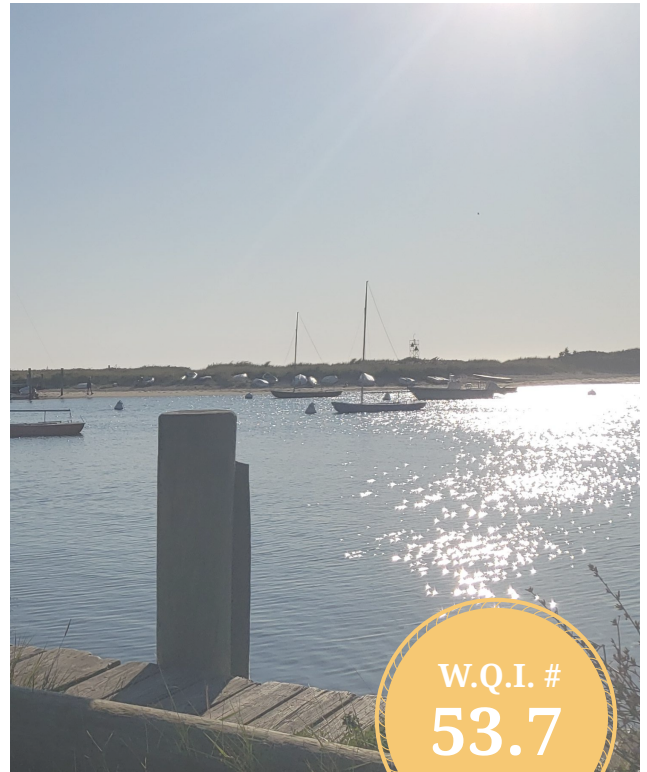
Water quality in Oak Bluffs Harbor at sites MV-15 (by the emergency dock) and MV-16 (by the harbormaster station) have been found to have such consistent water quality trends over years of monitoring that they were removed from a yearly monitoring schedule and will be sampled bi-annually. The station in Sunset Lake is the Sentinel Station, meaning it best represents the pond, and it is the most impaired station. The small culvert that connects the harbor to Sunset Lake limits the flushing, allowing nutrients from surrounding land runoff to build up in the pond and result in excessive algal growth.

Why Sampling is Important

Field measurements and water samples are collected during the summer months to determine the pond's water quality. MVC staff collects water samples and water quality indicators including: temperature, oxygen levels, salinity, conductivity, pH, time, depth, and weather conditions at the time of our sampling. Water samples are also tested for several nutrients that in excess can be detrimental to the quality of the water and the systems it supports. Our sampling protocol is consistent with the Massachusetts Estuaries Project (MEP) and the Mass DEP TMDL recommendations, which developed the nitrogen threshold. Water samples are sent for analysis to the University of Massachusetts at Dartmouth, School of Marine Science and Technology.



Please forward questions to:
Sheri Caseau, Water Resource Planner
Martha's Vineyard Commission (508) 693-3453



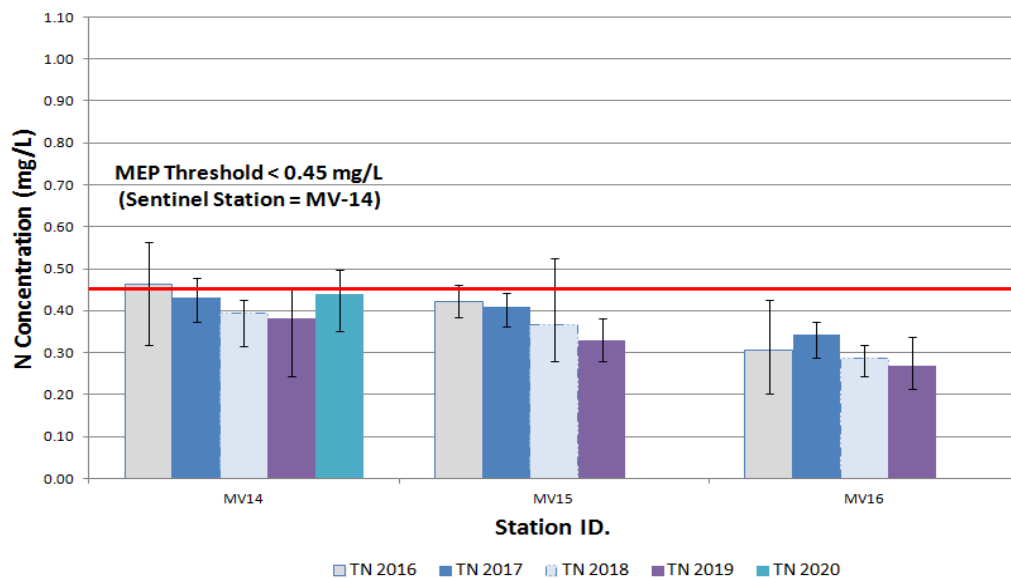
Water Quality Index

The water quality index score is a tool used to assess the well-being of a pond. It is composed of several parameters on the pond including water clarity, Oxygen levels, and nutrient levels. The score can range from 0 (low) to 100 (high) and is developed from data collected as part of a rigorous sampling schedule.

Oak Bluffs harbor, specifically in Sunset lake has moderate water quality with high nutrients and pigment levels found throughout the sampling season.



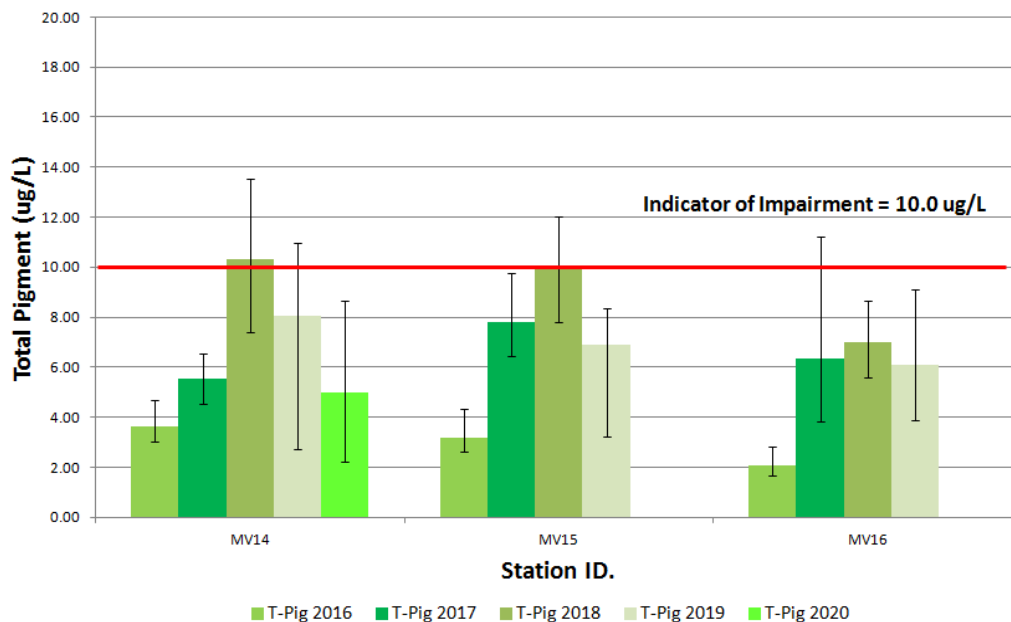
Oak Bluffs Harbor: Total N Gradient (2016, 2017, 2018, 2019, 2020)



Total Nitrogen

Nitrogen is a limiting nutrient and is necessary for plant, and algae growth but in excess can be harmful. In order to restore and protect this estuarine system the nitrogen concentrations in the water must remain below the recommended threshold. The harbor and the adjacent Sunset Lake are currently at or below their total nitrogen target concentration of 0.45 mg/L.

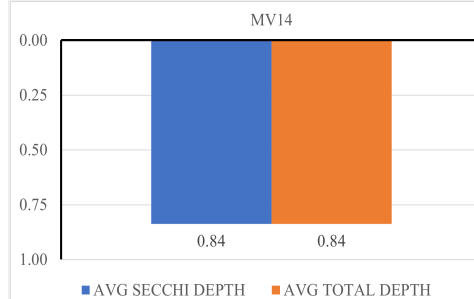
Oak Bluffs Harbor: Total Pigment Gradient (2016, 2017, 2018, 2019, 2020)



Total Pigment

Total Pigment indicates the level of microscopic plant life in the water, which can be influenced by nitrogen levels. In combination with other parameters pigment can indicate algal blooms or eutrophication within a system. In the harbor pigment levels have fallen this year compared to previous years but macro-algae was seen in moderate quantities in Sunset Lake (MV-14) indicating higher nutrient and pigment levels.

Water Clarity

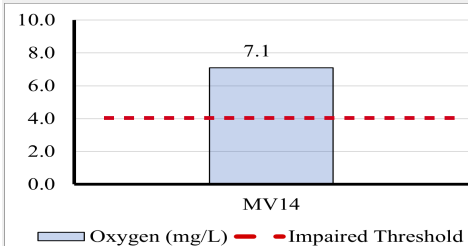


Water Clarity at MV-14 was high with maximum light penetration for the majority of the season. No notable changes were observed when compared to previous years. The shallowness of the site does contribute to the clarity.

2020 Sampling Dates

- July 6th
- August 12th
- July 27th
- September 8th

Dissolved Oxygen



Dissolved Oxygen (DO) concentrations at MV14 are reasonable and remain above 6 mg/L indicating good water quality and able to support a healthy benthic community in the pond. No significant changes were observed compared to previous years of data.

Disclaimer: Dissolved Oxygen (DO) concentrations shown here are a snapshot of conditions when the sample was taken. DO levels can widely fluctuate throughout the day and night due to photosynthesis and respiration of plants.