Lagoon Pond 2019

M.V.C. SAMPLING SUMMARY

Nature of the Pond

Lagoon Pond is a saltwater estuary with some groundwater influence. It is located between the towns of Tisbury and Oak Bluffs. The tide flows to Lagoon Pond via a channel connecting it to the Vineyard Haven Harbor. The major watershed area includes concentrated development. This proximity of developed land to the pond results in high nitrogen inputs. Lagoon Pond is used for recreational swimming, boating, and fin fishing and shellfishing. Mud Creek, located off the West Arm, is a poorly flushed area of concern that contributes a high nutrient load to the Lagoon.

Summary for 2019

Water quality in Lagoon Pond main basin is good; however, areas furthest from the channel were observed to have high nitrogen, high pigment and low dissolved oxygen. LGP-6 and LGP-4 have some freshwater influence from an adjacent herring pond at the south west end of the pond and poor flushing to these stations may be to blame for the decreased water clarity seen there. LGP-2 located centrally in the pond, and LGP-11, located in Mud Creek, are particularly impaired. Many restoration project efforts including seeding of shellfish, innovative wastewater systems and experiments with eelgrass restoration are being implemented to reduce nutrients.

2019 Sampling Dates

June 28
July 5
July 9
August 1
August 6
August 21

Fun Fact

This summer , a large population of several species of harmful and invasive species were removed from the pond!

MARTHA'S VINEYARD COMMISSION

Please forward questions to:
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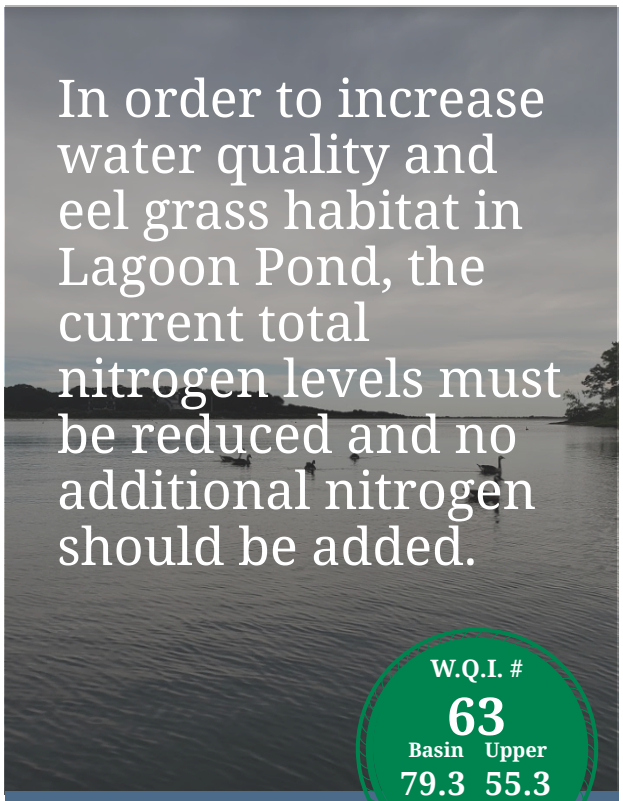


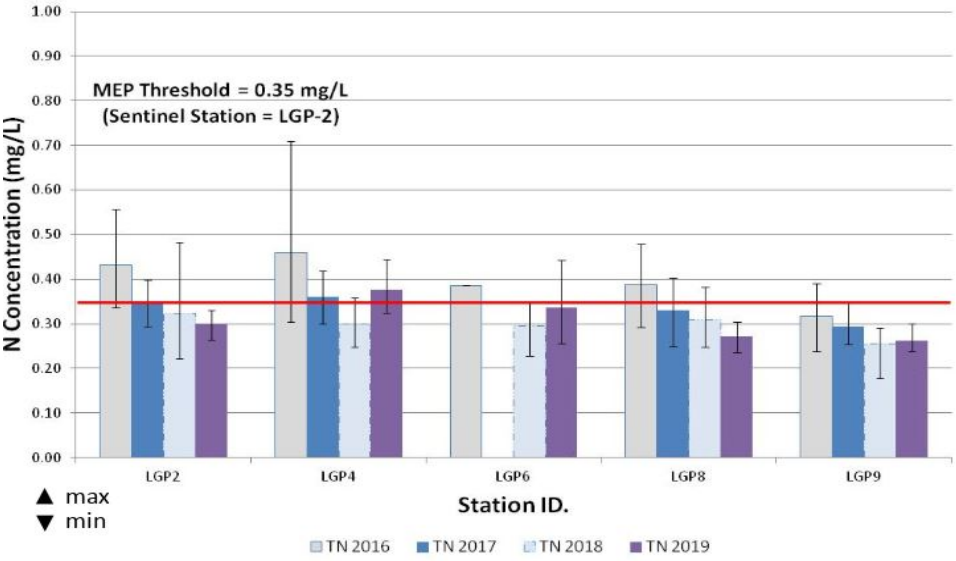
Water Quality Index

The water quality index score can range from 0 to 100 (low to high), and is based on parameters that are consistently monitored on this pond. Lagoon Pond has moderate water quality with greater impairment at more restricted sites. Total Nitrogen levels were very high in the last two years, particularly at LGP-2 and LGP-11.
Consistent monitoring will continue to establish trends and identify sources of excess nutrients.

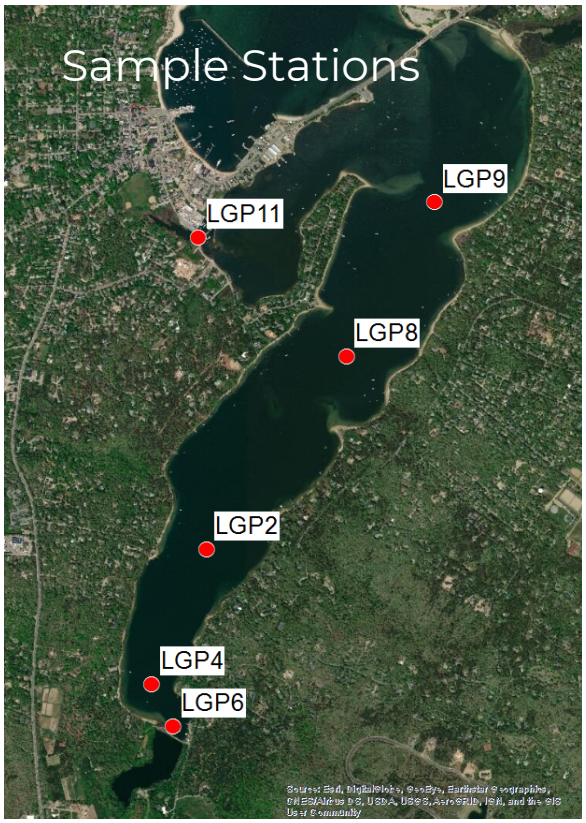
Why Sampling is Important

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.

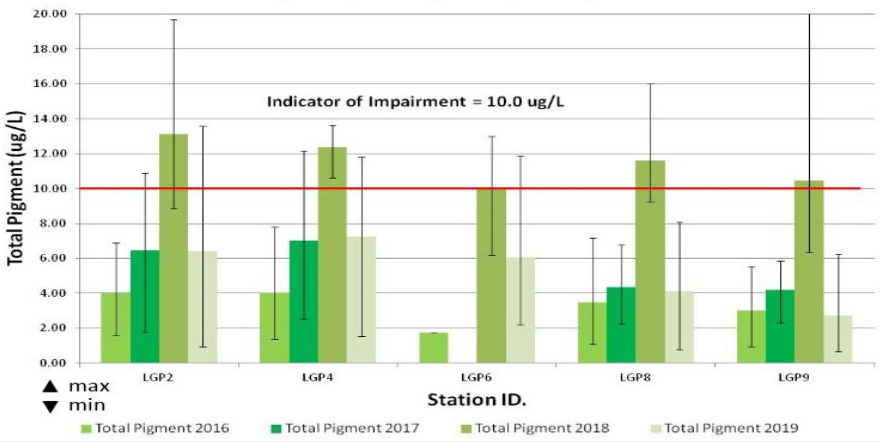
Lagoon Pond: Total N Gradient (2016, 2017, 2018, 2019)



Nitrogen is a limiting nutrient and is necessary for plant, phytoplankton, and algae growth but in excess can be harmful. Nitrogen concentrations are at or above the recommended threshold of 0.35 mg/L. Continued efforts need to be made to reduce nutrient inputs. Though highly impaired, LGP-11 was not included because it had a level of impairment that was off the charts.

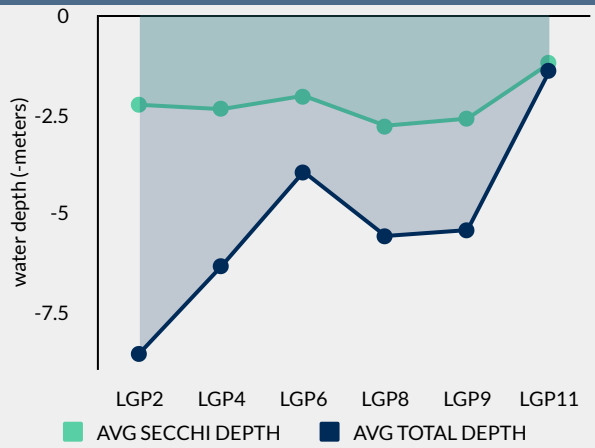


Lagoon Pond: Total Pigment Gradient (2016, 2017, 2018,2019)



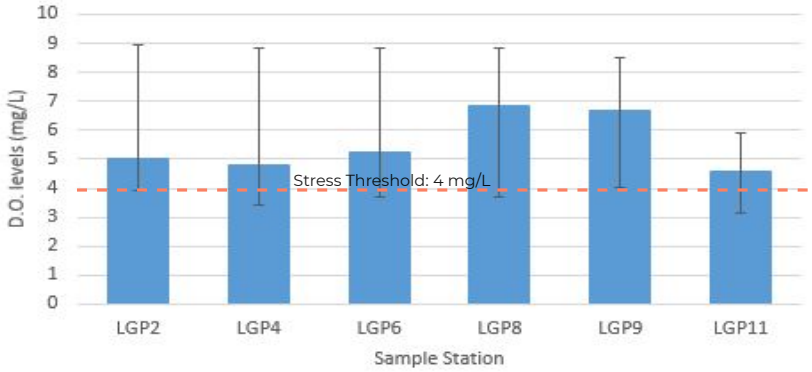
Total pigment indicates the level of microscopic plant life in the water, which can be influenced by nitrogen levels. The pigment concentrations are high at LGP-2 and LGP-4, which may indicate eutrophication when combined with the low dissolved oxygen and high total nitrogen also recorded at these sites.

Water Clarity



Water clarity in Lagoon Pond indicates decent flushing up to station LGP-8. Sampling station LGP-2 is the deepest point of the pond which contributes to the low water clarity there.

Dissolved Oxygen 2019 (mg/L)



Dissolved Oxygen

Dissolved Oxygen (DO) has decreased as a general trend, but averages remain above the stress threshold. Stations LGP-2, LGP-4, and LGP-6 have minimum DO levels below the threshold of 4 mg/L, and should be carefully monitored. DO concentrations shown here are a snapshot of conditions at the time the sample was taken. DO levels can widely fluctuate throughout the day and night. LGP-2, the sentinel station, is the deepest point in the pond which may contribute to the low minimum DO concentrations recorded there.

Research was made possible via grants from District Local Technical Assistance Program and by contributions from Tisbury Waterways Incorporated and the Lagoon Pond Association. The Martha's Vineyard Commission is a regulatory agency tasked with monitoring the environmental health of all towns on Martha's Vineyard. We'd like to extend a special thanks to Danielle Ewart, Chuck Fisher and Tisbury and Oak Bluffs shellfish staff for all of their help and knowledge. For more information on water quality on The Vineyard please visit http://www.mvcommission.org/.