

# Oak Bluffs Harbor

## 2019

### 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 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 2019

Water quality in the Oak Bluffs Harbor and Sunset Lake appears to be in good condition. Total nitrogen concentrations are near or below the threshold. Dissolved oxygen was above the stress threshold at all stations, and indicates good habitat for benthic communities in this estuarine system. Nitrogen, water clarity, and total pigment also indicate good water quality and good tidal flushing up to Sunset Lake. Given its small size and tidal exchange the main basin supports relatively high water quality, while the enclosed tributary basin of Sunset Lake (MV-14) and MV-15 (marina area) which do not flush as well, may be impacted by nutrient related impairment. The shallow depth of Sunset Lake and rising temperatures in recent years have caused some algae issues.

#### 2019 Sampling Dates

July 22  
August 5  
August 22  
September 17

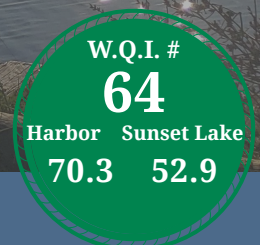


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#### Fun Fact

This year, a new Osprey couple moved into the nesting pole overlooking the harbor, what a view!

Oak Bluffs Harbor's water quality is trending toward improvement. Nutrient levels are near or below their threshold.



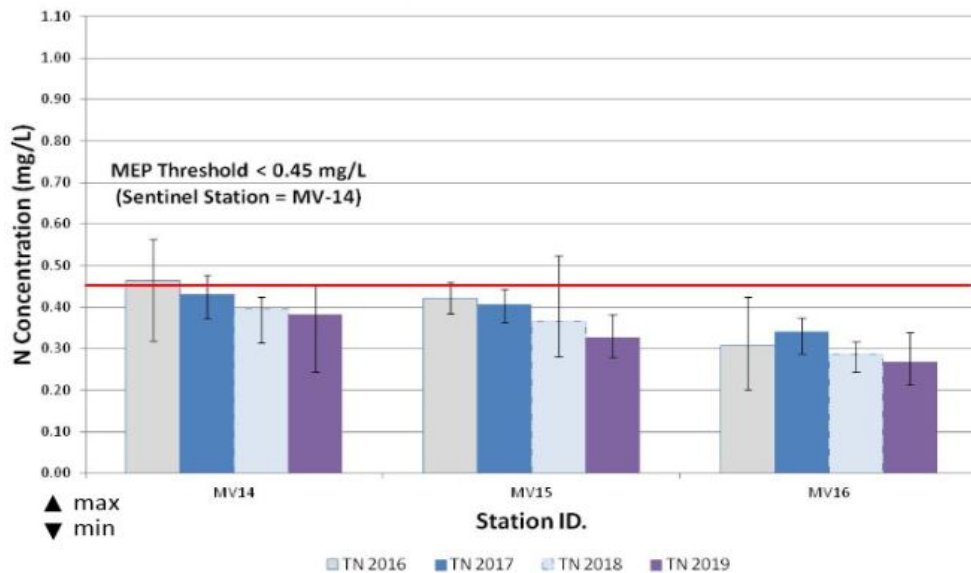
#### Water Quality Index

The water quality index score can range from 0 to 100 (low to high), and is based on parameters that are consistently monitored in this harbor. Oak Bluffs Harbor has moderate to high water quality. Regardless of the final index, it is important to consider each station individually and continue to monitor the harbor as all sites are at or below their threshold level and need to stay there. We use water quality to establish trends and make management decisions.

#### Why Sampling is Important

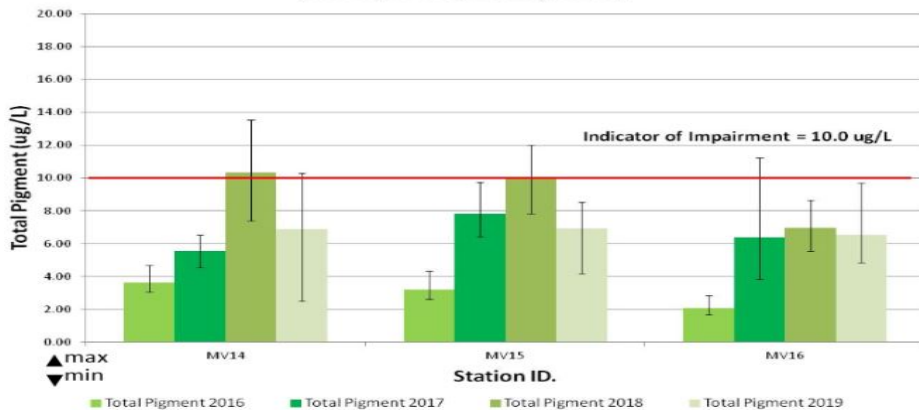
Field measurements and water samples are collected during the summer months in order to determine water quality of the pond. MVC staff collects water samples as well as a number of indicators of pond health including temperature, oxygen levels, salinity, conductivity, pH, and the time, depth and weather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

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



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 Pond are currently at or below their total nitrogen target concentration of 0.45 mg/L.

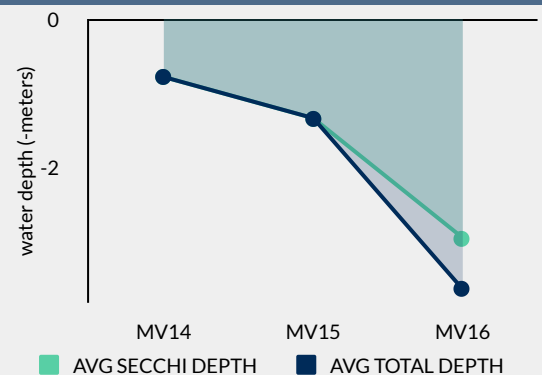
## Oak Bluffs Harbor: Total Pigment Gradient (2016, 2017, 2018, 2019)



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.

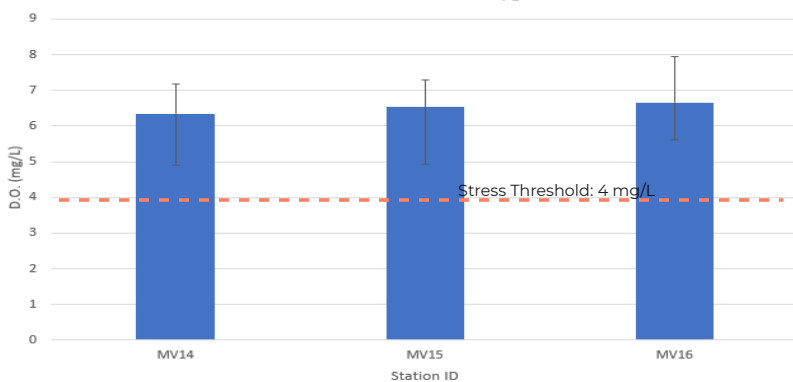


## Water Clarity



Water clarity in Oak Bluffs Harbor indicates good tidal flushing except at station MV-14 in Sunset Lake. Flushing here is limited by a culvert, and this is expected. The water clarity is excellent at all stations, including the deepest point at MV-16.

## Oak Bluffs Harbor Dissolved Oxygen 2019



## Dissolved Oxygen

Dissolved Oxygen (DO) in the Harbor and neighboring pond are good and remain above the stress threshold of 4 mg/L at all monitoring stations. Levels above 6 mg/L indicate excellent water quality and a thriving benthic community in the pond. DO concentrations shown here are a snapshot of conditions at the time the sample was taken. DO levels can widely fluctuate with photosynthesis and respiration of plants throughout the day and night.