Friends of the Bay
PROTECTING OYSTER BAY & COLD SPRING HARBOR

2020/2021 Annual Water Quality Report

Water Quality Monitoring Program

FUSS & O'NEILL

Prepared in 2022 for
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This *2020/2021 Annual Water Quality Report* was produced in 2022. It presents and describes data and observations that were recorded by the Friends of the Bay Water Quality Monitoring Program during the 2020 and 2021 monitoring seasons as well as information regarding other activities and accomplishments since 2018.

Who We Are

Friends of the Bay (FOB)–a widely respected, not-for-profit organization with thousands of supporters –is dedicated to the protection of the Oyster Bay/Cold Spring Harbor Estuary and the surrounding watershed. FOB's advocacy efforts enable the estuary to continue as an unsurpassed scenic, ecological and economically-productive resource.

Our Mission

FOB's mission is to protect, preserve and restore the ecological integrity and productivity of the Oyster Bay/Cold Spring Harbor Estuary and the surrounding watershed.

What We Do

- Help to maintain clean waters that sustain a vital ecosystem, a wide range of recreation and a shellfishing aquaculture business.
- Monitor water quality within the estuary.
- Create awareness of the need to preserve water quality and marine life.
- Confront unsound development proposals.
- Promote responsible development and land use planning.
- Partner with residents, organizations, and local businesses.
- Work with government at all levels.

Major Initiatives and Accomplishments

2021

In 2021 Friends of the Bay received a $6,000 grant from the Long Island Sound Stewardship Fund at the Long Island Community Foundation to install two raingardens at the Western Waterfront, which was done in October with the help of volunteers.

Friends of the Bay also received an $86,815 grant for the Long Island Sound Futures Fund (LISFF) project titled, "Expanding Oyster Spawner Sanctuaries in Oyster Bay and Cold Spring Harbor (NY)." The project will support efforts to establish oyster spawner sanctuaries, where oysters are permitted to reproduce and supplement existing oyster populations. The project will also quantify the success of oyster transplantation, areas where juvenile oysters ("spat") settle and develop a hydrological model for the area that identifies additional, potential sanctuaries. Partners on this project are Adelphi University and Cornell Cooperative Extension of Suffolk County.

In addition, Friends of the Bay is supporting partners for two other LISFF projects. Cornell Cooperative Extension's "Utilizing Seabin Floating Litter Trap Technology to Remediate Plastic Pollution in the Long Island Sound and Provide an Educational Platform for Plastic Pollution Reduction Education" and also Citizens Campaign for the Environment's "Mentoring Youth to Protect Long Island Sound."

We continued our monthly beach cleanup program begun in 2019, including Biannual Harbor and Beach Cleanups with the Town of Oyster Bay, International Coastal Cleanup Day with the Theodore Roosevelt Sanctuary/Audubon and Oyster Bay Main Street Association.

We also continued the Speaker Series and Team Terrapin, held more kayak cruises, participated in Long Island Clean-Water Vendor Day and supported The Nature Conservancy and Pew Charitable Trust's Supporting Oyster Aquaculture Restoration (SOAR) program.

2020

In 2020 Friends of the Bay updated its Quality Assurance Project Plan, originally created and approved by the Environmental Protection Agency in 2006.

We partnered with the Oyster Bay/Cold Spring Harbor Protection Committee, Harkin Aerial and Walden Environmental Engineering, on a $10,000 grant by the Nassau County Soil and Water Conservation District to use drones and thermal imaging to locate sources of illicit discharge into the watershed.

During the summer of 2020 Friends of the Bay established Team Terrapin, a joint program with the Town of Oyster Bay, to protect diamondback terrapins. Also organized two Kayak Conservation Cruises with The WaterFront Center.

Divers from across Long Island helped the Oyster Bay/Cold Spring Harbor Protection Committee and Friends of the Bay conduct an informal survey of oysters in Cold Spring Harbor.

2019

In 2019 Friends of the Bay began a monthly beach cleanup program involving community volunteers. Friends of the Bay worked with the Oyster Bay/Cold Spring Harbor Protection Committee and the town to establish three bay management areas in the estuary, which was approved by the town board on July 30. We also signed on to a letter with other advocacy groups to the governor requesting that the FY2019 budget include funds for additional certified shellfish laboratories on Long Island.

In September of 2019 Friends of the Bay partnered with The WaterFront Center and New York Sea Grant for Estuary Day co-hosted by the Long Island Sound Study (LISS), South Shore Estuary Reserve (SSER), and Peconic Estuary Program (PEP). The theme of the event was marine debris. Also participated in the Oyster Festival and managed the Waterfront Experience section for it, which included around a dozen other environmental groups.

One of the highlights of 2019 was Friends of the Bay's Float Our Boat fundraiser which helped build the coffers to buy a used 25-foot Parker cuddy cabin boat usable in rougher conditions.

Prior to 2019

Fourteen municipalities within the watershed joined together beginning in January 2010 in order to help protect and enhance the water quality of Oyster Bay and Cold Spring Harbor and their tributaries in the most cost-efficient and effective manner. In August 2012, these fourteen municipalities signed an

Intermunicipal Agreement that officially formed the Oyster Bay/Cold Spring Harbor Protection Committee (OB/CSH PC). Friends of the Bay is a non-voting member of the Protection Committee. OB/CSH PC seeks to be a model of suburban watershed protection for the nation and improve the health of Long Island Sound so that it meets all water quality standards necessary to support swimming, shellfishing, and other recreational, natural, and commercial uses. In June 2011, Friends of the Bay completed a Watershed Action Plan for the Oyster Bay/Cold Spring Harbor Estuary and surrounding watershed. The Watershed Action Plan is a comprehensive management plan to protect and restore water resource conditions throughout the Oyster Bay/Cold Spring Harbor Watershed. The plan recommends continuation of the ongoing monitoring programs to monitor changes in the harbor conditions as a result of changing watershed conditions and implementation of plan recommendations. Additional data collection is also recommended to refine the current understanding of water quality impairments in the estuary complex, particularly pollutants for which previous monitoring results have demonstrated the potential for water quality impairment but which are not currently identified by NYSDEC as a listed cause of impairment (e.g., sediment, nutrients, dissolved oxygen.)

A State of the Watershed Report was completed in October of 2009. This report summarizes existing environmental and land use conditions in the watershed. It is a comprehensive document that integrates many environmental indicators to assess the current health of the watershed and potential future threats. The report provides a baseline assessment of watershed conditions, which can be updated periodically to evaluate changes in the watershed and help direct watershed management planning.

In April of 2009 Friends of the Bay was awarded the Region 2 Environmental Quality Award by the Environmental Protection Agency for its water quality monitoring program. This award recognizes individuals and organizations that have significantly contributed to improving environmental quality during the prior year; have demonstrated a high level of achievement; and have created unique or location-specific benefits, produced results that are sustainable or reproducible, or increased public involvement in environmental action.

In 1997, we became one of the few East Coast groups ever to receive the prestigious Walter B. Jones Memorial and NOAA (National Oceanic and Atmospheric Administration) Excellence Award in Coastal and Ocean Resource Management presented to the "Non-Governmental Organization of the Year." In 1999, the New York Chapter of the American Planning Association honored FOB with an Award for Meritorious Achievement. Friends of the Bay was selected in the "Best Environmental Organizations" category of the *Long Island Press'* Best of Long Island 2013 issue. (This was the sixth year the readers of the *Long Island Press* selected us as their choice in this category.)

More importantly, our cooperative planning efforts are models for local governments and other environmental groups around Long Island Sound that seek to prepare watershed management plans to protect their embayments and reap the benefits of a cleaner Sound.

Our History

FOB was formed in 1987 by a group of engaged citizens concerned with the proposed development of the Jakobsen Shipyard site on Oyster Bay's western waterfront. Friends of the Bay successfully led a broad-based community effort to replace high-impact commercial development with an environmentally

friendly, publicly accessible recreational complex accommodating passive use, community sailing, rowing, fishing, boat launching, maritime preservation and marine education.

Since our founding, we have grown into a powerful voice representing approximately 3,000 members. *The New York Times* has identified Friends of the Bay as one of the most effective environmental organizations around Long Island Sound. Today, FOB continues to monitor water quality in the estuary, while actively advocating for policies and programs to maintain and improve water quality and habitat throughout the watershed. Consistent with the priorities established in the Watershed Action Plan, FOB has been integral to the founding and function of the Oyster Bay/Cold Spring Harbor Watershed Protection Committee, formed by inter-municipal agreement among 14 of the 18 local government entities having jurisdiction over portions of the watershed.

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Acknowledgements

Friends of the Bay thanks the individuals and organizations that make our Water Quality Monitoring Program possible.

Bridge Marina continuously provides support to Friends of the Bay through repairs, parts, service, and advice for our vessel.

Nassau County Department of Health donates laboratory testing services for bacteria samples collected by FOB.

Oyster Bay/Cold Spring Harbor Protection Committee helps fund the program through an annual donation.

Oyster Bay Marine Center donates fuel for the sampling boat each year.

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Executive Summary

Background

Friends of the Bay's Water Quality Monitoring Program is an important component of our efforts to protect the Oyster Bay/Cold Spring Harbor Estuary and the surrounding watershed while serving to increase public awareness of local threats to water quality. This program was developed in cooperation with the United States Fish and Wildlife Service, United States Environmental Protection Agency, New York State Department of Environmental Conservation, local governments, and other volunteer monitoring groups around Long Island Sound.

Friends of the Bay (FOB) conducts water quality monitoring in accordance with a Quality Assurance Project Plan (QAPP) approved by the Environmental Protection Agency (EPA). The QAPP establishes standard operating procedures and quality assurance for data collection, ensuring that data we provide is acceptable to EPA, other environmental agencies and academic researchers. The QAPP was developed in 2006 and has undergone seven revisions since its approval.

FOB has been conducting routine water quality monitoring since 2000. The monitoring results are documented in annual or biennial (once every two years) water quality monitoring reports. This report describes the combined results of water quality monitoring conducted in 2020 and 2021.

2020 and 2021 Monitoring Events

During 2020 and 2021, FOB continued data collection in support of the long-term open water body monitoring program. Once a week since 2000, from spring through fall, FOB has collected water quality data in Mill Neck Creek, Oyster Bay Harbor, and Cold Spring Harbor.

In 2020, samples were collected during 16 monitoring events between July 13 and October 27 (13 Mondays, 2 Tuesdays, 1 Wednesday). Twelve (12) sampling events between April and mid-July, 2020 were not conducted due to the emergence of the COVID pandemic. Over the sampling period between July and October 2020, there were 25 site/date combinations for which no data collection occurred at that site on the given sampling date. Samples were analyzed for bacteria (258 samples for fecal coliform and 258 for enterococci) and measurements were recorded for dissolved oxygen, temperature, pH, and salinity (averaging 193 measurements per variable), as well as water clarity (241 measurements).

In 2021, samples were collected during 27 monitoring events (20 Mondays, 7 Tuesdays). One (1) planned monitoring event (i.e., Week of August 15, 2021) was cancelled due to boat problems. Samples were analyzed for bacteria (425 samples for fecal coliform and 424 for enterococci) and measurements were recorded for dissolved oxygen, temperature, pH, and salinity (averaging 396 measurements per variable), as well as water clarity (448 measurements).

FOB monitored 19 open water body locations within Cold Spring Harbor (FB-1 through FB-4), Oyster Bay Harbor (FB-5 through FB-12), and Mill Neck Creek (FB-13 through FB-19). Each site was monitored in the morning once per week, weather and tide permitting, for dissolved oxygen, bacteria pollution, salinity, temperature, pH, and clarity. Nitrogen samples were not collected during the 2020 and 2021 monitoring seasons due to a lack of funding.

Note that, in July 2010, FOB added three monitoring locations in Laurel Hollow (LH-1, LH-2, and LH-3) to the open water body monitoring program at the request of the Village of Laurel Hollow and Nassau County Department of Health (NCDH). No samples were collected from these Laurel Hollow locations in 2020 or 2021.

Open Water Body Monitoring Results

Two major water quality parameters were monitored in 2020 and 2021: bacteria and dissolved oxygen. Analysis of this open water body monitoring data provides useful insights into the estuary's water quality.

Bacteria

The majority of shellfishing occurs in the estuary occurs in Oyster Bay Harbor. On a seasonal average basis across sites (FB-5 through FB-12), Oyster Bay Harbor met state shellfish standards for fecal coliform during the 2020 and 2021 monitoring seasons. Similar to 2017 and 2018 data, the 2020 and 2021 seasonal geometric mean (also called "geomean" in this report) fecal coliform concentrations in Oyster Bay Harbor were among the lowest recorded since the monitoring program began. The fecal coliform seasonal geomean averaged for all sites in Oyster Bay Harbor has generally been decreasing since 2000.

Analysis of the seasonal geomean for individual sites in Oyster Bay Harbor indicated fecal coliform remained below state shellfish standards during the 2020 and 2021 monitoring seasons at each site, except for FB-10 in 2020. The FB-10 seasonal geomean for fecal coliform (24 MPN/100 mL) exceeded the state shellfish standard (14 MPN/100 mL) by 71%.

The 30-day geometric mean fecal coliform levels exceeded the shellfish standard for some portion of the season at two out of eight Oyster Bay Harbor sites (2020) and five out of eight Oyster Bay Harbor sites (2021). Exceeding the shellfish standard for a portion of the season has been observed over previous years. Fecal coliform levels exceeded the shellfish standard for one site in 2018, five sites in 2017, six sites in 2016, and three sites in 2015. As mentioned above, sampling for the 2020 represents a shorter monitoring period than usual; only 16 monitoring events between July 13 and October 27, due to the emergence of the COVID pandemic. For enterococci, none of the eight sites at Oyster Bay Harbor exceeded the State swim standard of 35 MPN/100 mL over the 2020 and 2021 monitoring period. This observation is similar to previous years; none of the stations exceeded this standard in 2018, and one exceeded the standard in 2017.

As observed in previous years, fecal indicator bacteria (fecal coliform and enterococci) levels in Cold Spring Harbor and Mill Neck Creek were generally higher than in Oyster Bay Harbor. Similar to 2017 and 2018, only one of the four monitoring stations in Cold Spring Harbor met the fecal coliform shellfish standard for the entirety of the 2020 and 2021 seasons. All the Cold Spring Harbor stations remained below the swim standard for both fecal coliform and enterococci in 2020 and 2021.

Mill Neck Creek consistently has the highest levels of fecal indicator bacteria observed in the estuary complex. All Mill Neck Creek stations exceeded the fecal coliform shellfish standard in 2020 and 2021.

During a portion of the monitoring seasons one of the Mill Neck Creek stations (FB-15) exceeded the enterococci state swim standards in 2020 and two (FB-15 and FB-17) exceeded the standard in 2021. Two of the Mill Neck Creek stations (FB-15, FB-16) exceeded the fecal coliform swim standard in 2020 and one station (FB-17) exceeded it in 2021. The highest levels of fecal indicator bacteria generally occur at FB-15, FB-16, and FB-17, which are locations that are characterized by limited circulation or flushing during low tide or are located near "The Birches" residential subdivision.

The average bacteria concentrations recorded at Mill Neck Creek monitoring locations substantially decreased (approximately 78% and 65% decreases for fecal coliform and enterococci, respectively) from the 2011 to the 2021 sampling seasons. These reductions are an early indicator of the water quality improvements that have resulted from sewage infrastructure upgrades at The Birches. However, seasonal geometric mean fecal coliform and enterococci levels at many of the Mill Neck Creek monitoring stations continue to exceed their respective standards, which suggests other sources of fecal indicator bacteria to Mill Neck Creek. Additional monitoring data is needed to further assess water quality in Mill Neck Creek and the remaining pollutant sources.

Nitrogen

Due to limited funding, nitrogen sampling did not occur in 2020 and 2021.

A $10.6 million advanced wastewater treatment facility serving the Oyster Bay Sewer District has been fully operational since March 2006. As of the 2015-2016 Friends of the Bay Water Quality Report, the facility is achieving the 2014 nitrogen limits imposed by the New York State Department of Environmental Conservation—the upgrade reduced daily nitrogen discharges by as much as 75%.

Dissolved Oxygen (DO)

Hypoxic conditions (DO less 3mg/L) were measured in Cold Spring Harbor primarily between July and September in both 2020 and 2021. Dissolved oxygen was generally observed above 4 mg/L in Oyster Bay Harbor and Mill Neck Creek in 2020 and 2021, with the exception of two measurements in 2020 and one measurement in 2021. Dead fish were observed in the 2020 and 2021 monitoring season, potentially indicating fish kills due to hypoxic or anoxic conditions prior to or during the day of sampling.

In both years, the Cold Spring Harbor stations generally showed the greatest variability and lowest dissolved oxygen values of all stations monitored. In Cold Spring Harbor, dissolved oxygen concentrations at the bottom of the water column fell below the acute standard of 3 mg/L at all four stations in 2020 and at two stations in 2021. There were no stations in Oyster Bay Harbor or Mill Neck Creek that fell below this standard in 2020 and 2021. Dissolved oxygen data continues to indicate that the waters of the estuary are enriched with nutrients. Long-term reductions in nitrogen inputs should reduce the occurrence of extremely low dissolved oxygen conditions in bottom waters.

Stream and Outfall Monitoring

Since 2007, Friends of the Bay has implemented a stream and outfall monitoring program to establish baseline water quality conditions, identify water quality impacts from potential point and non-point pollution sources, develop a water quality database for the watershed to guide environmental decision-

making, and measure the progress toward meeting water quality goals in the estuary watershed. The monitoring program includes sampling of 10 or 11 major discharges (OBS 1-10) into the Oyster Bay/Cold Spring Harbor estuary. These discharges include streams, ponds, a formerly untreated sewage discharge ("The Birches"), and a 'rotating' outfall location that can change for each event in an effort to identify other pollutant sources. Due to circumstances beyond the control of Friends of the Bay, stream and outfall monitoring was not conducted in 2020 or 2021.

Water Quality and Watershed Management

In June 2011, Friends of the Bay completed a Watershed Action Plan for the Oyster Bay/Cold Spring Harbor Estuary and surrounding watershed. The Watershed Action Plan is a comprehensive management plan to protect and restore water resource conditions throughout the Oyster Bay/Cold Spring Harbor Watershed. The plan recommends continuation of the ongoing monitoring programs to monitor changes in harbor conditions as a result of changing watershed conditions and implementation of plan recommendations. Additional data collection is also recommended to refine the current understanding of water quality impairments in the estuary complex, particularly pollutants for which previous monitoring results have demonstrated the potential for water quality impairment but which are not currently identified by the New York State Department of Environmental Conservation (NYSDEC) as a listed cause of impairment (e.g., sediment, nutrients, and dissolved oxygen).

Friends of the Bay will continue to work with citizen scientists, government agencies, and other non-governmental organizations in future monitoring seasons. Together, FOB and its partners will continue to improve and enhance the monitoring program, with the ultimate objective of protecting and improving the quality of water in the Oyster Bay/Cold Spring Harbor estuary complex.

1 Introduction

Friends of the Bay (FOB) is a widely-respected non-profit environmental organization located on the North Shore of Long Island. The mission of FOB is to protect, preserve, and restore the ecological integrity and productivity of the Oyster Bay/Cold Spring Harbor estuary and the surrounding watershed[1]. *Appendix A* presents a fact sheet for the estuary.

The Oyster Bay/Cold Spring Harbor estuary complex consists of a unique ecosystem in close proximity to New York City. Consider:

- Oyster Bay (Mill Neck) is among the 33 Inaugural Stewardship Areas listed within the Long Island Sound Stewardship Initiative 2006 Atlas.[2]
- The U.S. Fish & Wildlife Service maintains a 3,209 acre National Wildlife Refuge (NWR) within the Oyster Bay/Cold Spring Harbor Estuary Complex.[3]
- Two State-designated Significant Coastal Fish and Wildlife Habitat areas exist within the Oyster Bay/Cold Spring Harbor Estuary Complex.[4]
- The Harbor Complex is home to the Cold Spring Harbor Fish Hatchery & Aquarium. The Hatchery is proud to have the largest living collection of New York State freshwater reptiles, fish, and amphibians.
- Oyster Bay is a designated New York State "historic maritime area."
- The oldest traditional shellfish farmer in New York State, Frank M. Flower and Sons (est. 1887), operates out of Oyster Bay. Frank M. Flower and Sons is the only traditional oyster company still in operation on Long Island (C.Blair, Newsday.com).
- Oyster Bay is designated as an Important Bird Area by the National Audubon Society.

The FOB Water Quality Monitoring Program was initiated to continue data collection efforts that were originally established by the Nassau County Department of Health that were terminated due to county budget cuts. This program was developed in cooperation with the United States Environmental Protection Agency (EPA), New York State Department of Environmental Conservation (NYSDEC), local governments and other volunteer monitoring groups around Long Island Sound. Friends of the Bay considers this program a necessary component in the effort to preserve the Oyster Bay/Cold Spring

[1] Friends of the Bay Mission Statement as of 2005

[2] The Stewardship Initiative identifies places with significant biological, scientific, or recreational value throughout Long Island Sound and works to develop a strategy to protect and enhance those special places. The Stewardship Initiative has five specific goals: 1) Preserve native plant and animal communities and unique habitat types; 2) Improve recreation and public access opportunities; 3) Protect threatened and endangered species in their natural habitats; 4) Preserve sites that are important for long-term scientific research and education; and 5) Promote efforts to plan for multiple uses. For additional information, visit http://longislandsoundstudy.net/stewardship/stewardship_atlas06.pdf

[3] http://refuges.fws.gov/profiles/WildHabitat.cfm?ID=52563

[4] http://www.nyswaterfronts.com/waterfront_natural_narratives.asp; For almost two decades, there have been three State designated Significant Coastal Fish and Wildlife Habitats within the Oyster Bay/Cold Spring Harbor Estuary: Cold Spring Harbor, Oyster Bay Harbor, and Mill Neck Creek Wetlands (these habitat designations originated in 1987). On October 15, 2005, The New York State Department of State recommendations to consolidate these designations became effective. The two habitats now include 1) Mill Neck Creek, Beaver Brook, and Frost Creek, and 2) Oyster Bay and Cold Spring Harbor.

Harbor ecosystem and hopes to increase public awareness of local threats to water quality. The water quality program of Friends of the Bay is being conducted to:

1. Provide high quality data to continue the dissolved oxygen-testing baseline established by the Nassau County Department of Health in 1972.
2. Screen for water quality impairments.
3. Monitor the estuary in support of the Total Maximum Daily Load (TMDL) for pathogens that has been established for Oyster Bay and Mill Neck Creek[5].
4. Determine long-term water quality trends.
5. Document effects of water quality improvements.
6. Educate and involve citizens and public officials about water quality protection.
7. Act as a watchdog for activity within the watershed and harbor.
8. Assist local, state, and federal agencies in harbor management by providing data.

This program enables trained citizen scientists working alongside Friends of the Bay staff to monitor various components of the marine ecosystem. Friends of the Bay citizen scientists participate in collecting samples, recording data, and related activities. Individually, they bring intellectual curiosity, diverse backgrounds and skills, and a passion for the environment. They come from as far as the south shore of Long Island and as close as Bayville and Oyster Bay. Friends of the Bay's Water Quality Monitoring Program is also made possible by supporting members, businesses, and other partners including the Bridge Marina, Nassau County Department of Health, Oyster Bay/Cold Spring Harbor Protection Committee, and Oyster Bay Marine Center.

The program monitors a number of water quality parameters in the estuary including water temperature, pH, clarity, salinity, dissolved oxygen, enterococci bacteria, and fecal coliform bacteria. Measuring these parameters enables Friends of the Bay to better understand changes within the local marine ecosystem. The design of the program was reviewed and approved by the EPA in May of 2006 through Friends of the Bay's *Open Water Body Water Quality Monitoring Program Quality Assurance Project Plan* (QAPP).

A Memorandum of Understanding exists between Friends of the Bay and the U.S. Fish and Wildlife Service as well.[6] In this agreement, Friends of the Bay supplies collected data to the Fish and Wildlife Service. The objectives of this cooperative effort are to support long-term water quality monitoring within Oyster Bay Harbor, Mill Neck Creek, and Cold Spring Harbor, and waterways contained within the Oyster Bay National Wildlife Refuge in addition to cooperative efforts on environmental education, interpretation, and outreach projects.

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[5] *Pathogen Total Maximum Daily Loads for Shellfish Waters in Oyster Bay Harbor and Mill Neck Creek*. NYSDEC (2003). In November 2018, NYSDEC withdrew the pathogen TMDLs for Shellfish Waters in Oyster Bay Harbor and Mill Neck Creek, with DEC stating "the withdrawal was necessary because recent data has shown that implementation of the TMDLs would not have caused water quality standards to be achieved." Oyster Bay and Mill Neck Creek is included in Part 2c (*Multiple Segment/Categorical Waterbody Segments due to Shellfishing Restrictions)* of the New York 2018 Section 303(d) list of impaired/TMDL waters.

[6] Under the authority of the *U.S. Fish and Wildlife Coordination Act,* as amended, (16 U.S.C. Section 661) and Section 7 of the *Fish and Wildlife Act of 1956* [16 U.S.C. 742F(a)(4)], and the *Interior and Related Agencies Appropriation Act of 1992* (PL 102-154, Title 1, 105 Stat. 995.)

This Annual Water Quality Report summarizes the data collected during the 2020 and 2021 monitoring seasons. This report was produced in 2022 as part of Friends of the Bay's continuing commitment to study the complex factors that impact water quality within the estuary and the surrounding watershed.

2 Watershed Management

In June 2011, Friends of the Bay completed a watershed management plan for the Oyster Bay/Cold Spring Harbor Estuary and surrounding watershed. The watershed management plan was developed in two phases—a State of the Watershed Report and a Watershed Action Plan—following an approach endorsed by the U.S. Environmental Protection Agency (EPA), the NYSDEC, and the New York State Department of State (NYSDOS) Division of Coastal Resources for developing watershed-based plans.

The State of the Watershed Report, prepared on behalf of Friends of the Bay in November 2009 (Fuss & O'Neill, Inc.), summarized existing environmental and land use conditions within the Oyster Bay/Cold Spring Harbor watershed. The State of the Watershed Report integrated a variety of environmental indicators to assess the current health of the watershed and potential future threats. The report provided a baseline assessment of watershed conditions, which can be updated periodically to evaluate changes in the watershed and help direct watershed management planning. The State of the Watershed Report therefore serves as the basis for the Watershed Action Plan.

The Watershed Action Plan identifies prioritized action items to protect and improve the health of the Oyster Bay/Cold Spring Harbor watershed and estuary. The plan recommends continuation of the ongoing water quality monitoring program to monitor changes in harbor conditions as a result of changing watershed conditions and implementation of plan recommendations. Additional data collection is also recommended to refine the current understanding of water quality impairments in the estuary complex, particularly pollutants for which previous monitoring results have demonstrated the potential for water quality impairment but which are not currently identified by NYSDEC as a listed cause of impairment (e.g., sediment, nutrients, and dissolved oxygen).

3 Monitoring Program

3.1 Open Water Body Monitoring

Every Monday[7] morning from July through October 2020 and April through October 2021, Friends of the Bay staff and citizen scientists collected data on water quality and ambient conditions at 19 open water body sites throughout the estuary complex. The parameters measured by Friends of the Bay included dissolved oxygen, salinity, water temperature, pH, water clarity, and enterococci and coliform bacteria.

[7] Monitoring is conducted on Tuesday or Wednesday when Monday is a holiday. Some monitoring events could not be carried out due to weather or other circumstances (see details below).

Dissolved oxygen, salinity, pH, and water temperature were measured using the Manta 35+, which was first used for the 2020 season and replaced the Hydrolab Quanta Water Quality Monitoring System. The instrument includes a probe that is lowered within the water column to analyze the water's attributes in-place and a handheld data-logger that interprets the probe measurements and displays them for the sampler.

Water clarity was measured using a Secchi disk, a circular disk with opposing white and black quadrants that is lowered into the water column to the depth at which it can no longer be distinguished by an observer at the surface.

Water samples for enterococci and coliform bacteria measurements were also collected by Friends of the Bay and analyzed by the Nassau County Department of Health (NCDH).

Field measurements collected and observations made at the time of sampling were recorded on field water quality monitoring sheets, which are presented in *Appendix C*. The following is a summary of the water quality testing locations and methods. These methods are consistent with the Standard Operating Procedures and Quality Assurance Project Plan that was approved by the EPA in May 2006.

3.1.1 Monitoring Locations

Friends of the Bay monitored a total of 19 open water body sites throughout the Oyster Bay/Cold Spring Harbor estuary, including locations FB-1 through FB-4 in Cold Spring Harbor, FB-5 through FB-12 in Oyster Bay Harbor, and FB-13 through FB-19 in Mill Neck Creek. A map identifying the approximate location of each site and a table of coordinates (latitude/longitude) for each station are included in *Appendix B*.

The Oyster Bay/Cold Spring Harbor estuary station locations and identifiers were revised in 2003. This should be taken into consideration when comparing results from 2003 through 2021 to results presented in the 2002 report.

3.1.2 Monitoring Methods

Friends of the Bay monitored each open water body site for the following water quality parameters:

- **Dissolved Oxygen, Water Temperature, and pH** – Dissolved oxygen (DO), water temperature, and pH were measured at 19 monitoring sites using the Manta 35+ data-logger and multiparameter sonde. At each station, dissolved oxygen readings were taken at approximately one half-meter above the bay bottom, one-half meter below the water surface, and one meter below the water surface (depth permitting). The DO data was measured and recorded in milligrams per liter (mg/L), which is equivalent to parts per million (ppm). The measured values are then compared to ranges that describe the effect of dissolved oxygen on aquatic life, which are well established. In general, dissolved oxygen levels above 5 mg/L are preferred. Levels between 4 and 5 mg/L can cause harm to some species of organisms, especially the larvae of crustaceans such as lobster and crabs. Levels between 2 and 4 mg/L can cause harm to many organisms if exposure is prolonged. When dissolved oxygen levels decline below 2 mg/L, many organisms can be harmed quickly, and 3 mg/L is the concentration below which water is termed

hypoxic. Few organisms can survive exposure to levels below 1 mg/L for more than very short periods.

- **Salinity** – Salinity is the measurement of the concentration of dissolved salts in the water. Friends of the Bay monitored salinity with the Manta 35+, which measures specific conductivity (a direct measurement of the ease with which electricity passes through water) and converts that measurement to salinity. In earlier years, Friends of the Bay monitored salinity with a hydrometer, an instrument used to measure the specific gravity of liquids.
- **Water Clarity** – Friends of the Bay measured water clarity with a Secchi disk. The 8-inch diameter disk is divided into alternating black and white quadrants. The disk is lowered into the water with the sun at the citizen scientist's back. The depth at which the disk becomes completely obscured is recorded. The disk is then raised and the point at which the disk becomes visible again is recorded. The average of these two numbers is the Secchi depth, recorded to the nearest tenth of a meter (decimeter).
- **Bacteria** – Water samples were collected by Friends of the Bay in sterile bottles approximately one foot below the water surface. The bottles, supplied by NCDH, are then stored in a cooler with ice and transported immediately to the NCDH laboratory in Hempstead for analysis. The NCDH uses the SM-9222D-2006 method (Membrane Filter Technique for Members of the Coliform Group: 9222D. Fecal Coliform Membrane Filter Procedure. 9222G. MF Partition Procedures) for testing for fecal coliform and EPA Method 1600 (EPA Method 1600: Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl-β-D-Glucoside Agar [mEI], 2002) for enterococci. The level of fecal coliform bacteria and enterococci in a water sample is expressed as colony forming unit per 100 ml (CFU/100mL). CFU/100ml are considered equivalent to most probable number per 100ml (MPN/100mL) for the purposes of this data. A trip blank, supplied by the NCDH laboratory, is used to ensure that proper temperature standards are met. It is placed in the cooler with the ice and, upon arrival at the NCDH laboratory; the trip blank temperature is immediately recorded. If the trip blank exceeds 6°C, NCDH laboratory personnel flag the results on the chain of custody form and then Friends of the Bay flags the data in the electronic database.
- **Other Parameters** – Other information collected at the sites include: the time the sample was collected; qualitative description of rainfall in the previous 24 hours; tidal stage (scale of 1-4), air temperature (°C); wind direction (1 of 8 directions); wind speed (estimated in 5-mph increments); wave height (subjective, on a scale of 0-5); weather conditions (on a predetermined 1-6 scale); water color (subjective color, e.g. yellow-brown), cloud cover (0-5 scale) and any unusual conditions (i.e., odors, fish kills, debris). In 2021, wind direction was reported by cardinal direction (e.g., NE, N) and wind speed was reported in meters per second.

3.1.3 Quality Assurance and Quality Control

The 2006 season was the first in which Friends of the Bay implemented a QAPP that was prepared for the open water body monitoring project. The QAPP was prepared with assistance from Fuss & O'Neill, approved by the EPA, and was implemented by Friends of the Bay in June 2006—the document has been revised seven times since its approval. Friends of the Bay performed many of the tasks required by

the QAPP in earlier years, but the QAPP provides a procedural framework to ensure that the data collected meets EPA standards. Friends of the Bay continued to follow procedures outlined in the QAPP during the 2020 and 2021 monitoring seasons. The QAPP includes:

- Formalized monitoring locations and standard parameter list.
- Defined sampling analysis procedures.
- Required collection of duplicate samples.
- Validation of field data through calibration checks and validation with other measurement methods.

Duplicate samples were not collected during the 2020 and 2021 monitoring seasons. The QAPP can be viewed at Friends of the Bay's office in Oyster Bay and is posted on their website at www.friendsofthebay.org.

3.2 Stream and Outfall Monitoring Program

A stream and outfall monitoring program was initiated in 2007 to establish current baseline water quality conditions in the watershed, identify water quality impacts from potential point and non-point pollution sources, develop a water quality database for the watershed to guide environmental decision-making, and measure the progress toward meeting water quality goals in the Oyster Bay/Cold Spring Harbor estuary watershed.

Friends of the Bay was unable to conduct stream and outfall monitoring in 2020 or 2021.

4 Results, Analysis, and Discussion

4.1 Open Water Body Monitoring

With the help of citizen scientists, Friends of the Bay monitored water quality at a total of 19 open water body locations on 16 monitoring dates from mid-July through October, 2020. Twelve (12) sampling events between April and mid-July, 2020 were not conducted due to the emergence of the COVID pandemic. In 2021, samples were collected during 27 monitoring events. One (1) planned monitoring event (i.e., Week of August 15, 2021) was cancelled due to boat problems.

Four sites are located in Cold Spring Harbor (FB-1 through FB-4), eight are located in Oyster Bay Harbor (FB-5 through FB-12), and seven (FB-13 through FB-19) are located in Mill Neck Creek ((see Monitoring Locations Map in *Appendix B)*. There are three locations in Laurel Hollow that have been sampled in past years, although sampling has not been conducted since 2011. Data collected during the 2020 and 2021 monitoring seasons were analyzed both spatially (differences between areas in the estuary) and temporally (changes throughout the season) and compared to results recorded during previous seasons. The estuary was considered both as a whole, and in terms of the three primary water bodies (not including Laurel Brook) that comprise the estuary: Cold Spring Harbor, Oyster Bay Harbor, and Mill Neck Creek.

These major water bodies are distinguished by hydrographic separations and differ in terms of physical characteristics, land use, watershed features, and tidal influence (see Monitoring Locations Map in *Appendix B* and Tide Charts in *Appendix D*). Relatively narrow constrictions separate each water body. Plum Point separates Oyster Bay Harbor from Cold Spring Harbor, and the narrows at the Bayville Bridge divide Oyster Bay Harbor from Mill Neck Creek. Mill Neck Creek is shallow and likely to be more influenced by tributary inflows than the other hydrographic areas. Oyster Bay Harbor contains a large mooring area and industrial facilities, is more densely developed on its south shore, and is somewhat separated from Long Island Sound by Centre Island and the landmass that includes incorporated and unincorporated parts of Bayville. Cold Spring Harbor is open to Long Island Sound and is likely to be most rapidly impacted by tidal inflows and water quality within the Sound. Tributaries flowing into the estuary include White's Creek, Mill River, Beaver Brook, Spring Lake, Tiffany Creek, Cold Spring Brook and others.

A long-term data analysis was performed in January 2009. This analysis evaluated the open water body water quality monitoring data that was collected by the Friends of the Bay from 2000 to 2006. The data were evaluated for spatial and temporal trends in order to identify how water quality in the Oyster Bay/Cold Spring Harbor Estuary has changed and the progress that has been made as a result of management efforts to address water quality problems in the estuary.

4.1.1 Physical Parameters

4.1.1.1 Temperature and Precipitation

Salinity, water temperature, pH, air temperature, and water clarity were measured at each open water body sampling station throughout the 2020 and 2021 monitoring seasons. These physical parameters can impact environmental and ecological conditions within the estuary. *Figure 1* shows average air temperature and total rainfall for the sampling season (April through October) in Long Island from 2000 through 2021.[8]

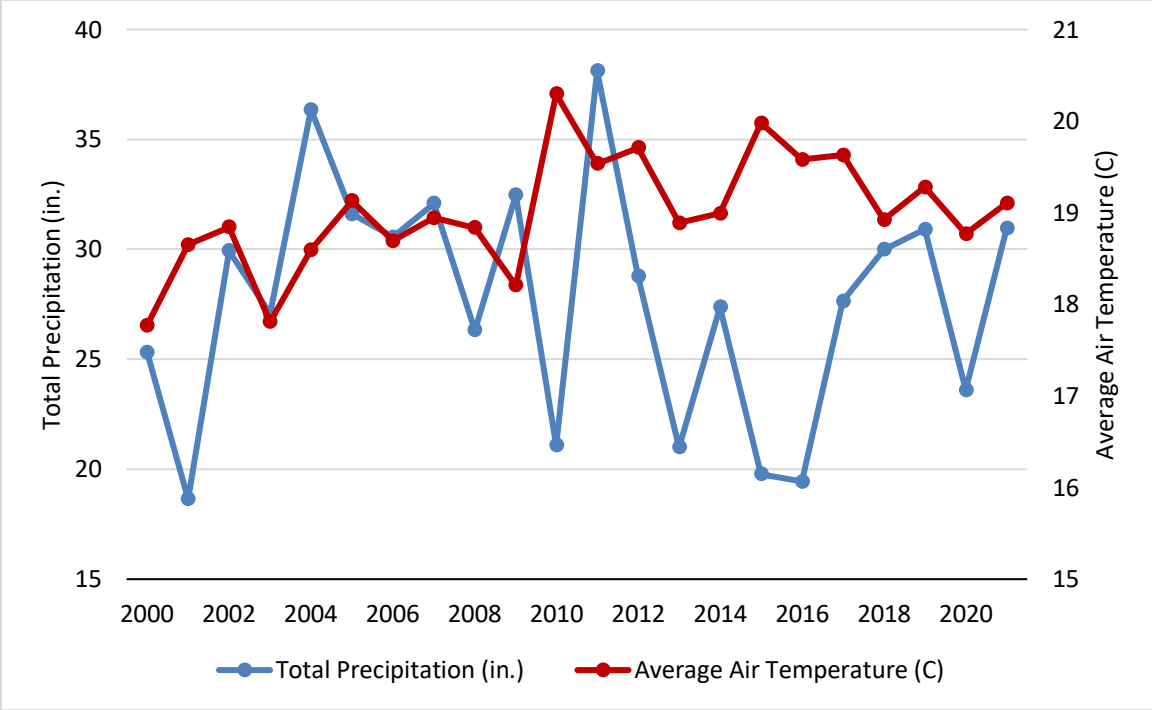

Figure 1. Physical conditions on Long Island, 2000 – 2021 (April through October).

From 2000 to 2021, the average total precipitation during the monitoring season (April through October) was 27.7 inches. The total precipitation during the 2020 monitoring season was less than the average, at 23.6 inches and 24% and 21% less than the 2019 and 2018 total precipitation, respectively. The total precipitation during the 2021 monitoring season was higher than average in 2021, at 31.0 inches and 0.3% and 3% higher than 2019 and 2018 total precipitation, respectively.

The average seasonal air temperature in Long Island was approximately 19.0 degrees Celsius across the 19-season period, ranging from a low of 17.8 in 2001 to a high of 20.3 in 2010. The average air temperatures during the 2020 and 2021 monitoring seasons were 18.8 and 19.1 degrees Celsius,

[8] Temperature data from the National Weather Service for JFK International Airport in Queens, New York. Precipitation data from the NOAA National Centers for Environmental Information for the station at JFK International Airport in Queens, New York.

respectively. Visual inspection of average air temperature during the monitoring season shows a general increase since 2000 as depicted in *Figure 1*.

4.1.1.2 Water Clarity

Secchi disk depth is an indication of water clarity. Light that penetrates the surface of the water passes through the water column, reflects off the disk, and passes back through the water column to the eye of the observer. Secchi disk depth is the depth where enough light is scattered (by objects, such as sediment particles) or absorbed (by being converted to heat or chemical energy, such as by algae) within the water column that the light reflected by the disk can no longer return to the surface. Dissolved solids, particulate solids, algae, and other biota can impact clarity in a water column. Secchi disk depths in the Oyster Bay/Cold Spring Harbor complex are generally between 2.5 and 0.8 m (the range was 3.2 to 0.4 m in 2020 and 2.6 to 0.3 m in 2021).

Figures 2 and 3 present 2020 and 2021 Secchi disk depth results, respectively, as averaged for Cold Spring Harbor, Oyster Bay Harbor, and Mill Neck Creek. Average Secchi disk depths (in meters) in 2020 for these areas were 1.4, 1.6, and 1.2, and in 2021 were 1.3, 1.4 and 1.1, respectively. As was the case in past years, Mill Neck Creek had lower water clarity than Oyster Bay Harbor and Cold Spring Harbor, possibly a result of increased biological activity due to it shallow depth, marshy areas, and close proximity to tributary discharges. Average Secchi disk depths were generally consistent with previous years exhibiting the lowest water clarity in Mill Neck Creek and highest water clarity in Oyster Bay Harbor. Similar to 2017 and 2018, the lowest clarity levels seem to occur during early through later summer (generally June through August) at all locations, although data between April 2020 through July 13, 2020 is not available. Although the cause has not been studied in detail, lowest clarity levels during summer are likely caused by algal growth fueled by nitrogen inputs to the Bay. See *Appendix E* for additional physical data.

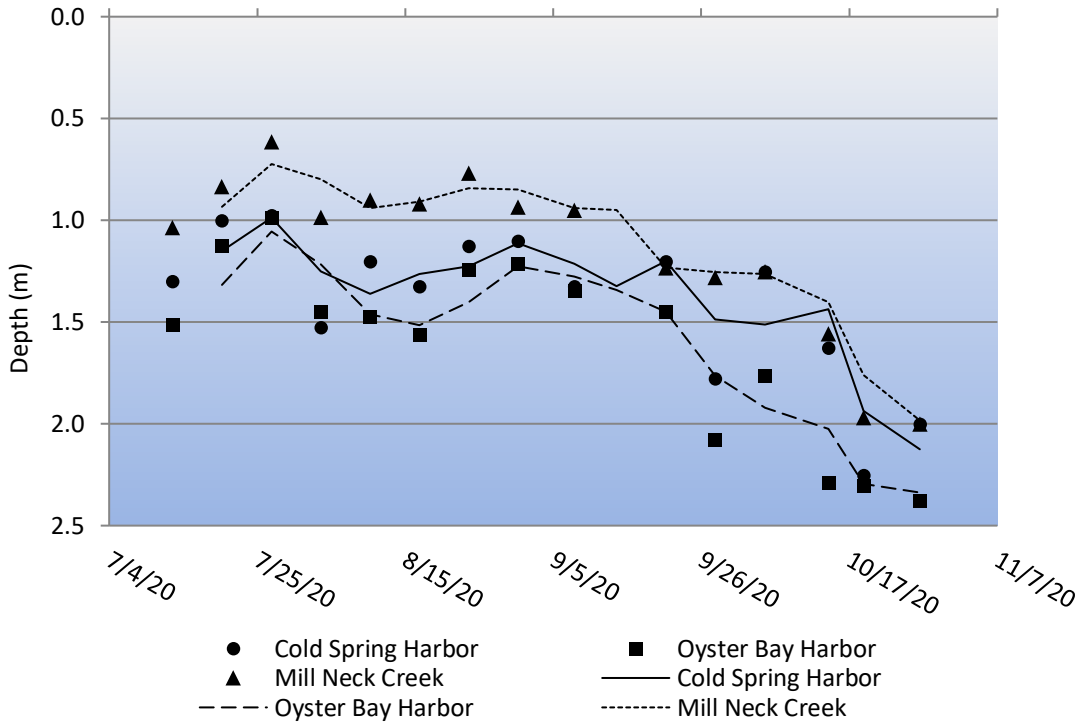

Figure 2. 2020 Secchi disk results, averaged locationally, with moving average lines

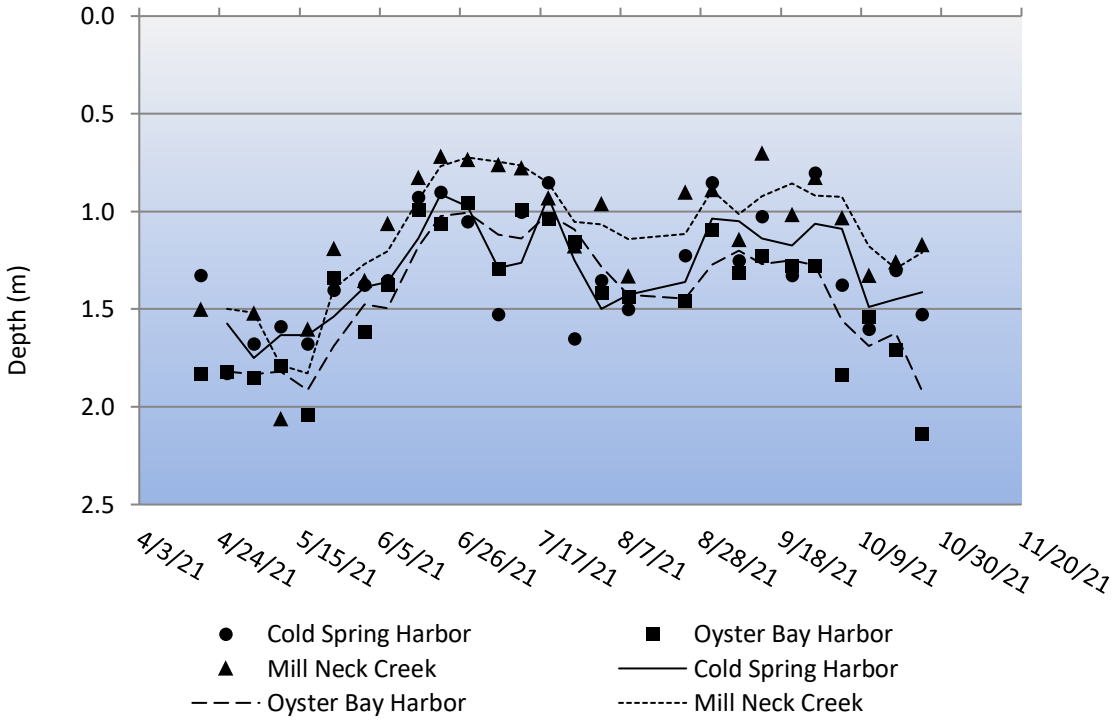

Figure 3. 2021 Secchi disk results, averaged locationally, with moving average lines

4.1.2 Bacteria

Bacteria are widespread in the environment. Certain types can be used to indicate the possible presence of human pathogens. Common fecal indicator bacteria include fecal coliform and enterococci. Bacteria are introduced in the marine environment through various point and non-point sources such as surface water runoff, industrial and agricultural discharges, or wastewater discharges. The New York Code of Rules and Regulations (NYCRR) specify levels of fecal coliform bacteria that should be met in bodies of water designated for different purposes. Waters used for shellfish cultivation and harvest must meet the most stringent bacteriological criteria.

Coliform bacteria levels are reported as logarithmic averages with a 30-day averaging period (also known as the geometric mean, or geomean). Geomeans are often used for regulatory thresholds as they are less prone to influence by outlier values which frequently result during bacterial analysis.

Friends of the Bay collected bacteria monitoring data during 16 weeks monitored in 2020 and 27 weeks monitored in 2021. The completeness of monitoring runs, calculated by dividing the number of runs performed by the number of possible runs (30) and expressed as a percent, is 53% for 2020 and 90% for 2021.

Table 1 summarizes shellfish standards for fecal coliform bacteria that are enforced by New York State (NYS). In 2004, revised beach closure standards were implemented that are based on measured levels of enterococci, an alternate indicator bacteria, and fecal coliform. The standards are summarized in *Table 2*.

Table 1. NYS Coliform Bacteria Standards

	Shellfishing *
Fecal Coliform	LOG AVG <14 MPN/100 mL and If < 10% of samples do not exceed 43 MPN/100 mL

* 6 NYCRR §47.3

Table 2. NYS Coliform Bacteria Standards, effective 2004

	Swimming †
Fecal Coliform	LOG AVG 30 days < 200 MPN/100mL, and no sample greater than 1,000 MPN/100 mL
Enterococci	LOG AVG 30 days <35 MPN/100 mL, and no sample greater than 104 MPN per 100 mL

†10 NYCRR Section 6-2.15 - Water quality monitoring

Fecal coliform and enterococci levels were measured and reported at nineteen (19) locations during the 2020 and 2021 monitoring seasons. Fecal coliform has been measured by Friends of the Bay since the inception of the monitoring program, while enterococci has been measured since 2004.[9]

Tables 3 and *4* present a summary of the season's bacteria results compared to the New York State Shellfishing Standards in *Table 1*. The shaded cells in *Table 3* and *Table 4* indicate that the seasonal geomean and/or the 90th percentile value at that station exceeded the State standard. Bolded values indicate which value exceeded the State standard. Although only fecal coliform data and not total coliform were collected in 2020 and 2021, in earlier years of the monitoring program, fecal coliform exceedances were generally accompanied by exceedances in total coliform as well.

In 2020 and 2021 seasonal geometric mean fecal coliform bacteria levels exceeded the shellfish standards for fecal coliform at FB-1 through FB-3, FB-8, FB-10, FB-13 through FB-19. FB-1, FB-2, and FB-3 are located in Cold Spring Harbor; FB-8 and FB-10 are located in Oyster Bay Harbor; and FB-13 through FB-19 are located in Mill Neck Creek.

Despite these exceedances, these results are encouraging, since shellfish standards were mostly met within Oyster Bay Harbor, where the majority of shellfishing occurs in the estuary. All of the stations in Oyster Bay Harbor (FB-5 through FB-12) met shellfish standards in 2021, and the majority of stations (six of eight stations) met shellfish standards in 2020. During the 2017-2018 seasons the shellfish standard was exceeded in three stations in Cold Spring Harbor and all stations in Mill Neck Creek, a similar occurrence observed for the 2020-2021 seasons.

[9] The NCDH laboratory, which performs bacterial analysis for Friends of the Bay, changed analysis methods between the 2004 and 2005 seasons. The earlier method resulted in elevated values compared to the later method. As such, data from 2004 is not comparable to data from later years and not included in this report.

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Table 3. Comparison of 2020 Monitoring Results to State Shellfishing Standards

Fecal Coliform			
Station	Seasonal Geomean	90th Percentile	Location
FB-1	**56**	**479**	CSH
FB-2	**47**	**109**	CSH
FB-3	**17**	40	CSH
FB-4	2	1	CSH
FB-5	2	1	OBH
FB-6	2	3	OBH
FB-7	8	8	OBH
FB-8	5	24	OBH
FB-9	7	6	OBH
FB-10	**24**	23	OBH
FB-11	3	14	OBH
FB-12	3	1	OBH
FB-13	**16**	**50**	MNC
FB-14	**34**	**270**	MNC
FB-15	**102**	**51**	MNC
FB-16	**44**	**150**	MNC
FB-17	**68**	**296**	MNC
FB-18	11	32	MNC
FB-19	13	**54**	MNC
Shellfish Standards	14	43	

Bolded numbers indicate the value exceeds the shellfish standard
Greyed cells indicate stations that exceeded the shellfish standard for the seasonal geomean and/or the 90th percentile

Table 4. Comparison of 2021 Monitoring Results to State Shellfishing Standards

Fecal Coliform			
Station	Seasonal Geomean	90th Percentile	Location
FB-1	**22**	**192**	CSH
FB-2	**26**	**132**	CSH
FB-3	6	42	CSH
FB-4	2	5	CSH
FB-5	2	6	OBH
FB-6	2	5	OBH
FB-7	6	20	OBH
FB-8	7	16	OBH
FB-9	4	25	OBH
FB-10	10	34	OBH
FB-11	3	19	OBH
FB-12	5	19	OBH
FB-13	11	**45**	MNC
FB-14	**19**	**72**	MNC
FB-15	**59**	**356**	MNC
FB-16	**16**	**47**	MNC
FB-17	**38**	**190**	MNC
FB-18	9	**48**	MNC
FB-19	**14**	**88**	MNC
Shellfish Standards	14	43	

Bolded numbers indicate the value exceeds the shellfish standard
Greyed cells indicate stations that exceeded the shellfish standard for the seasonal geomean and/or the 90th percentile

In 1983, NYSDEC closed Mill Neck Creek to shellfishing due to the elevated coliform bacteria levels found there, which was likely the result of the sewage overflows from "The Birches" (also known as Continental Villa) housing development in Locust Valley that have plagued Mill Neck Creek. This subdivision historically operated its own sewage treatment system, which suffered chronic problems due to cesspool overflows and inadequate treatment of waste, impacting low-lying wetlands and the adjacent creek. Failing and/or low-functioning individual on-site sewage disposal systems located in this area are also believed to have contributed to these chronic problems. As of April 2011, sewage infrastructure upgrades were completed, and all the homes in "The Birches" residential subdivision were connected to the Glen Cove sewage treatment plant.

The average bacteria levels recorded at Mill Neck Creek monitoring locations have decreased substantially from the 2011 sampling season to 2021 (78% and 65% for fecal coliform and enterococci, respectively). These reductions are an early indicator of potential water quality improvements resulting from the sewage infrastructure upgrades. However, seasonal geometric mean fecal coliform levels at the Mill Neck Creek monitoring stations continue to exceed the fecal coliform standard, which suggests other sources of fecal indicator bacteria to Mill Neck Creek. Additional monitoring data is needed to further assess water quality in Mill Neck Creek and the remaining pollutant sources.

Figure 4 and *Figure 5* present seasonal geometric means (i.e., July through October, 2020; April through October for 2021) for fecal coliform and enterococci, respectively, for each of the estuary's embayments. From 2020 to 2021, seasonal geometric mean levels of fecal coliform decreased for Cold Spring Harbor, Oyster Bay Harbor, and Mill Neck Creek. The seasonal fecal coliform geometric means for Oyster Bay Harbor (2020 & 2021) and Cold Spring Harbor (2021) measured below the State shellfish standard for fecal coliform. Although seasonal fecal coliform geometric means for Mill Neck Creek decreased from 2020 to 2021 by 32.5%, the State shellfish standard was exceeded in both years in Mill Neck Creek. Overall, since 2000, geometric mean fecal coliform levels appear to be decreasing, especially in for Mill Neck Creek and Cold Spring Harbor. The geometric mean concentrations for Oyster Bay Harbor and have remained low and relatively constant in recent year, with greater fluctuations in Mill Neck Creek and Cold Spring Harbor.

Prior to 2021, since 2005 seasonal geometric mean for enterococci have been decreasing for all three areas (i.e., Cold Spring Harbor, Oyster Bay Harbor, and Mill Neck Creek), especially in Mill Neck Creek and Cold Spring Harbor. In 2021, the seasonal geometric mean for enterococci increased for all three areas, although less so in Oyster Bay. In general, the 2021 seasonal geomeans were similar to the last complete (April-October) monitoring season in 2018. In general, the seasonal geometric mean has remained relatively constant in Oyster Bay Harbor since 2013, with greater fluctuations in Cold Spring Harbor and Mill Neck Creek. In 2020, which was an abbreviated sampling season compared to other years, enterococci seasonal geometric means in all areas were among the lowest recorded levels since monitoring of the parameter began in 2005.

Although the shellfish and swimming standards are included on the figures below for reference, the locationally-averaged geomeans cannot be used to directly assess compliance with the standards—instead, the 30-day running geometric means should be used.

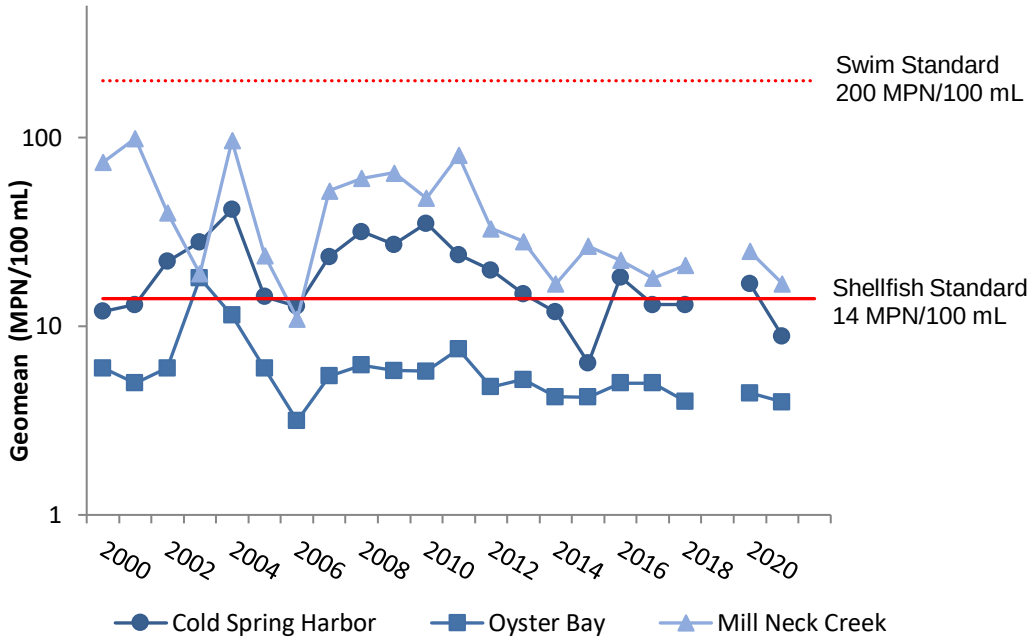

Figure 4. Seasonal geomeans of fecal coliform data by location, 2000-2021

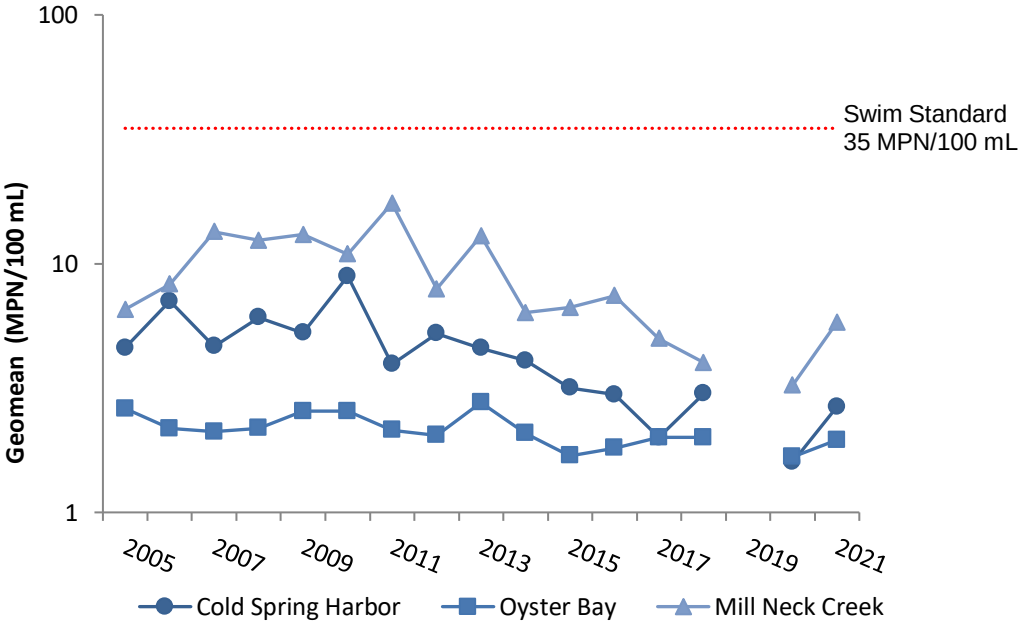

Figure 5. Seasonal geomeans of enterococci data by location, 2005-2021

Figure 6 and *Figure 7* present total monthly precipitation as recorded at a NOAA precipitation station JFK International Airport in Queens during the 2020 and 2021 sampling seasons. In 2020, the monthly precipitation ranged from a low of 1.33 inches in May to a high of 5.16 inches in July, with a monthly

average of 3.41 inches. In 2021, the monthly precipitation ranged from a low of 1.57 inches in June to a high of 7.38 inches in August. This signifies a large range in precipitation between months. The 2020 average monthly precipitation of 3.6 inches was slightly higher compared to 2020. The distribution of precipitation through the monitoring season is important because stormwater runoff can transport bacteria pollution to receiving waters. See *Appendix E* for additional bacteria data.

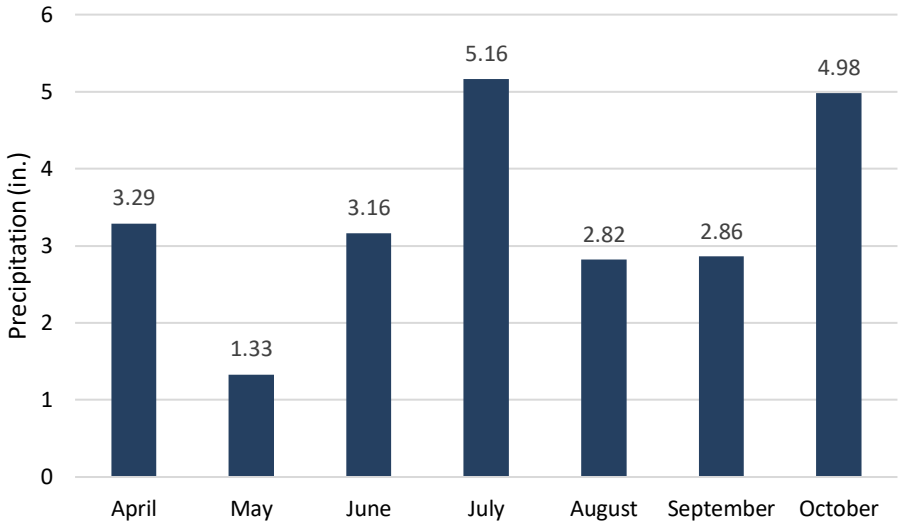

Figure 6. Precipitation monthly totals, JFK International Airport, NY 2020

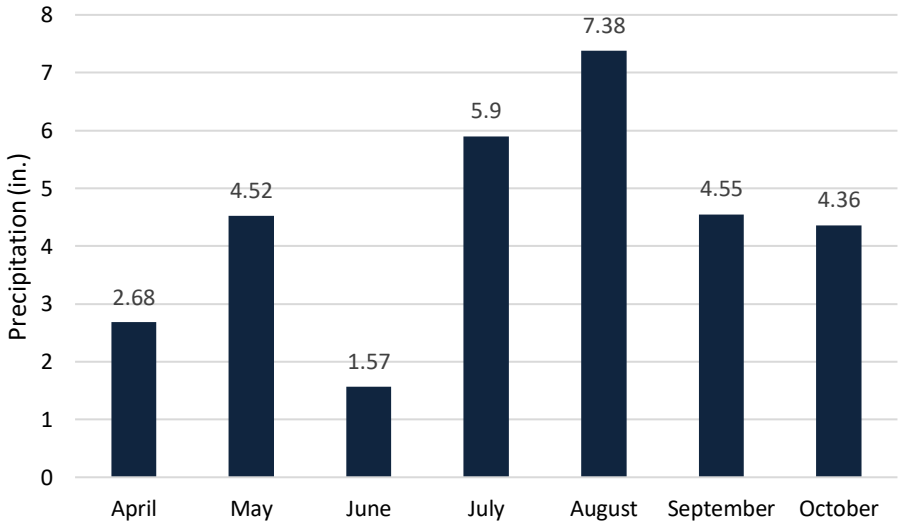

Figure 7. Precipitation monthly totals, JFK International Airport, NY 2021

4.1.2.1 Cold Spring Harbor Results

Four stations were monitored for fecal coliform and enterococci bacteria in Cold Spring Harbor in 2020 and 2021. *Figure 8* through *Figure 11* present the 2020 and 2021 fecal coliform and enterococci 30-day running bacteria geometric means for each station.

The compliance of the 30-day geometric means for fecal coliform bacteria for shellfishing standards are consistent with the seasonal geometric means presented in *Table 3*; only station FB-4 met the fecal coliform NYS shellfish geometric mean standard (14 MPN/100 mL) for the entirety of the 2020 season. In 2021, station FB-4 was again the only station to meet the standard for the entirety of the season. Stations FB-1 and FB-2 exceeded the standard for a majority of the 2020 and 2021 seasons. FB-3 exceeded the standard for a portion of the 2020 and 2021 seasons.

The fecal coliform geometric mean swim standard (200 MPN/100 mL) and enterococci geometric mean swim standard (35 MPN/100 mL) were not exceeded by any Cold Spring Harbor stations in 2020 and 2021.

During the 2020 and 2021 seasons, no fecal coliform samples exceeded the 1,000 MPN/100 mL single sample swimming standard. The 104 MPN/100 mL single sample swim standard for enterococci was not exceeded at any Cold Spring Harbor stations in 2020 and 2021. See *Appendix E* for bacteria data.

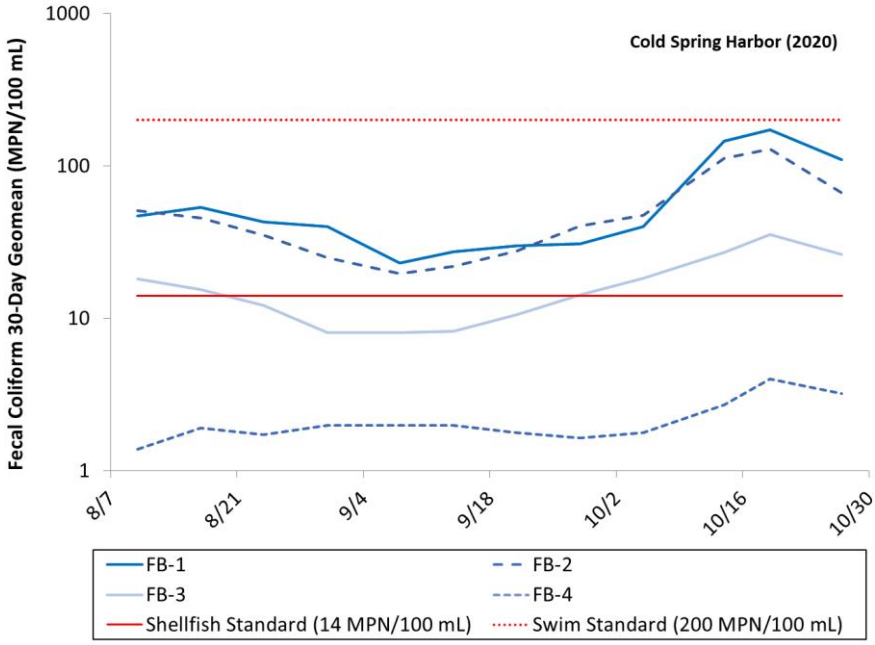

Figure 8. 30-day running geometric mean of 2020 Cold Spring Harbor fecal coliform samples

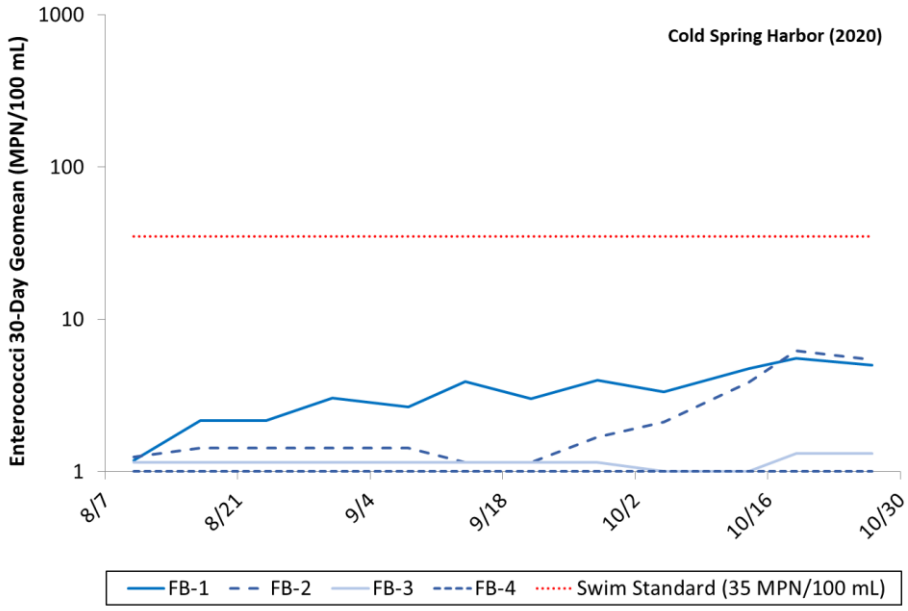

Figure 9. 30-day running geometric mean of 2020 Cold Spring Harbor enterococci samples

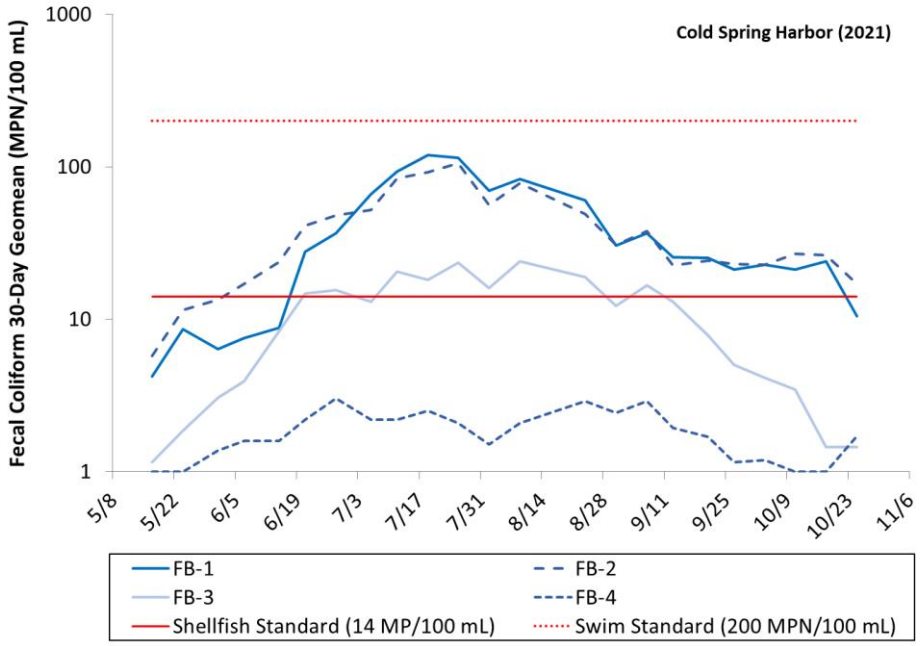

Figure 10. 30-day running geometric mean of 2021 Cold Spring Harbor fecal coliform samples

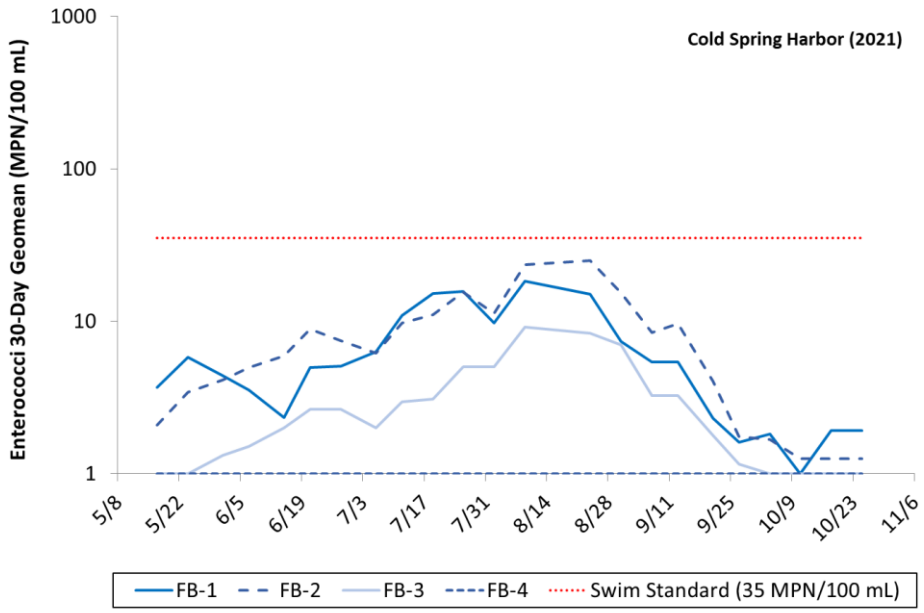

Figure 11. 30-day running geometric mean of 2021 Cold Spring Harbor enterococci samples

4.1.2.2 Oyster Bay Harbor Results

Eight stations were monitored for fecal coliform and enterococci bacteria in Oyster Bay Harbor in 2020 and 2021, as depicted in *Figures 12-15*. As shown, the fecal coliform geometric mean values at several stations did not meet the geometric mean standard for shellfishing for the 2020 and 2021 seasons. In 2020, two of the eight stations exceeded the standard during a portion of the season (FB-7 and FB-10). In 2021, only four stations (FB-7, FB-8, FB-9, FB-10) exceeded this standard during a portion of the season.

The 30-day fecal coliform geometric mean standard for swimming (200 MPN/100 mL) and enterococci standard for swimming (35 MPN/100 mL) were not exceeded for any Oyster Bay Harbor station during the 2020 and 2021 sampling seasons.

In 2020 and 2021, neither the single sample swimming standard of 1,000 MPN/100 mL for fecal coliform nor the 104 MPN/100 mL enterococci swimming standard were exceeded. These results are consistent with the 2017 and 2018 sampling seasons. See *Appendix E* for bacteria data.

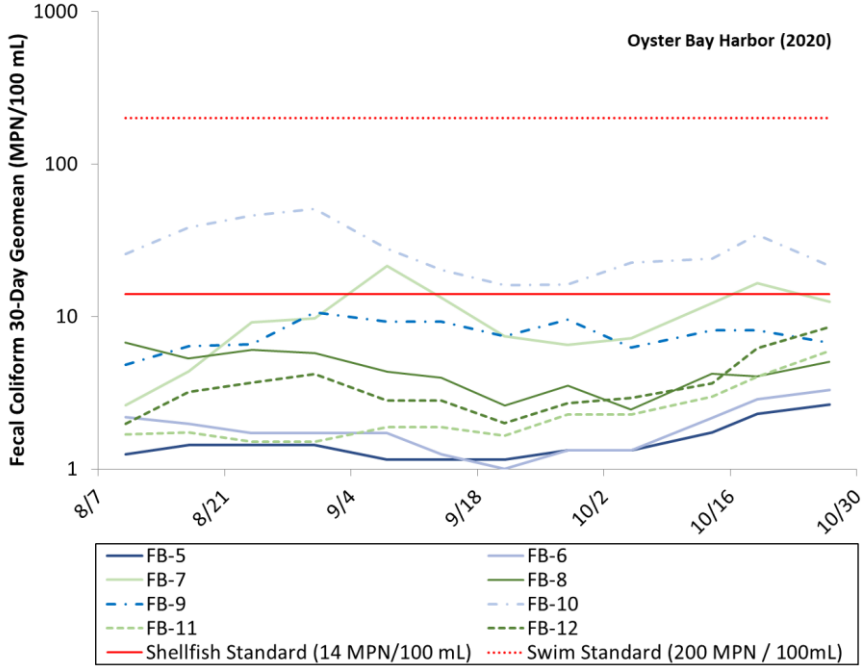

Figure 12. 30-day running geometric mean of 2020 Oyster Bay Harbor fecal coliform samples

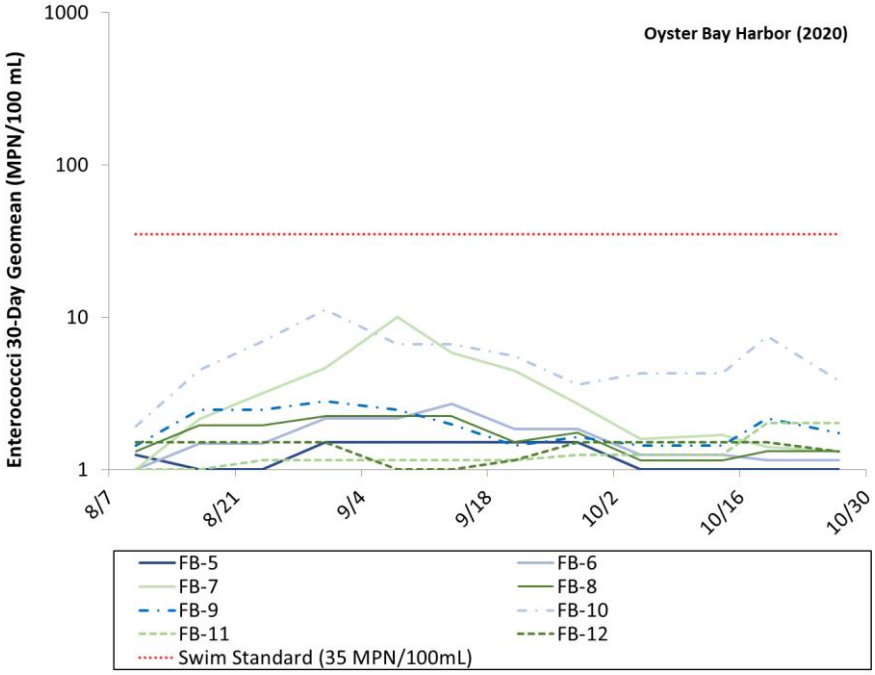

Figure 13. 30-day running geometric mean of 2020 Oyster Bay Harbor enterococci samples

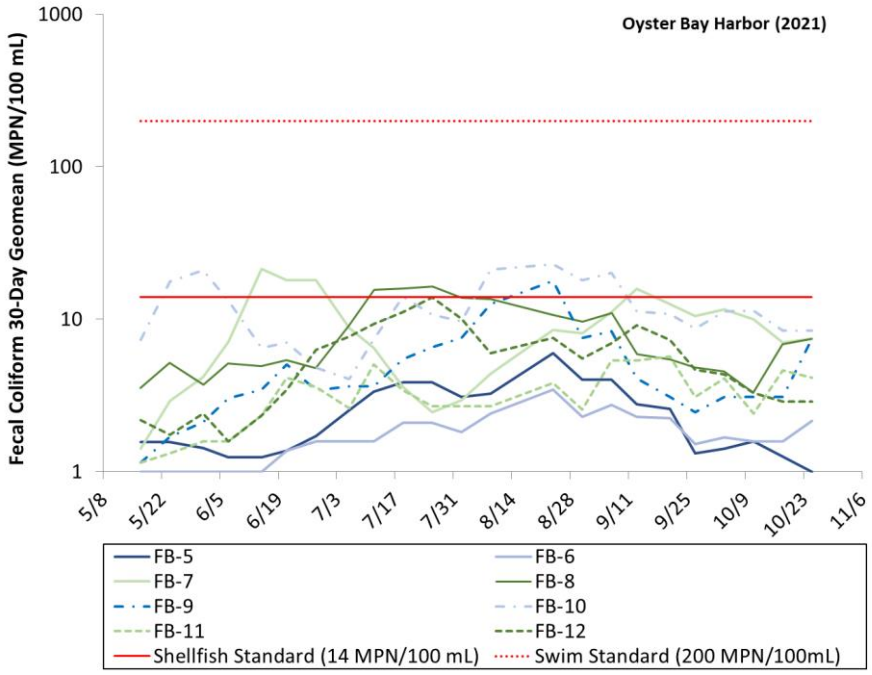

Figure 14. 30-day running geometric mean of 2021 Oyster Bay Harbor fecal coliform samples

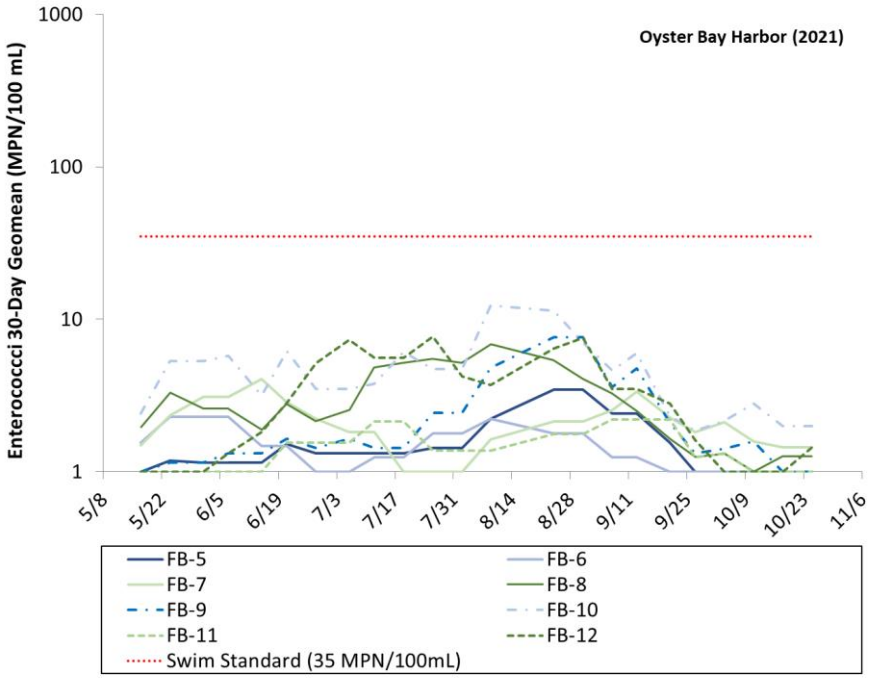

Figure 15. 30-day running geometric mean of 2021 Oyster Bay Harbor enterococci samples

4.1.2.3 Mill Neck Creek Results

Seven stations were monitored in Mill Neck Creek for fecal coliform and enterococci, and monthly geometric means were calculated for the data. *Figure 16* through *Figure 19* present the results of this analysis. FB-15, FB-16, and FB-17 are difficult to monitor due to low tidal conditions preventing access; FB-15, FB-16, and FB-17 were only successfully sampled on 56%, 44%, and 25% of the monitoring events during 2020, respectively, and 52%, 56%, and 41% of the monitoring events during 2021, respectively. Therefore, the analysis is based on a much smaller data set for the geomeans. In some cases, fewer than two samples were collected in the preceding 30-day period- as a result, some breaks in the line graphs are present.

None of the Mill Neck Creek locations met the fecal coliform geometric mean shellfishing standards (14 MPN/100 mL) for the 2020 and 2021 monitoring seasons. In 2020, two stations (FB-15 and FB-16) exceeded the fecal coliform swim standard of 200 MPN/100 mL, while only one station (FB-17) exceeded this standard in 2021. These results would have resulted in beach closures.

The single sample fecal coliform standard (1,000 MPN/100 mL) was not exceeded in 2020 or 2021. In 2020, no stations in Mill Neck Creek exceeded the single sample enterococci swimming standard (104 MPN/100 mL). In 2021, this standard was exceeded at multiple stations over three dates:

- June 21, 2021: FB-15 (210 MPN/100 mL) and FB-18 (>600 MPN/100 mL)
- August 9, 2021: FB-15 (170 MPN/100 mL)
- October 25, 2021: FB-13 (134 MPN/100 mL), FB-14 (167 MPN/100 mL), and FB-18 (>600 167 MPN/100 mL)

These fecal coliform exceedances are likely associated with high precipitation events, as stormwater runoff can transport bacteria pollution to receiving waters. According to the Community Collaborate Rain, Hail & Snow Network (CoCoRaHS), these dates of exceedances are during or following precipitation events greater than 0.25 inches. CoCoRaHS reports rain totals for the 24-hour period generally ending 7:00 am. For Suffolk County, New York weather stations just south of the Oyster Bay Harbor, CoCoRaHS reported 0.30 inches on June 20, 2021, 1.68 inches on August 9, 2021, and 0.07 inches on October 25, 2021 and 2.30 inches on October 26, 2021. The highest fecal coliform levels at three stations were measured during an extreme precipitation event between October 25 and 26. See *Appendix E* for bacteria data.

Fecal coliform and enterococci exceeded standards most frequently at FB-15 and FB-18, although standards were exceeded at least once at FB-13, FB-14, FB-16, and FB-17. It is notable that FB-15 is located in tidal flats with limited circulation or flushing during low tide, FB-17 is the closest station to "The Birches" residential subdivision (described previously), and FB-16 is at the northern-most tidal location sampled in Mill Neck Creek (second closest to "The Birches"). As indicated previously, the average bacteria levels recorded at Mill Neck Creek monitoring locations decreased substantially (about 78% and 65% for fecal coliform and enterococci, respectively) from the 2011 to the 2018 sampling seasons. These reductions are an indicator that water quality is continuing to improve following the sewage infrastructure upgrades. However, seasonal geometric mean fecal coliform and enterococci levels

at many of the Mill Neck Creek monitoring stations continue to exceed their respective standards, which suggest other sources of fecal indicator bacteria to Mill Neck Creek. Additional monitoring data is needed to further assess water quality in Mill Neck Creek and the remaining pollutant sources.

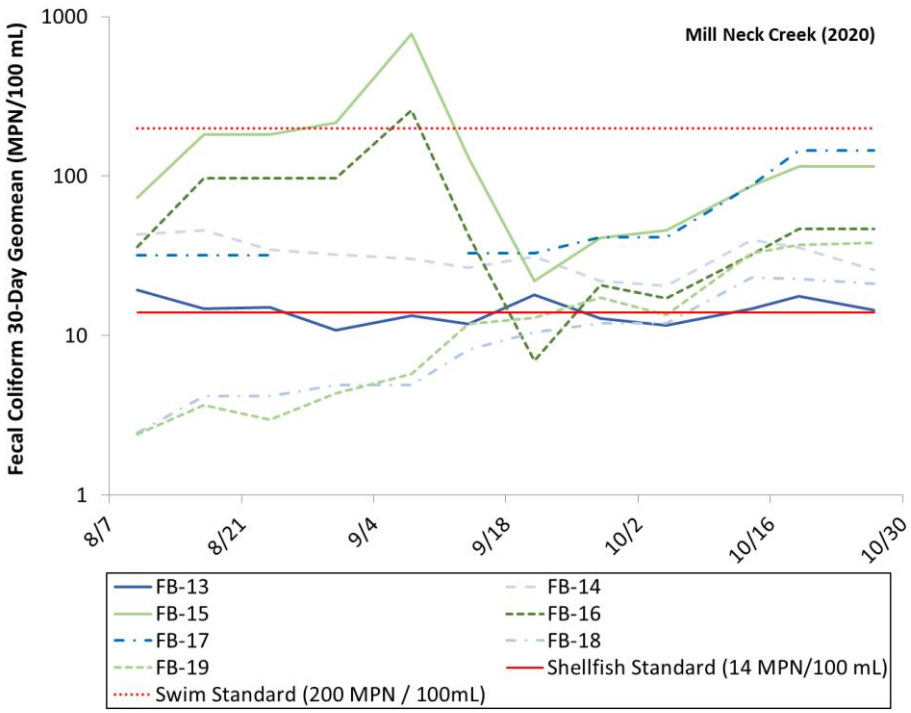

Figure 16. 30-day running geometric mean of 2020 Mill Neck Creek fecal coliform samples

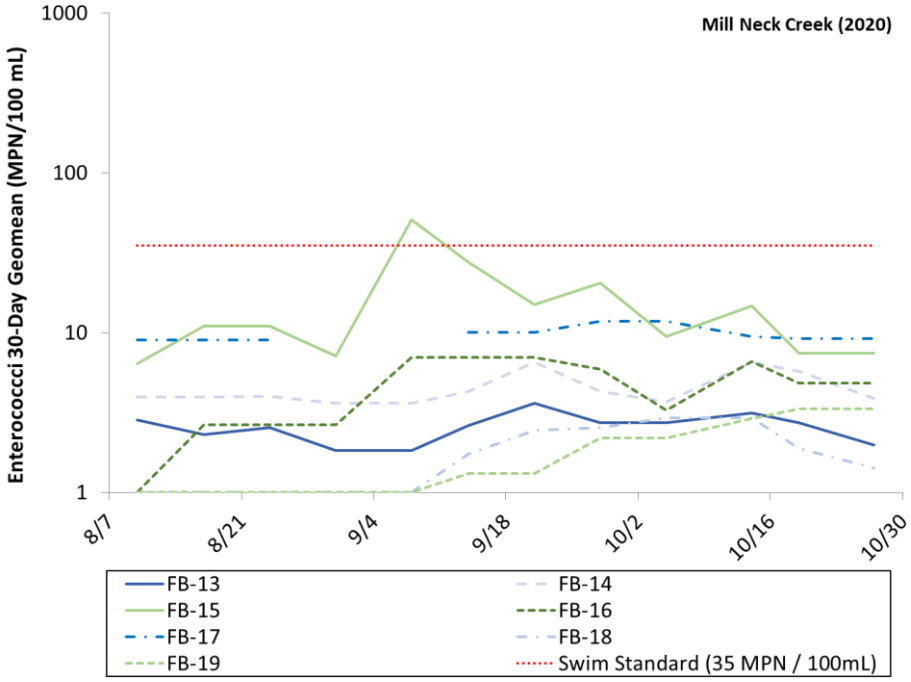

Figure 17. 30-day running geometric mean of 2020 Mill Neck Creek enterococci samples

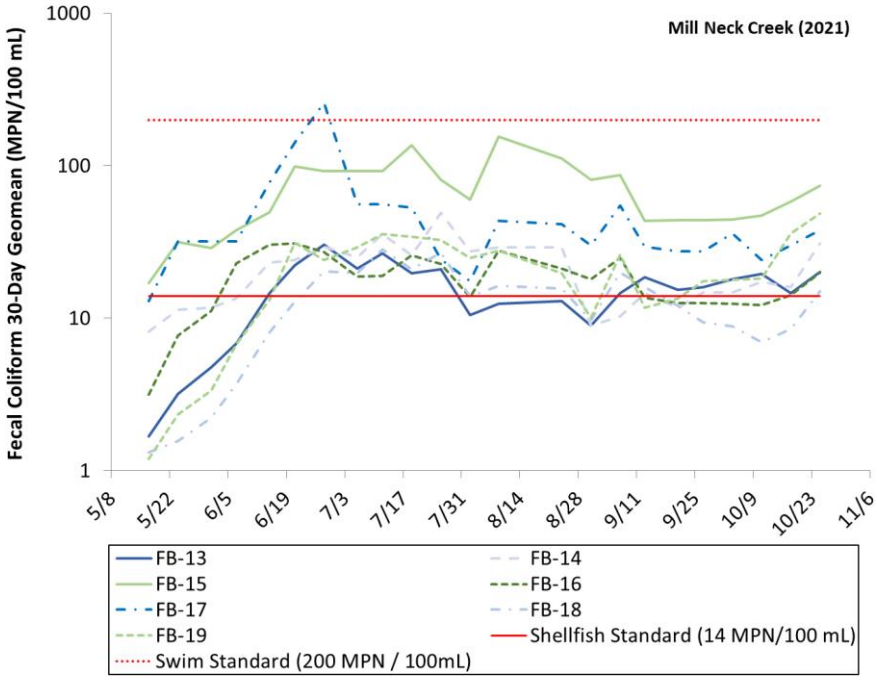

Figure 18. 30-day running geometric mean of 2021 Mill Neck Creek fecal coliform samples

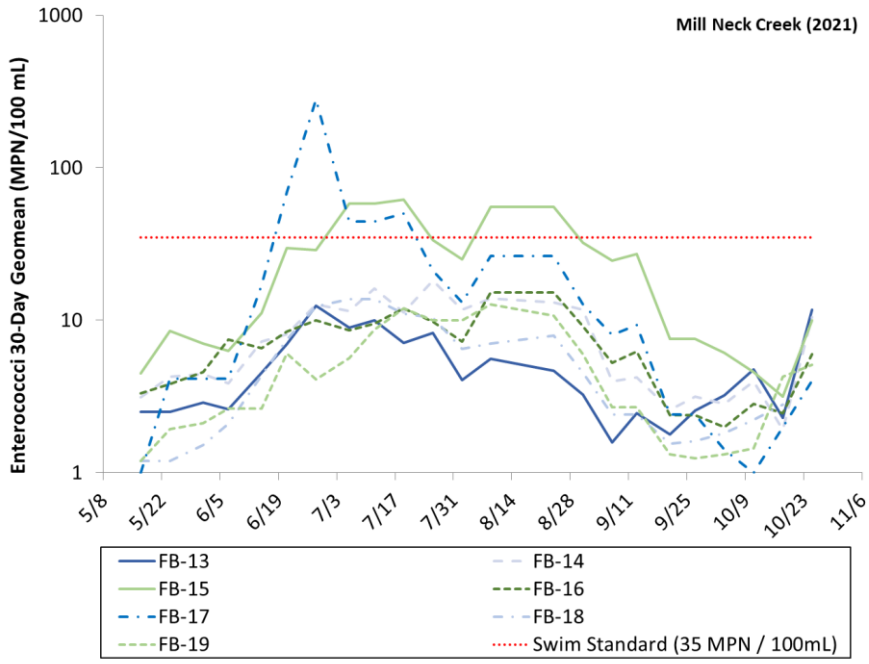

Figure 19. 30-day running geometric mean of 2021 Mill Neck Creek enterococci samples

4.1.3 Nutrient Enrichment by Nitrogen

4.1.3.1 The Nitrogen Cycle

The nutrients nitrogen and phosphorus, as well as other minerals, are essential components for marine organisms. Nitrogen and phosphorus are typically the limiting factor in the quantity of biomass (organisms, such as algae, bacteria, fish, and plants) that can grow in a water body. When nutrient inputs to a water body increase, microorganism populations also increase. These increases are generally first seen in the density of algae, resulting in an algal bloom.

A common rule of thumb is that the ratio of nitrogen to phosphorus in biomass is approximately 7 to 2. This means that, if the nitrogen concentration divided by the available phosphorus is less than 3.5, biological growth will be limited by the amount of nitrogen (Chapra, 1997) in the water. If this ratio is greater than 3.5, then phosphorus will limit biological growth (other nutrients, such as silica, are known to limit growth as well in less common instances).

In marine ecosystems, such as the Oyster Bay/Cold Spring Harbor complex, phosphorus is generally abundant. The amount of biological growth that occurs is directly related to the amount of nitrogen that is present in the water. For this reason, Friends of the Bay has monitored nitrogen in the estuary since nitrogen is typically the "limiting" nutrient in the marine environment.

Algal blooms may occur during the year, depleting the nutrient concentrations within the water column. When the nutrients are depleted, phytoplankton populations die off and sink to the bottom, contributing to large amounts of organic matter in the water column. This organic matter decays while sinking and is further decomposed by bacteria in the estuarine sediments.

Bacteria consume oxygen while decomposing dead phytoplankton. This depletion of oxygen may result in hypoxia (DO less than 3 mg/L) at the harbor bottom. Typically, hypoxia occurs in summer, when the water column stratification hinders oxygen replenishment in deep water.

Four nitrogen species are common in marine waters: ammonia, nitrate, nitrite and organic nitrogen. *Figure 20* presents a schematic of the interrelationships between these species, showing the processes that impact nitrogen in the marine environment.

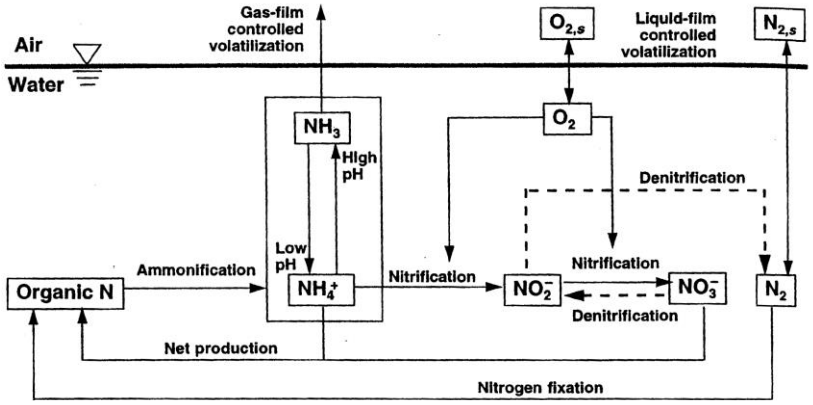

Figure 20. Nitrogen species and processes in marine environments
(Source: Chapra 1997)

Organic nitrogen is present in the form of urea, amino acids, proteins and other compounds (LISS, 1994). It can be bound to organic matter such as plants or algae. Dissolved forms of organic nitrogen come from sewage plants effluent, sewer overflow, failing septic systems and stormwater runoff. Dissolved forms of organic nitrogen are available to bacteria and phytoplankton populations and promote their growth.

Phytoplankton also utilize inorganic forms of nitrogen, including ammonia, nitrate, and nitrite. Organic nitrogen decays through ammonification to ammonia. Nitrates and nitrites are carried into the marine waters by stormwater runoff or result from nitrification of ammonia within the water body. Nitrates and nitrites can be converted to nitrogen gas by bacteria under anoxic conditions, and thus removed from the aqueous environment. High levels of ammonia may pose a danger to aquatic life. With rising temperatures and pH, ammonia ions (NH_4^+) change at increased rates into an un-ionized form of ammonia (NH_3). This form of ammonia is toxic to fish and aquatic plants.

4.1.3.2 Nitrogen Criteria and Standards

In 1989, the U.S. EPA proposed ambient water quality criteria for ammonia (NH_3) in salt water. The criteria are influenced by pH, salinity, and temperature. The EPA recommends that continuous total ammonia levels should not exceed 0.72 mg/L for waters having the following conditions: salinity 20 ppt, temperature 2°C, and pH 8. However, for slightly more alkaline conditions (pH 8.4), the criterion decreases to 0.30 mg/L.

The 1994 Long Island Sound Study (LISS) identified several major sources of nitrogen. These sources include deposition from air pollution, delivery from large tributaries, sewage treatment plants, failing septic systems, and storm water runoff. LISS presented several management options for controlling the nitrogen load into the Sound. Two of these options, including sewage treatment plant upgrades for nitrogen removal and reduction of nitrogen from non-point sources, could potentially result in a 55% reduction of nitrogen load to Long Island Sound.

Nitrogen water quality standards vary across the U.S. Some States follow total maximum daily load (TMDL) criteria. Others use site-specific or waterbody-based ambient nutrient levels (National Research Council, 2000). New York State adopted a revised aquatic life standard for ammonia level in marine waters in 2008. For estuarine waters such as Oyster Bay, the chronic, or long-term aquatic standard for ammonia (un-ionized ammonia as NH_3) is 35 µg/L (0.035 mg/L). The acute ammonia standard is 230 µg/L (0.23 mg/L), meaning that the estuary is considered impaired if measurements exceed this level.

In addition, the NYSDEC has adopted a total nitrogen (TN) guideline of 0.5 mg/L for the Peconic Bay estuary surface water (Suffolk County Department of Health Services, 1999). This guideline is based on the 1988-1990 summer data correlation of the mean TN levels with an occurrence of dissolved oxygen standard violations. The 1999 Comprehensive Conservation and Management Plan for the Peconic Bay Estuary proposed a change of this guideline to 0.45 mg/L based on more recent data (1994-1996). A more stringent criterion of 0.4 mg/L TN is being considered for shallow waters in order to protect eelgrass habitat areas.

LISS established a target of 58.5% nitrogen reduction from the 1990 baseline for cumulative point and non-point in-basin sources (NYSDEC, 2000). This target is to be achieved through maintaining maximum annual loads of nitrogen at 11 management zones. As of 2002, sewage treatment plant upgrades decreased nitrogen loads to the Sound by 28% (EPA 2006). An additional 12% reduction was targeted for completion by August 2004 (it is unknown if this goal was accomplished).

To address this water quality problem, NYSDEC imposed limits to reduce nitrogen discharged from the municipal treatment plants located on the north shore of Long Island. NYSDEC issued a revised discharge permit that required the Oyster Bay Sewer District (OBSD) to reduce nitrogen discharged to Oyster Bay from the treatment plant by 63.8 percent in three 5-year increments by August 2014. With the intent of reducing nitrogen discharges into Oyster Bay and Long Island Sound, the OBSD upgraded its plant in 2006 to provide advanced treatment for nitrogen removal. The OBSD advanced treatment facility is achieving the 2014 nitrogen limits imposed by the NYSDEC permit, and the upgrade has reduced the daily nitrogen discharged by as much as 75%.

4.1.3.3 Monitoring Results

FOB began monitoring nitrogen in 2002 with the goal of establishing a baseline of data and identifying possible areas of concern in the estuary. Due to lack of available funding, nitrogen sampling has not occurred since 2016.

4.1.4 Dissolved Oxygen

All aquatic life larger than bacteria depends on oxygen availability in the water column. Low levels of oxygen have multiple effects on the marine ecosystem such as changes in species behavior, sensitive species growth impairment and, in severe conditions, death of large populations of fish and other species. LISS summarized the effects of different oxygen impairment levels on some organisms of Long Island Sound. An excerpt of these findings is presented in *Table 5*. LISS (1994) concluded that low dissolved oxygen (hypoxia) poses the most serious threat to the health of the Sound ecosystem. The waters of the western and central portions of the Sound generally exhibit hypoxia during the months of July, August and September.

In bodies of water, oxygen is replenished from the atmosphere and by plant and algal photosynthesis. While aquatic plants and algae produce oxygen during the day, throughout the night photosynthesis does not occur, and consumption of oxygen by bacteria through decay of dead biomass consumes residual oxygen. Thus, the lowest levels of the daily cycle occur in the early morning hours. Several other factors influence the amount of dissolved oxygen found in a particular body of water:

- **Water temperature** - cooler water holds more oxygen; therefore, warm summer waters can be particularly stressful for marine organisms.
- **Salinity** - with increasing salinity the capacity of water to hold oxygen diminishes.
- **Water turbidity** - poor water clarity prevents sunlight from reaching oxygen-producing aquatic plants lower in the water column.
- **Nutrients** - excess nutrients can cause an algal bloom which blocks sunlight from aquatic vegetation lower in the water column. When algae dies and sinks to the bottom, the bacteria involved in decay of the plant material consume a significant amount of dissolved oxygen.
- **Mixing of the waters** - stagnant waters and waters that are stratified hinder transport of oxygen into lower levels of the water column.

Table 5. Effect of Dissolved Oxygen Concentrations on Selected Organisms (LISS, 1994)

Dissolved oxygen concentrations above the pycnocline (top of the water column)	
4-5 mg/L	Suitable for many species and life stages, may result in limited biological consequences
3-4 mg/L	25-50% mortality of larval lobsters (based on 4-day long experiments)
2-3 mg/L	50-95% mortality of larval lobsters (based on 4-day long experiments)

Dissolved oxygen concentrations below the pycnocline (bottom of the water column)	
4-5 mg/L	Protective for most biological consequences
3-4 mg/L	Protective for many biological consequences, reduced growth of juvenile Am. Lobster, grass shrimp, summer flounder (12-day experiments)
2-3 mg/L	Impaired finfish habitat (reduced abundance), mortality of larval grass shrimp and mud crabs (12-day experiments)
1-2 mg/L	Impaired lobster and finfish habitat, 10-90% mortality of some non-larval species (4-day experiments)
0-1 mg/L	Many severe consequences, even at short exposures

Previously, DO levels above 5.0 mg/L were considered healthy; DO levels below 5.0 mg/L were considered to cause various adverse impacts (related to growth, reproduction, and survival of organisms). The severity of impacts, and threshold DO levels where impacts occur, are strongly species dependent. A revised dissolved oxygen standard was implemented by NYSDEC in 2008. For estuarine waters such as Oyster Bay/Cold Spring Harbor Estuary, the chronic, or long-term DO standard is 4.8 mg/L. The standard allows levels to fall below 4.8 mg/L for short periods of time; the lower the level, the shorter the time interval allowed (as defined by the equation below).

$$DO_i = \frac{13.0}{2.80 + 1.84e^{-0.1t_i}}$$

where DO_i = DO concentration in mg/L between 3.0 - 4.8 mg/L and t_i = time in days. This equation is applied by dividing the DO range of 3.0 - 4.8 mg/L into a number of equal intervals. DO_i is the lower bound of each interval (i) and t_i is the allowable number of days that the DO concentration can be within that interval. The actual number of days that the measured DO concentration falls within each interval (i) is divided by the allowable number of days that the DO can fall within interval (t_i). The sum of the quotients of all intervals (i …n) cannot exceed 1.0:

$$\sum_{i=1}^{n} \frac{t_i(actual)}{t_i(allowed)} < 1.0$$

The DO concentration shall not fall below the acute standard of 3.0 mg/L at any time.

The acute DO standard is 3.0 mg/L, meaning that the estuary is considered impaired if DO measurements fall below this level. For DO concentrations that are equal to or greater than 3.0 mg/L and less than 4.8 mg/L, the growth and abundance of certain marine species will be affected. The impact of hypoxia on marine life depends on the duration and area over which low DO levels occur; water temperature, salinity, and distribution and behavioral patterns of resident species also play a role in how marine organisms react to hypoxic conditions.

In 2020 and 2021, Friends of the Bay monitored DO levels at the top and bottom of the water column at 19 open water body sites in the estuary. Dissolved oxygen concentrations at the top of the water column averaged 6.73 mg/L in 2020 (ranging from 2.96 to 9.37 mg/L) and 7.24 mg/L in 2021 (ranging from 3.15 to 11.57 mg/L). At a depth of one meter below the surface, DO averaged 6.54 mg/L in 2020 (ranging from 2.73 to 9.19 mg/L) and 7.28 mg/L in 2021 (ranging from 3.22 to 12.04 mg/L). DO averaged 6.42 mg/L at the bottom of the water column in 2020 (ranging from 1.89 to 9.02 mg/L) and 7.14 mg/L in 2021 (ranging from 2.03 to 11.76 mg/L). The 2020 and 2021 data follow the general patterns observed in past years, with the highest dissolved oxygen values occurring in the spring, declining levels through the early summer, and then rising again in late summer and into the fall. Sampling events in spring through early summer 2020 (April and mid-July) were not conducted due to the emergence of the COVID pandemic. Therefore, 2020 data represents only a portion of the typical sampling season. Refer to *Figures 21* through *26* for DO data collected at the bottom of the water column throughout the 2020 and 2021 seasons.

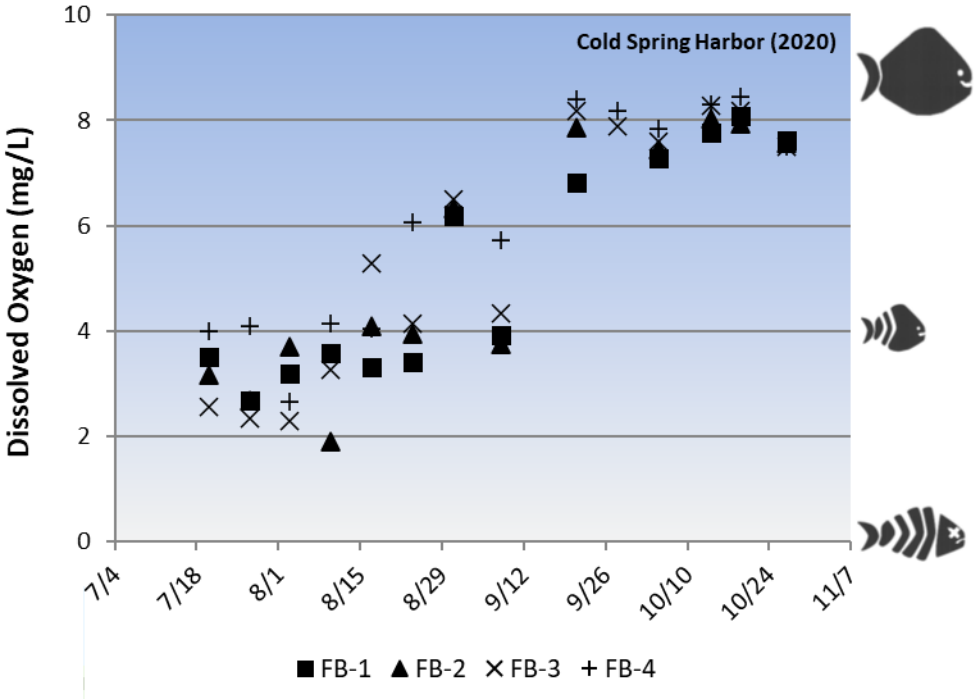

Figure 21. Dissolved oxygen at the bottom of the water column for Cold Spring Harbor monitoring locations, 2020

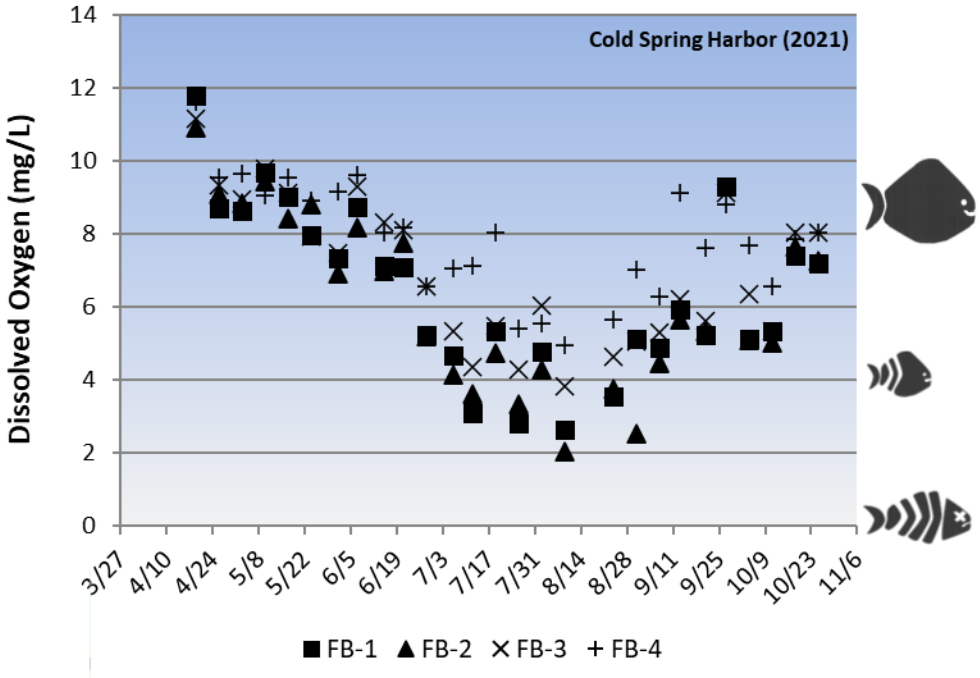

Figure 22. Dissolved oxygen at the bottom of the water column for Cold Spring Harbor monitoring locations, 2021

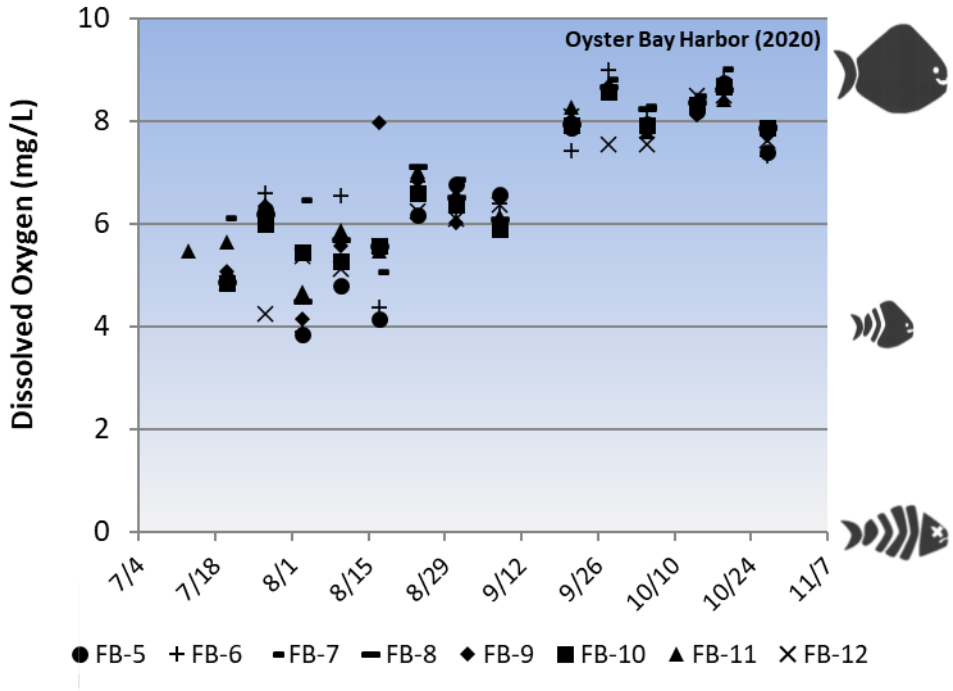

Figure 23. Dissolved oxygen at the bottom of the water column for Oyster Bay Harbor monitoring locations, 2020

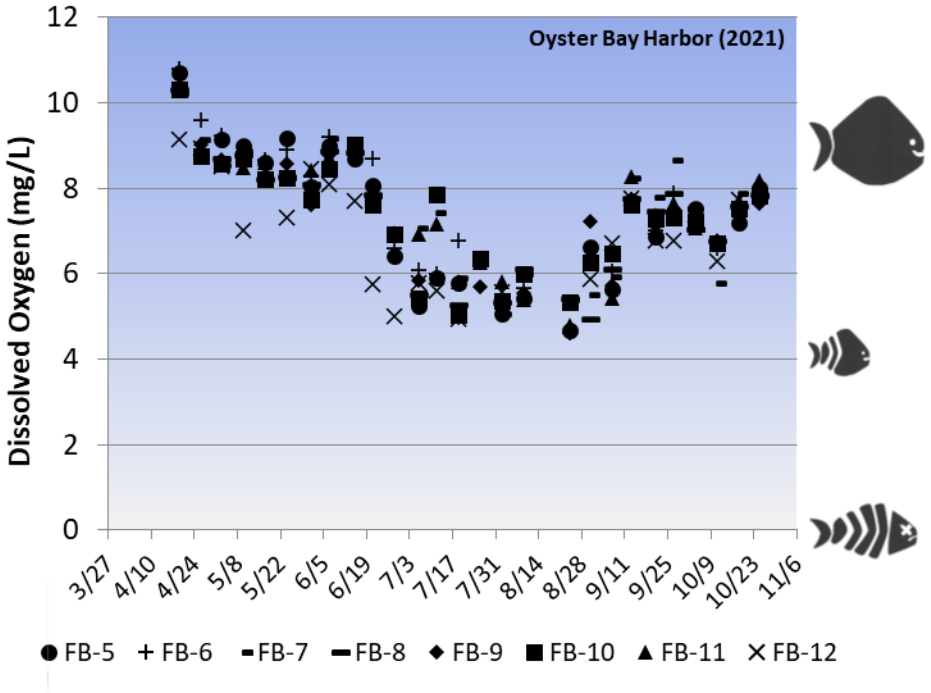

Figure 24. Dissolved oxygen at the bottom of the water column for Oyster Bay Harbor monitoring locations, 2021

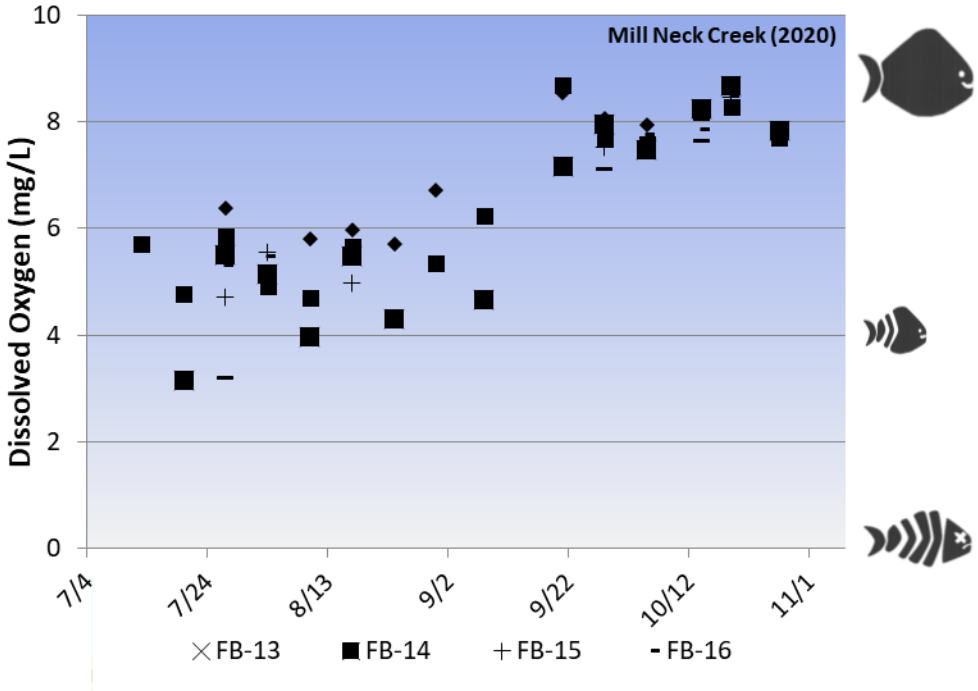

Figure 25. Dissolved oxygen at the bottom of the water column for Mill Neck Creek monitoring locations, 2020

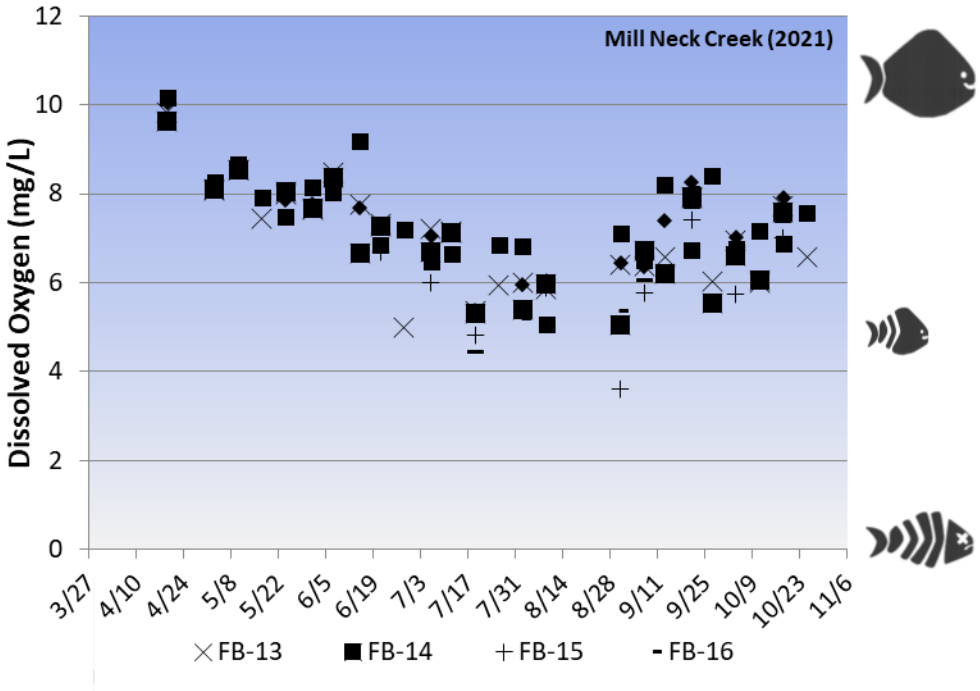

Figure 26. Dissolved oxygen at the bottom of the water column for Mill Neck Creek monitoring locations, 2021

Figure 28 and *Figure 29* present boxplots to graphically summarize the DO data collected at the bottom of the water column throughout the 2020 and 2021 seasons. Boxplots provide a succinct, graphical summary of water quality data to allow comparison of water quality conditions at different monitoring stations; each plot consists of a box, "whiskers", and outliers. As shown in *Figure 27*, the top of the box is the 75th percentile, the bottom of the box is the 25th percentile, the line dividing the box is the median value (50th percentile), and the diamond is the average. The vertical lines, or "whiskers" above and below the box represent the minimum and maximum values of the observed data.

The mean and median DO values in 2020 and 2021 were similar to those in previous years, generally between 4 mg/L and 8 mg/L. In 2021, the Cold Spring Harbor stations (FB-1, FB-2, FB-3, and FB-4) generally showed the greatest variability and lowest DO values of all stations monitored. Variability in 2020 cannot be assessed based on the shorter sampling season (mid-July through October). In Cold Spring Harbor, dissolved oxygen concentrations at the bottom of the water column fell below the acute standard of 3.0 mg/L at all four stations in 2020 and at two stations in 2021. There were no stations in Oyster Bay Harbor or Mill Neck Creek that fell below this standard in 2020 and 2021.

Dead fish were observed in over the 2020 and 2021 monitoring season, potentially indicating fish kills due to hypoxic or anoxic conditions prior to or during the day of sampling.

Dead fish were observed on the following dates:

- September 8, 2020: FB-1 and FB-7 (dead fish on surface; DO = 3.91 mg/L)
- August 31, 2020: FB-3 (1 dead fish; DO = 6.5 mg/L)
- June 28, 2021: FB-1(dead fish, DO = 5.23 mg/L)

- July 19, 2021: FB-14 (1 dead fish and crab, DO=5.31 mg/L)
- July 26, 2021: FB-2 (1 dead fish, DO = 2.85 mg/L)
- August 9, 2021: FB-15 (2 dead fish, DO = 5.87 mg/L)

Although the existing ecological community has likely adapted to low DO levels, and actual DO levels are not believed to have deviated beyond typical ranges, the observed dead fish may be a result of low DO levels. Low dissolved oxygen levels are a symptom of over-enrichment by nutrients and not a problem that can be solved directly. Reducing nutrient inputs from the surrounding watershed into the estuary would likely improve water quality and could reduce the occurrence of low DO levels. See *Appendix E* for additional dissolved oxygen data.

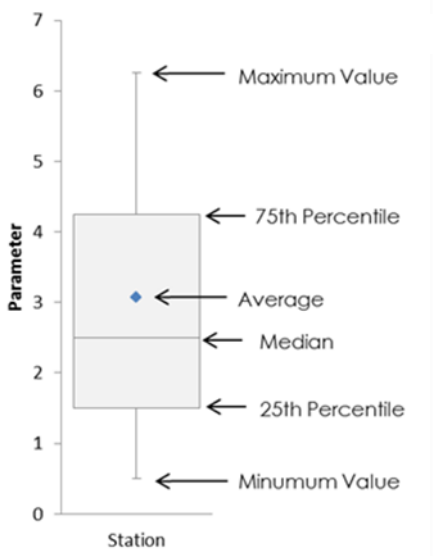

Figure 27. Boxplot Elements

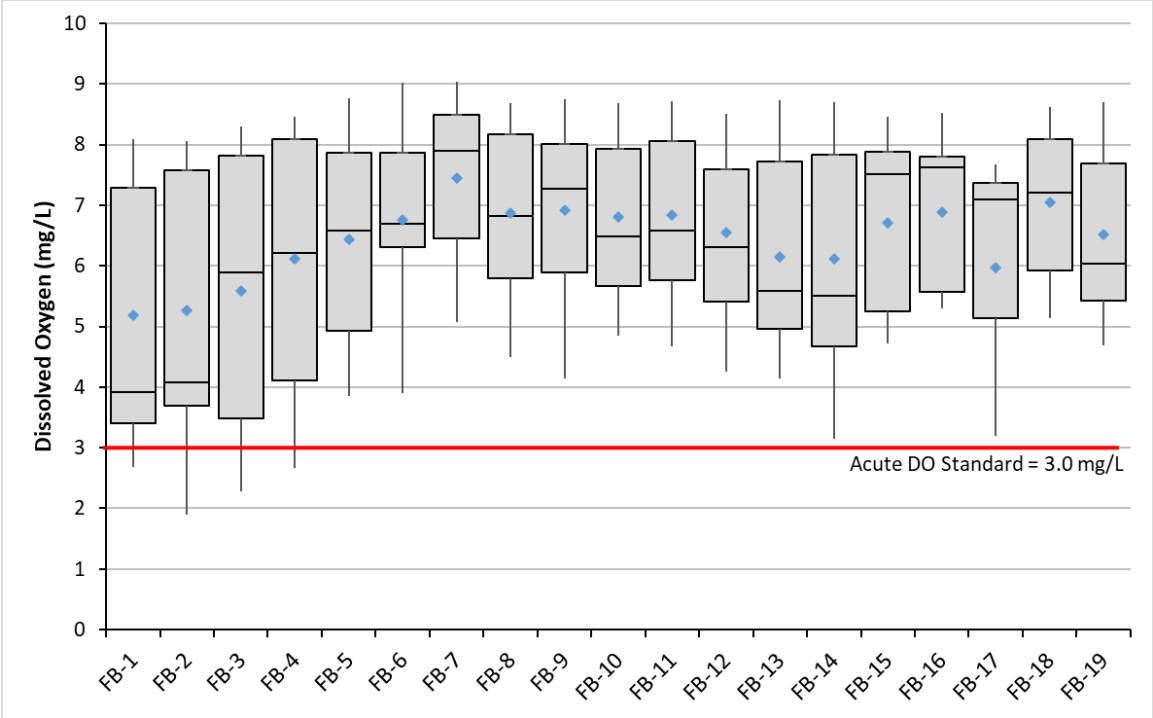

Figure 28. Dissolved oxygen at the bottom of the water column at all monitoring locations, 2020

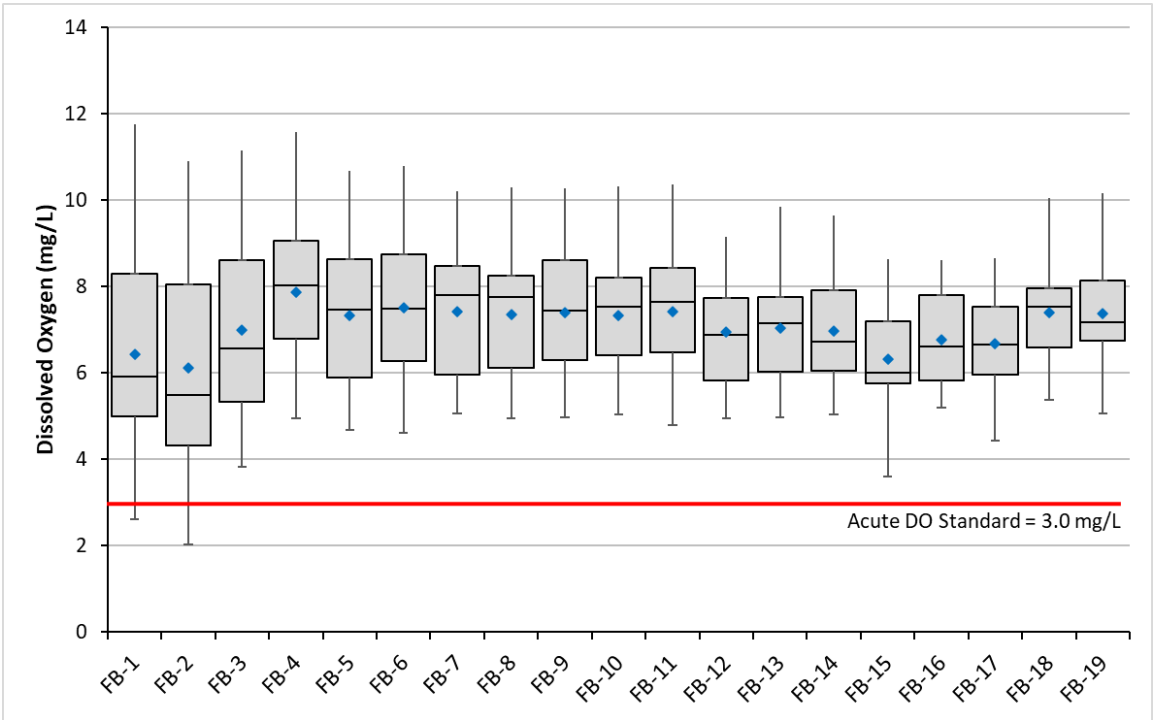

Figure 29. Dissolved oxygen at the bottom of the water column at all monitoring locations, 2021

4.2 Stream and Outfall Monitoring

The Friends of the Bay stream and outfall monitoring program is intended to identify potential upland sources of pollutants and causes of water quality impacts in the Oyster Bay Harbor, Cold Spring Harbor, and Mill Neck Creek estuary complex. No samples were collected during the 2020 and 2021 sampling seasons following upgrades to septic systems near previous monitoring stations. Analysis and discussion of data collected up until 2014 monitoring data can be found in the previous Water Quality Reports.

5 Program Recommendations

5.1 Proposed Short-Term Changes

- **Measure DO Profiles –** Prior to 2003, FOB recorded DO at one-meter intervals throughout the water column. This practice ceased in 2003 due to the excessive number of measurements recorded each week. However, stratification data can be useful in tracking conditions within the estuary. FOB should consider measuring DO profiles at one of the open water monitoring locations to track the development of stratification throughout the season. If temperature and salinity profiles were also recorded at that location, then the pycnocline (depth interval of steep density gradients) could be tracked via the halocline (depth interval of steep salinity gradients) and thermocline (depth interval of steep temperature gradients).

5.2 Potential Future Changes

To further refine the understanding of water quality in Cold Spring Harbor, Oyster Bay Harbor, and Mill Neck Creek, Friends of the Bay is considering the following additions to the monitoring program:

- **Improve Understanding of Estuary and Watershed Conditions** – As stated in the Watershed Action Plan, Friends of the Bay would like to:
  - Continue the current Friends of the Bay citizen water quality monitoring program at the in-harbor monitoring locations to continue collecting baseline water quality information and to assess the effectiveness of plan implementation over time.
  - Resume the Friends of the Bay stream and outfall monitoring program, as funding allows, focusing on priority outfalls and discharges to the estuary complex. Both dry- and wet-weather sampling is useful in identifying pollutant sources.
  - Although many users of the harbor have a working knowledge of the various types of marine habitats within portions of the estuary complex, information is limited regarding the actual quality and distribution of benthic (i.e., bottom-dwelling) communities and habitats throughout Oyster Bay/Cold Spring Harbor. A benthic habitat mapping survey is recommended to identify and assess the quality of benthic habitats and biological communities, including those habitats and biological communities that are threatened,

missing, or have been extirpated by human activity. This type of information would be used to identify and guide restoration projects such as a shellfish sanctuary, eelgrass restoration, and restoration of diamondback terrapin nesting areas.

- Current efforts at improving water quality focus on reducing pathogen loads to the estuary complex, based on the pathogen loading in Oyster Bay and Mill Neck Creek (the NYSDEC recently revoked Total Maximum Daily Load (TMDL) requirements for five waterbodies in these areas) While pathogens are a major threat to water quality, as well as to recreation and the shellfish industry, they are just one of many. Water quality monitoring data collected by Friends of the Bay indicates that low dissolved oxygen and elevated nitrogen concentrations are common in areas of the estuary complex during the summer. Additionally, sediment from stormwater runoff can smother otherwise productive shellfish beds and contain nutrients such as phosphorus which can result in harmful algal blooms. Specific recommended actions to evaluate other water quality issues include:
  - Coordinate with NYSDEC regarding the potential inclusion of Oyster Bay/Cold Spring Harbor for water quality impairments other than pathogens (i.e., low dissolved oxygen, nutrients, sediment) during future listing of impaired waters (303d list).
  - Coordinate with NYSDEC regarding the potential revised TMDL for Oyster Bay and Mill Neck Creek.
  - As a long-term project, develop a linked hydrodynamic and water quality model of the estuary complex to assess the relative influence of watershed sources and Long Island Sound circulation on the water quality of the estuary. In addition to pathogen load reductions, the model could be used to predict the effect of reduced nutrient loads from the watershed on harbor water quality, focusing on specific water quality concerns, such as dissolved oxygen. The model could also be used to predict the impact of other changes on water quality, such as increased rainfall resulting from climate change.
  - Ensure that future management efforts address the full range of water quality parameters and potential sources of water quality impairments.
- Additional study of the Cold Spring Harbor inner harbor area and the Beaver Lake and Oak Neck Creek areas in Mill Neck Creek is recommended to further assess potential pollution sources in these areas.

- **Bacteria Source Tracking** – Friends of the Bay would like to include Bacteria Source Tracking as part of its water quality monitoring program in future years. FOB continues to monitor grant opportunities to fund the collection of samples for Bacteroides as an indicator of recent human fecal pollution. The QAPP will be modified if funding is acquired to accommodate the additional sampling.
- **Chlorophyll a and/or Algal Enumeration** – In addition to measuring apparent color, it would benefit the monitoring program to measure chlorophyll levels within the estuary. A chlorophyll test would measure the concentration of algae in the water column, helping to identify if algal blooms are influencing water clarity. Alternatively, algal enumeration can identify the quantity of specific algal species that are present. Varying algal species can be an indicator of changes in a water body from year to year.

6 Conclusions

Analysis of the 2020 and 2021 water quality monitoring data provides the following insights:

- Overall, seasonal geometric mean fecal coliform concentrations have been decreasing in Cold Spring Harbor, Oyster Bay Harbor, and Mill Neck Creek since the program's inception in 2000.
- On a seasonal average basis, Oyster Bay Harbor met the State shellfish standards for fecal coliform in 2020 and 2021, except for at FB-10 in 2020. Oyster Bay Harbor is where the majority of shellfishing occurs in the estuary. The 2020 and 2021 seasonal geometric mean fecal coliform levels in Oyster Bay Harbor were also below the State shellfish standards. In contrast, seasonal average levels in Cold Spring Harbor (2020) and Mill Neck Creek (2020 and 2021) exceeded this standard.
- Although seasonal geometric mean fecal coliform levels in Oyster Bay Harbor were below the shellfish standard at most locations, consistent with previous years, the 30-day geometric mean fecal coliform levels exceeded the shellfish standard for some portion of the season at two out of eight Oyster Bay Harbor sites (2020) and five out of eight Oyster Bay Harbor sites (2021), generally consistent with previous years. Fecal coliform levels exceeded the shellfish standard for one site in 2018, five sites in 2017, six sites in 2016, and three sites in 2015.
- As observed in previous years, fecal indicator bacteria levels in Cold Spring Harbor and Mill Neck Creek were higher than in Oyster Bay Harbor. Similar to 2017 and 2018, only one of the four monitoring stations in Cold Spring Harbor met the fecal coliform shellfish standard for the entirety of the 2020 and 2021 seasons. All the Cold Spring Harbor stations remained below the swim standard for both 30-day geomean fecal coliform and enterococci in 2020 and 2021. All Mill Neck Creek stations exceeded the 30-day geomean fecal coliform shellfish standard in 2020 and 2021 for a portion of the sample seasons. Mill Neck Creek consistently has the highest levels of fecal indicator bacteria observed in the estuary complex. The highest levels generally occur at FB-15, FB-16, and FB-17, which are locations that are characterized by limited circulation or flushing during low tide or are located near "The Birches" residential subdivision.
- The average bacteria levels recorded at Mill Neck Creek monitoring locations decreased substantially (about 78% and 65% for fecal coliform and enterococci, respectively) from the 2011 sampling season to the 2018 sampling season, which is a continuation of the data observed in the 2017-2018 monitoring seasons. These reductions are an indicator of the water quality improvements that have resulted from sewage infrastructure upgrades at The Birches. However, seasonal geometric mean fecal coliform and enterococci levels at many of the Mill Neck Creek monitoring stations continue to exceed their respective standards, which suggest other sources of fecal indicator bacteria to Mill Neck Creek. This could be the result of stormwater pollution and other point and non-point sources.
- The single sample enterococci swimming standard was exceeded at multiple stations over three dates. These dates of exceedances were during or following precipitation events greater than 0.25 inches, further indicating spikes in bacteria-impaired water quality could be a result of stormwater pollution. However, additional monitoring data is needed to further assess water quality in Mill Neck Creek and further characterize the remaining pollutant sources.

- Nitrogen monitoring did not occur due to funding challenges. Since nitrogen plays an important ecosystem role in the estuary, its monitoring is important and should be restarted if feasible.
- A $10.6 million advanced wastewater treatment facility serving the Oyster Bay Sewer District has been fully operational since March 2006. It is believed that the facility is achieving the 2014 nitrogen limits imposed by the New York State Department of Environmental Conservation. The upgrade has reduced daily nitrogen discharges by as much as 75%. Nitrogen monitoring can provide valuable information for evaluating the effects of reduced nitrogen loading on estuary water quality.
- Hypoxic conditions (dissolved oxygen less 3 mg/L) were measured in Cold Spring Harbor primarily between July and September in both 2020 and 2021. Dissolved oxygen was generally observed above 4 mg/L in Oyster Bay Harbor and Mill Neck Creek in 2020 and 2021, with the exception of two measurements in 2020 and one measurement in 2021. Dead fish were observed in over the 2020 and 2021 monitoring season, potentially indicating fish kills due to hypoxic or anoxic conditions prior to or during the day of sampling.
- In Cold Spring Harbor, dissolved oxygen concentrations at the bottom of the water column fell below the acute standard of 3.0 mg/L at all four stations in 2020 and at two stations in 2021. There were no stations in Oyster Bay Harbor or Mill Neck Creek that fell below this standard in 2020 and 2021. Dissolved oxygen data continue to indicate that the waters of the estuary are enriched with nutrients and increases in ambient temperatures (*Figure 1*) will tend to further decrease DO concentrations since DO is also a function of water temperature. Long-term reductions in nitrogen inputs should reduce the occurrence of extremely low dissolved oxygen conditions in bottom waters.
- Stream and outfall monitoring was discontinued in 2015. Friends of the Bay currently does not have resources available at this time to resume stream and stormwater outfall monitoring to further assess point and nonpoint source pollutant contributions and sources in the watershed.
- As recommended in the 2011 Watershed Action Plan, ongoing water quality monitoring is essential for evaluating changes in harbor water quality as a result of land use activities in the watershed and implementation of the watershed plan recommendations. Additional data collection is also recommended to refine the current understanding of water quality impairments in the estuary complex, particularly pollutants for which previous monitoring results have demonstrated the potential for water quality impairment but which are not currently identified by NYSDEC as a listed cause of impairment (e.g., sediment, nutrients, and dissolved oxygen).
- Friends of the Bay will continue to work with citizen scientists, government agencies, and other non-governmental organizations in future monitoring seasons. Together, FOB and its partners will continue to improve and enhance the monitoring program, with the ultimate objective of protecting and improving the quality of water in the Oyster Bay/Cold Spring Harbor estuary complex.

7 References

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Appendix A

Oyster Bay/Cold Spring Harbor Estuary Complex Fact Sheet

Oyster Bay/Cold Spring Harbor Estuary Complex

Background Information

Located on the north shore of Long Island, the Oyster Bay/Cold Spring Harbor Estuary Complex – approximately 6,000 acres in size – is recognized as a vital natural, economic, cultural, historical and recreational resource.

And there is so much more to know about the Oyster Bay/Cold Spring Harbor Estuary Complex:

- The Oyster Bay/Cold Spring Harbor Estuary Complex is an embayment of Long Island Sound. (In 1987, the Sound was officially designated an Estuary of National Significance under the National Estuary Program.)

- The U.S. Fish & Wildlife Service maintains a National Wildlife Refuge (NWR) within the Oyster Bay/Cold Spring Harbor Estuary Complex. In fact, the Oyster Bay NWR which was renamed to Congressman Lester Wolff NWR in 2020 – which encompasses part of Cold Spring Harbor – is the largest of the Long Island Complex's eight refuges. The NWR consists of 3,209 acres of bay bottom, saltmarsh, and a small freshwater wetland. Nationally, Congressman Lester Wolff NWR is one of the few bay bottom Refuges owned and managed by the U.S. Fish and Wildlife Service.[1]

  The Congressman Lester Wolff NWR – which was established in 1968 via land donation from the Town of Oyster Bay and several local villages under the Migratory Bird Conservation Act – consists of high quality marine habitats that support a variety of aquatic-dependent wildlife. The refuge's waters and marshes surround Sagamore Hill National Historic Site, home of Theodore Roosevelt - father of the National Wildlife Refuge System.[2]

  Subtidal (underwater up to mean high tide line) habitats are abundant with marine invertebrates, shellfish and finfish.[3] The Refuge is located off of the Long Island Sound and the sheltered nature of the bay makes it extremely attractive as winter habitat for a variety of waterfowl species, especially diving ducks.[4]

  In 2005, Defenders of Wildlife included the Congressman Lester Wolff NWR (previously named Oyster Bay NWR) on their list of the ten most endangered Refuges in the country. The *Refuges at Risk: America's Ten Most Endangered National Wildlife Refuges 2005* report explains that the Congressman Lester Wolff NWR has become threatened by polluted stormwater runoff; non-sustainable development; habitat destruction; and human sewage associated with failing sewer infrastructure, inadequate on-site septic systems, and boat discharge. (Since 2005,

[1] http://refuges.fws.gov/profiles/WildHabitat.cfm?ID=52563
[2] http://refuges.fws.gov/profiles/index.cfm?id=52563
[3] http://refuges.fws.gov/profiles/index.cfm?id=52563
[4] http://refuges.fws.gov/profiles/WildHabitat.cfm?ID=52563

both Oyster Bay and Long Island Sound have been declared "no discharge zones." Discharge of sewage from boats is now illegal.)

- For almost two decades there have been three State-designated Significant Coastal Fish and Wildlife Habitats within the Oyster Bay/Cold Spring Harbor Estuary: Cold Spring Harbor, Oyster Bay Harbor, and Mill Neck Creek Wetlands (these habitat designations date back to 1987).[5] The New York State Department of State recently concluded a review involving proposed revisions to 25 designated Significant Coastal Fish and Wildlife Habitats (SCFWH) on the North Shore in Nassau and Suffolk counties. The habitat designations went into effect on October 15, 2005. Among the 25 habitats that have been revised are areas that fall within the OB/CSH Estuary. The three Habitats will now be consolidated into two: 1) Mill Neck Creek, Beaver Brook, and Frost Creek and 2) Oyster Bay and Cold Spring Harbor. [See end of document for more info regarding SCF&W Habitat areas.]

- OB/CSH Fish and Wildlife Facts:
    - More than 126 bird species have been documented at the Oyster Bay National Wildlife Refuge, including 23 species of waterfowl.[6]
    - Oyster Bay National Wildlife Refuge has the heaviest winter waterfowl use of any of the Long Island National Wildlife Refuges.[7]
    - According to the U.S. Fish and Wildlife Service (USFWS), species that rely on this ecosystem include Federal and State designated endangered and threatened species such as the bald eagle, peregrine falcon, osprey, northern harrier, and least tern.[8]
    - The northern diamondback terrapin is common at the Oyster Bay National Wildlife Refuge, particularly in the Frost Creek and Mill Neck Creek sections. The Refuge is considered to have one of the largest populations of diamondback terrapins on Long Island.[9]
    - The Harbor Complex hosts a productive marine finfishery. Oyster Bay has been designated by the National Marine Fisheries Service (NMFS) as Essential Fish Habitat (EFH) for 15 species of finfish across multiple life stages. The harbor serves as a nursery and feeding ground from early spring to late fall for these species and, as a result, contributes to the abundance of fisheries resources that are of regional significance.[10]

- New York State's 1999 Long Island Sound Coastal Management Program, prepared by the NYS Department of State, identifies the Oyster Bay-Cold Spring Harbor area as a Regionally Important Natural Area.[11] [See end of document for more info regarding RINA.]

- The Oyster Bay/Cold Spring Harbor Estuary Complex is also considered one of the most important shellfish producing areas in New York State. The majority of Oyster Bay is certified for commercial shellfish harvest, with economically important shellfisheries including oyster (*Crassotrea virginica*) and hard clam (*Mercinaria mercinaria*). The waters of Oyster Bay are classified SA - the highest and best water quality determination for shellfishing. This is an unusual distinction given the harbor

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[5] http://www.nyswaterfronts.com/waterfront_natural_narratives.asp
[6] http://refuges.fws.gov/profiles/WildHabitat.cfm?ID=52563
[7] http://refuges.fws.gov/profiles/WildHabitat.cfm?ID=52563
[8] http://refuges.fws.gov/profiles/WildHabitat.cfm?ID=52563
[9] http://refuges.fws.gov/profiles/WildHabitat.cfm?ID=52563
[10] National Marine Fisheries Service and Mid-Atlantic Fishery Management Council. 2000. *Guide to Essential Fish Habitat Designations in the Northeastern United States*. http://www.nero.noaa.gov/hcd/webintro.html
[11] http://www.nyswaterfronts.com/downloads/pdfs/lis_cmp/Chap6.pdf

complex's proximity to New York City and the fact that harbors to the west have been closed for more than 30 years.

- According to the Oyster Bay Cold Spring Harbor Protection Committee website, the F.M. Flower & Sons, Inc., along with 80 independent baymen, harvest roughly 90% of New York State's oyster crop[12] and 33% of NY's hard clams[12,13] from Oyster Bay and Cold Spring Harbor.

- A section of the surrounding watershed is located within the Oyster Bay Special Groundwater Protection Area – a Critical Environmental Area[14] – on the spine of the deep flow water recharge area. Virtually all of Long Island's drinking water is drawn from a system of underground reservoirs or aquifers. The Island's drinking water system was designated as the nation's first Sole Source Aquifer, requiring special protection. The Oyster Bay Special Groundwater Protection Area is one of two such state-designated areas in Nassau County designed for the purpose of maintaining open space to recharge the aquifer.

- The Harbor Complex is home to the Cold Spring Harbor Fish Hatchery & Aquarium. The Hatchery is proud to have the largest living collection of New York State freshwater reptiles, fish and amphibians which are housed in the Julia F. Fairchild Building, the Walter L. Ross II Aquarium Building and in eight outdoor ponds. Brook, Brown and Rainbow trout are raised to stock private ponds.

- Renowned for its maritime legacy, Oyster Bay has been designated a "historic maritime area" by New York State.

What is a Significant Coastal Fish & Wildlife Habitat?

The New York State Department of Environmental Conservation evaluates the significance of coastal fish and wildlife habitats, and following a recommendation from the DEC, the Department of State designates and maps specific areas.

A habitat is designated "significant" if it serves one or more of the following functions: (a) the habitat is essential to the survival of a large portion of a particular fish or wildlife population; (b) the habitat supports populations of species which are endangered, threatened or of special concern; (c) the habitat supports populations having significant commercial, recreational, or educational value; and (d) the habitat exemplifies a habitat type which is not commonly found in the state or in a coastal region. In addition, the significance of certain habitats increases to the extent they could not be replaced if destroyed.

What is a Regionally Important Natural Area?

Regionally important natural areas are defined geographic areas within the Long Island Sound coastal boundary and generally are composed of a variety of smaller, natural ecological communities that together form a landscape of environmental, social, and economic value to the people of New York. A regionally important natural area would meet the following three conditions:

1) The area contains significant natural resources.

[12] https://www.oysterbaycoldspringharbor.org Accessed July 2022
[13] 2013 New York Annual Shellfish Landings, New York State Department of Environmental Conservation
[14] http://www.dec.state.ny.us/website/dcs/seqr/cea/

2) The resources are at risk.
3) Additional management measures are needed to preserve or improve the significant resources, or sustain their use.

To be designated as a CEA, an area must have an exceptional or unique character with respect to one or more of the following: a benefit or threat to human health; a natural setting (e.g., fish and wildlife habitat, forest and vegetation, open space and areas of important aesthetic or scenic quality); agricultural, social, cultural, historic, archaeological, recreational, or educational values; or an inherent ecological, geological or hydrological sensitivity to change that may be adversely affected by any change. Following designation, the potential impact of any Type I or Unlisted Action on the environmental characteristics of the CEA is a relevant area of environmental concern and must be evaluated in the determination of significance prepared pursuant to Section 617.7 of SEQR.

Additional information:

❖ Use impairments in Oyster Bay Harbor, Mill Neck Creek, Cold Spring Harbor and its tributaries are identified in the 2000 Atlantic Ocean/Long Island Sound Basin Waterbody Inventory and Priority Waterbodies List (PWL).[15] The use impairments include shellfishing, public bathing, fish consumption, habitat/hydrology, aquatic life, and recreation. (The use impairment of shellfishing is reinforced by the following facts: 1) Oyster Bay Harbor, Mill Neck Creek and its tidal tributaries are among the 69 water bodies, in the New York State 2002 303(d) list, impaired for shellfish harvesting[16] (SEE BELOW) and 2) The NYS DEC has decertified all shellfish harvesting areas in Mill Neck Creek and some shellfish harvesting areas in Oyster Bay.)

❖ According to *Pathogen Total Maximum Daily Loads for Shellfish Waters in Oyster Bay Harbor and Mill Neck Creek*, a September 2003 report[17] by the New York State Department of Environmental Conservation, "urban storm water is… the major source of pathogens (approx. 88% of total) to the Harbor." The report also points out that "the waters support a large recreational environment for boating which represents the second largest source of pathogens (approx. 11% of total) to these bodies." (Note that boat discharges have now been banned in Oyster Bay and throughout the Sound.)

❖ Oyster Bay Harbor, Mill Neck Creek, and its tidal tributaries are among the 69 water bodies listed in the New York State's 2002 303(d) as impaired for shellfish harvesting. The New York State Department of Environmental Conservation, with the cooperation and technical assistance of the U.S. Environmental Protection Agency (USEPA), along with their contractors Battelle and HydroQual, has completed the total maximum daily loads (TMDL) for pathogens in the shellfish waters for Oyster Bay Harbor and Mill Neck Creek. In accordance with USEPA's Water Quality Planning and Management Regulations (40 CFR, Part 30), TMDLs need to be developed to achieve the applicable water quality standards. Oyster Bay Harbor needed to be broken down into several distinct areas where individual TMDLs have been developed. Once implemented, these TMDLs are expected to achieve the targeted reductions in pathogen loads from point and non-point sources with the ultimate goal of achieving the water quality standards for shellfish harvesting. In management zone OBH-2 a 10% pathogen load reduction is mandated and in management zone OBH-3 an

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[15] 2000 Atlantic Ocean/Long Island Sound Basin Waterbody Inventory and Priority Waterbodies List (PWL), New York State Department of Environmental Conservation.

[16] *Pathogen Total Maximum Daily Loads For Shellfish Waters in Oyster Bay Harbor and Mill Neck Creek*, New York State Department of Environmental Conservation (September 2003) http://www.dec.state.ny.us/website/dow/oystbay.pdf

[17] *Pathogen Total Maximum Daily Loads For Shellfish Waters in Oyster Bay Harbor and Mill Neck Creek*, New York State Department of Environmental Conservation (September 2003) http://www.dec.state.ny.us/website/dow/oystbay.pdf

89% pathogen load reduction is mandated. In the other management zones, it is necessary to ensure no increase in pathogen discharges.[18]

Further, the TMDL indicates that pollution from marinas and boat mooring areas should be reduced using appropriate mitigation techniques such as:

- Public awareness campaigns on illicit dumping of wastewater,
- Enhancement of public toilet facilities near the shore and,
- Expansion of current pump-out programs including the mobile and on-shore pump out facilities.

[18] *Pathogen Total Maximum Daily Loads For Shellfish Waters in Oyster Bay Harbor and Mill Neck Creek*, New York State Department of Environmental Conservation (September 2003) http://www.dec.state.ny.us/website/dow/oystbay.pdf

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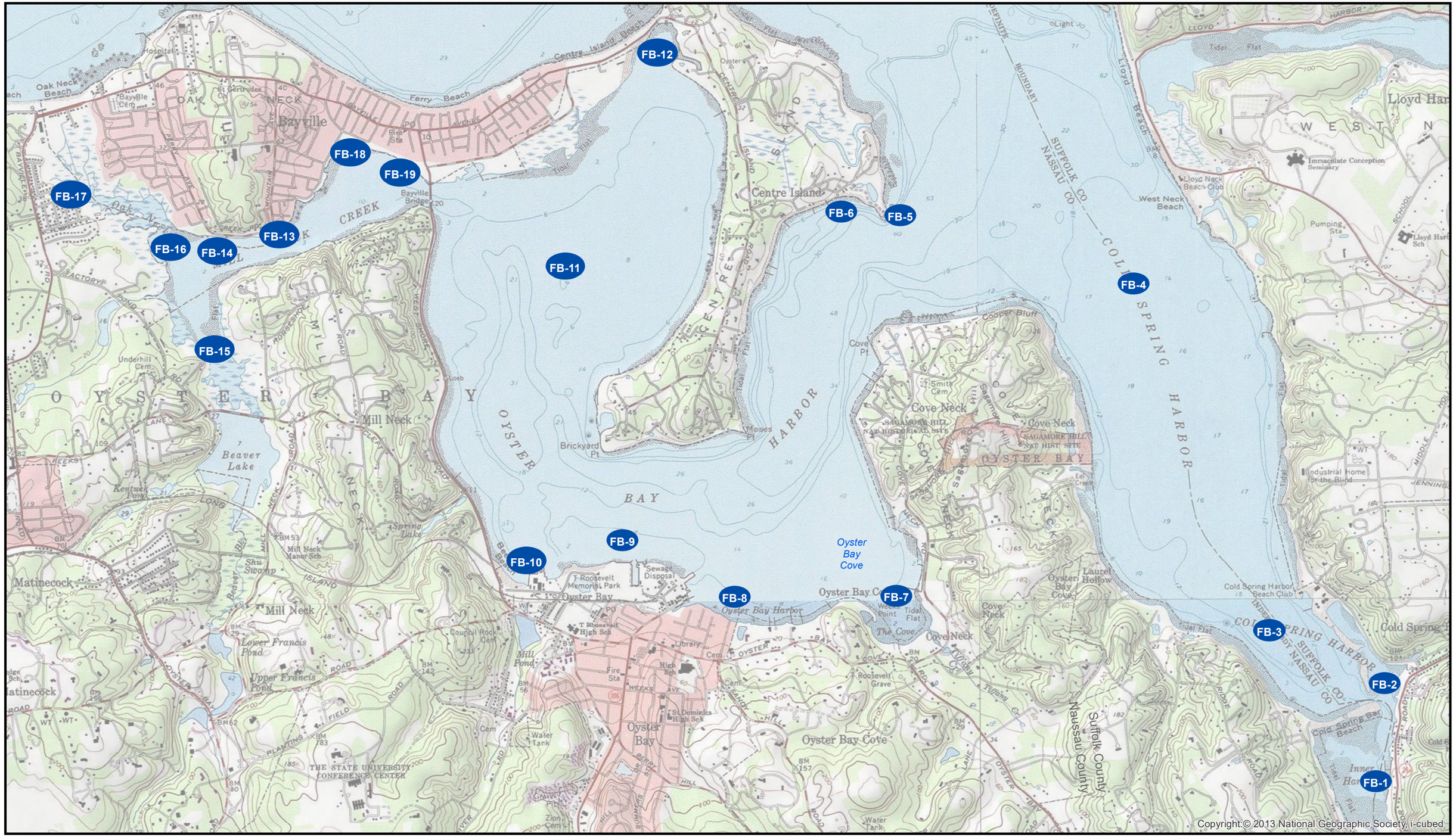
Appendix B

Sampling Locations Map and Description



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FUSS & O'NEILL

Friends of the Bay
Water Quality Monitoring Locations

N W E S

0 0.5 1
Miles

Data Sources:
Friends of the Bay; USGS Topo Maps © 2011 National Geographic Society;
Document Path: K:\P2005\1349\MonitoringLocations.mxd

Sampling Locations in Cold Spring Harbor, Oyster Bay Harbor, and Mill Neck Creek

	Site ID	Site Name	Site Description	Latitude	Longitude
Cold Spring Harbor	FB-1	South Cold Spring Harbor Cove	50 yards off last dock in Cold Spring Harbor, just south of Whalers Yacht Club Slips	40°51'45" N	73°27'51" W
	FB-2	CSH Cove North Mooring Field	Cove just north-east of Powell's Marina, east of large sand bar and small mooring field	40°52'09" N	73°27'48" W
	FB-3	CSH South	200 yards west of Cold Spring Harbor mooring field; mid channel between Mobil Oil Terminal and orange brick house	40°52'22" N	73°28'25" W
	FB-4	CSH North	Center of CSH, south-east of Plum Point; just north of Charles Wang's dock	40°53'47" N	73°29'08" W
Oyster Bay Harbor	FB-5	Plum Point	Off Plum Point, 110 yards south of Red Nun "4"	40°54'04" N	73°30'23" W
	FB-6	Seawanhaka Yacht Club PSTP outfall	Out fall is located at pink buoy. Station 200 years off boat yard dock	40°54'05" N	73°30'42" W
	FB-7	Oyster Bay Cove	Center of cove 100 yards south-west of Mr. Yampole's pier	40°52'31" N	73°30'25" W
	FB-8	Whites Creek and OB-STP outfall	100 yards east of Commander Oil dock	40°52'31" N	73°31'17" W
	FB-9	Roosevelt Beach	Approx. 200 yards offshore and in line with flagpole at Roosevelt Park	40°52'45" N	73°31'53" W
	FB-10	Beekman Beach and Mill Pond outfall	Mid Channel between mooring field and finger piers, 100 yards off shore	40°52'40" N	73°32'24" W
	FB-11	West Harbor	Midway between east and west shores, off large white house on North western shore	40°53'52" N	73°32'11" W
	FB-12	Turtle Cove	110 yards west of canal	40°54'44" N	73°31'41 W
Mill Neck Creek	FB-13	Mill Neck Creek-East	Mill Neck Creek, south of yellow house and wall	40°54'00" N	73°33'43" W
	FB-14	Mill Neck Creek -West	Confluence of Oak Neck Creek and Mill Neck Creek	40°53'56" N	73°34'03" W
	FB-15	Mill Neck Creek-South	As far south towards Beaver Dam in Oak Neck Creek as tidal stage allows	40°53'32" N	73°34'04" W
	FB-16	Mill Neck Creek-North	As far North in Mill Neck Creek as tidal stage allows to steel pillared dock	40°53'57" N	73°34'18" W
	FB-17	The Birches STP	North-west most channel past steel pillared dock in Mill Neck Creek	40°54'10" N	73°34'50" W
	FB-18	Mill Neck Cove	North most point which tide will allow	40°54'20" N	73°33'20" W
	FB-19	Flowers Oyster Hatchery	10 feet south of warning buoy marking shellfish racks	40°54'15" N	73°33'04" W

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Appendix C

Water Quality Monitoring Data Sheets

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Volunteer Water Quality Monitoring Data Sheet

DATE: _____

CAPTAIN: _____ FIELD SAMPLING LEADER: _____

SAMPLERS: _____ _____

STATION: _____ Time (2400): _____ Air Temp (C°) _____

GPS Reading: 40°_____ 73°_____

☐ Bacteria Sample ☐ Duplicate

☐ Nitrogen Sample ☐ Duplicate

☐ DO Sample Collected ☐ DO Sample Preserved

____ Rainfall in previous 24 hours: 0= none 1= light 2= moderate 3= heavy

WATER & WEATHER CONDITIONS

	Tidal Stage	1=high slack 2 = ebbing/falling 3= low slack 4 = flooding/rising
	Water Color	1 = brown 2 = red brown 3 = green 4 = yellow brown 5 = green brown
	Surface conditions	1= algal bloom 2 = oil slick 3 = foam 4 =dead fish 5 = debris 6=Other: _____
	Cloud Cover	**0 = no clouds, 1 = <25%, 2 =25-50%, 3 =50-75%, 4 = 75-100%**
	Wind Direction	**1= North 2= Northeast 3= East 4= Southeast 5= South 6= Southwest 7= West 8= Northwest**
	Wind Speed	**0= no wind 1= <5mph 2= 5-10mph 3= 10-15mph 4= 15-20mph 5= 20-25mph 6= >25mph**

	Weather	**1 = fair 2 = partly cloudy 3 = cloudy 4 = rain 5 = snow 6 = fog**
	Wave Height	0 = no waves 1= slight movement 2= light chop small waves on shore 3= moderate chop 4 = white caps 5 = swells

FIELD MEASUREMENTS Site #_____

Depth (m)	Temperature °C	Dissolved Oxygen (mg/l)	Salinity (ppt)	pH
0.5				
1.0				
_____ (0.5 m above bottom)				
Bottom = _____				

SECCHI DEPTH:_____

	Initials:	Initials:
Hit bottom before disappearing?	Yes No	Yes No
Angle		
Average of Two Readings		(m)

COMMENTS

_____ _____ _____

Rev. Aug 2014

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Appendix D

Tide Tables for Oyster Bay – 2020 & 2021

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2020

The NOAA Tide Predictions application provides predictions in both graphical and tabular formats, with many user selected options, for over 3000 stations broken down by key areas in each state. Users can also access stations via the Google map interface. Additional information can be found in the help page.

Station Types: The NOAA Tide Predictions application provides predictions from 2 distinct categories of stations at over 3000 locations:
Harmonic - The predicted height values for Harmonic stations are conducted by combining the harmonic constituents into a single tide curve.
Subordinate - The high and low height values for Subordinate stations are obtained by means and differences, and ratios applied to the full harmonic constant predictions at a specific Harmonic station (a Reference station).

Disclaimer: The official Tide prediction tables are published annually on October 1, for the following calendar year. Tide predictions generated prior to the publishing date of the official tables are subject to change. The predictions from the web based NOAA Tidal Predictions are based upon the latest information available as of the date of your request. Tide predictions generated may differ from the official published predictions if information for the station requested has been updated since the publishing date of the official published tables.

StationId: 8516299
Source: NOAA/NOS/CO-OPS
Station Type: Primary
Time Zone: LST_LDT
Datum: MLLW

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2020

(40 54.2N / 73 33.0W)

Times and Heights of High and Low Waters

January

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	03:15	6.9 210	**16**	03:19	8.4 256
	09:39	0.9 27		09:46	-0.5 -15
W	15:28	6.7 204	Th	15:44	7.7 235
	21:58	0.6 18		22:07	-0.6 -18
2	04:03	6.8 207	**17**	04:19	8.3 253
	10:35	1.0 30		10:53	-0.4 -12
Th	16:21	6.4 195	F	16:49	7.3 223
	22:50	0.8 24	◑	23:09	-0.3 -9
3	04:54	6.8 207	**18**	05:23	8.1 247
	11:35	0.9 27		12:02	-0.4 -12
F	17:19	6.2 189	Sa	18:00	7.0 213
◐	23:43	1.0 30			
4	05:48	6.9 210	**19**	00:16	-0.1 -3
	12:34	0.8 24		06:31	8.1 247
Sa	18:20	6.1 186	Su	13:11	-0.4 -12
				19:14	6.9 210
5	00:37	1.0 30	**20**	01:23	0.0 0
	06:43	7.0 213		07:39	8.0 244
Su	13:31	0.6 18	M	14:17	-0.5 -15
	19:22	6.1 186		20:22	6.9 210
6	01:30	1.0 30	**21**	02:28	0.1 3
	07:36	7.2 219		08:41	8.0 244
M	14:24	0.4 12	Tu	15:16	-0.6 -18
	20:18	6.3 192		21:21	7.0 213
7	02:21	0.9 27	**22**	03:27	0.1 3
	08:25	7.4 226		09:35	8.0 244
Tu	15:10	0.1 3	W	16:09	-0.7 -21
	21:06	6.5 198		22:13	7.1 216
8	03:07	0.7 21	**23**	04:19	0.1 3
	09:10	7.7 235		10:24	8.0 244
W	15:53	-0.2 -6	Th	16:56	-0.7 -21
	21:48	6.7 204		22:59	7.1 216
9	03:51	0.5 15	**24**	05:05	0.1 3
	09:53	8.0 244		11:07	7.9 241
Th	16:34	-0.5 -15	F	17:39	-0.6 -18
	22:30	7.0 213	●	23:41	7.1 216
10	04:35	0.2 6	**25**	05:46	0.2 6
	10:37	8.3 253		11:46	7.7 235
F	17:15	-0.8 -24	Sa	18:16	-0.5 -15
○	23:12	7.4 226			
11	05:20	-0.1 -3	**26**	00:18	7.1 216
	11:22	8.5 259		06:24	0.2 6
Sa	17:57	-1.0 -30	Su	12:20	7.6 232
	23:57	7.7 235		18:49	-0.3 -9
12	06:07	-0.4 -12	**27**	00:50	7.1 216
	12:09	8.6 262		06:59	0.3 9
Su	18:41	-1.2 -37	M	12:53	7.4 226
				19:20	-0.2 -6
13	00:44	8.0 244	**28**	01:20	7.1 216
	06:56	-0.6 -18		07:34	0.3 9
M	12:59	8.6 262	Tu	13:27	7.3 223
	19:26	-1.2 -37		19:53	0.0 0
14	01:32	8.2 250	**29**	01:53	7.2 219
	07:48	-0.6 -18		08:12	0.4 12
Tu	13:50	8.4 256	W	14:05	7.1 216
	20:15	-1.1 -34		20:28	0.2 6
15	02:24	8.4 256	**30**	02:31	7.2 219
	08:45	-0.6 -18		08:54	0.5 15
W	14:45	8.1 247	Th	14:48	6.8 207
	21:08	-0.9 -27		21:08	0.4 12
			31	03:14	7.1 216
				09:42	0.6 18
			F	15:35	6.5 198
				21:54	0.7 21

February

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	04:01	7.0 213	**16**	04:58	8.1 247
	10:36	0.7 21		11:39	-0.3 -9
Sa	16:26	6.3 192	Su	17:39	6.9 210
	22:45	0.9 27		23:54	0.2 6
2	04:52	7.0 213	**17**	06:09	7.8 238
	11:34	0.8 24		12:51	-0.1 -3
Su	17:22	6.1 186	M	18:56	6.7 204
◐	23:40	1.1 34			
3	05:46	7.0 213	**18**	01:07	0.4 12
	12:35	0.7 21		07:21	7.6 232
M	18:23	6.0 183	Tu	14:00	-0.1 -3
				20:06	6.7 204
4	00:38	1.1 34	**19**	02:16	0.4 12
	06:45	7.1 216		08:27	7.6 232
Tu	13:36	0.5 15	W	15:01	-0.2 -6
	19:28	6.1 186		21:07	6.9 210
5	01:37	1.0 30	**20**	03:16	0.3 9
	07:44	7.3 223		09:23	7.6 232
W	14:33	0.2 6	Th	15:54	-0.3 -9
	20:28	6.4 195		21:58	7.0 213
6	02:34	0.7 21	**21**	04:08	0.3 9
	08:40	7.6 232		10:12	7.7 235
Th	15:24	-0.1 -3	F	16:40	-0.3 -9
	21:20	6.8 207		22:43	7.1 216
7	03:27	0.3 9	**22**	04:53	0.2 6
	09:31	8.0 244		10:54	7.6 232
F	16:10	-0.6 -18	Sa	17:20	-0.3 -9
	22:07	7.3 223		23:22	7.2 219
8	04:17	-0.1 -3	**23**	05:32	0.2 6
	10:20	8.4 256		11:30	7.6 232
Sa	16:54	-0.9 -27	Su	17:54	-0.2 -6
	22:53	7.8 238	●	23:54	7.3 223
9	05:06	-0.5 -15	**24**	06:05	0.2 6
	11:08	8.6 262		12:01	7.5 229
Su	17:38	-1.2 -37	M	18:23	-0.1 -3
○	23:39	8.2 250			
10	05:54	-0.9 -27	**25**	00:21	7.3 223
	11:56	8.8 268		06:36	0.2 6
M	18:22	-1.4 -43	Tu	12:29	7.4 226
				18:50	0.0 0
11	00:26	8.6 262	**26**	00:47	7.4 226
	06:44	-1.2 -37		07:06	0.1 3
Tu	12:45	8.8 268	W	12:59	7.3 223
	19:07	-1.5 -46		19:18	0.1 3
12	01:14	8.8 268	**27**	01:17	7.5 229
	07:34	-1.2 -37		07:39	0.2 6
W	13:36	8.6 262	Th	13:34	7.2 219
	19:55	-1.3 -40		19:50	0.3 9
13	02:04	8.9 271	**28**	01:53	7.5 229
	08:28	-1.1 -34		08:16	0.3 9
Th	14:28	8.2 250	F	14:14	7.0 213
	20:46	-1.0 -30		20:27	0.5 15
14	02:56	8.7 265	**29**	02:33	7.5 229
	09:26	-0.9 -27		08:59	0.4 12
F	15:25	7.8 238	Sa	14:57	6.8 207
	21:43	-0.6 -18		21:09	0.7 21
15	03:54	8.4 256			
	10:30	-0.6 -18			
Sa	16:28	7.3 223			
◑	22:46	-0.2 -6			

March

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	03:18	7.4 226	**16**	05:33	8.0 244
	09:48	0.6 18		12:15	-0.1 -3
Su	15:46	6.5 198	M	18:18	7.0 213
	21:58	1.0 30	◑		
2	04:08	7.2 219	**17**	00:35	0.5 15
	10:44	0.7 21		06:46	7.6 232
M	16:41	6.3 192	Tu	13:28	0.2 6
◐	22:54	1.1 34		19:35	6.7 204
3	05:04	7.1 216	**18**	01:50	0.7 21
	11:47	0.8 24		08:01	7.3 223
Tu	17:41	6.2 189	W	14:37	0.3 9
	23:56	1.2 37		20:45	6.8 207
4	06:04	7.1 216	**19**	02:59	0.7 21
	12:52	0.7 21		09:08	7.3 223
W	18:47	6.3 192	Th	15:38	0.2 6
				21:45	6.9 210
5	01:02	1.0 30	**20**	03:59	0.6 18
	07:09	7.3 223		10:05	7.4 226
Th	13:56	0.4 12	F	16:30	0.1 3
	19:54	6.6 201		22:35	7.1 216
6	02:07	0.7 21	**21**	04:50	0.4 12
	08:13	7.6 232		10:52	7.5 229
F	14:53	0.0 0	Sa	17:15	0.1 3
	20:53	7.1 216		23:18	7.3 223
7	03:06	0.2 6	**22**	05:33	0.3 9
	09:11	8.1 247		11:34	7.5 229
Sa	15:43	-0.5 -15	Su	17:53	0.1 3
	21:44	7.8 238		23:54	7.4 226
8	05:00	-0.4 -12	**23**	06:10	0.2 6
	11:03	8.5 259		12:09	7.5 229
Su	17:30	-0.9 -27	M	18:25	0.2 6
	23:32	8.4 256			
9	05:50	-0.9 -27	**24**	00:24	7.5 229
	11:52	8.8 268		06:42	0.1 3
M	18:15	-1.2 -37	Tu	12:38	7.4 226
○			●	18:53	0.2 6
10	00:18	8.9 271	**25**	00:48	7.6 232
	06:39	-1.3 -40		07:10	0.1 3
Tu	12:41	8.9 271	W	13:04	7.4 226
	19:00	-1.4 -43		19:18	0.3 9
11	01:05	9.2 280	**26**	01:13	7.7 235
	07:28	-1.5 -46		07:38	0.1 3
W	13:30	8.9 271	Th	13:32	7.4 226
	19:46	-1.4 -43		19:45	0.4 12
12	01:52	9.4 287	**27**	01:43	7.8 238
	08:17	-1.5 -46		08:09	0.1 3
Th	14:19	8.7 265	F	14:06	7.3 223
	20:34	-1.2 -37		20:17	0.5 15
13	02:41	9.3 283	**28**	02:19	7.8 238
	09:09	-1.3 -40		08:44	0.1 3
F	15:10	8.3 253	Sa	14:44	7.2 219
	21:24	-0.8 -24		20:53	0.6 18
14	03:33	9.0 274	**29**	02:59	7.8 238
	10:04	-0.9 -27		09:25	0.3 9
Sa	16:05	7.9 241	Su	15:27	7.0 213
	22:20	-0.3 -9		21:34	0.8 24
15	04:29	8.5 259	**30**	03:44	7.7 235
	11:06	-0.5 -15		10:12	0.5 15
Su	17:07	7.4 226	M	16:15	6.8 207
	23:23	0.2 6		22:23	1.0 30
			31	04:35	7.5 229
				11:07	0.6 18
			Tu	17:09	6.6 201
				23:21	1.2 37

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

StationId: 8516299
Source: NOAA/NOS/CO-OPS
Station Type: Primary
Time Zone: LST_LDT
Datum: MLLW

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2020

(40 54.2N / 73 33.0W)

Times and Heights of High and Low Waters

April

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	05:31	7.4 226	**16**	01:27	1.0 30
W	12:09	0.7 21		07:32	7.2 219
◐	18:10	6.6 201	Th	14:06	0.6 18
				20:15	6.9 210
2	00:27	1.2 37	**17**	02:35	0.9 27
	06:33	7.3 223		08:39	7.1 216
Th	13:16	0.7 21	F	15:06	0.6 18
	19:16	6.7 204		21:14	7.1 216
3	01:36	1.0 30	**18**	03:33	0.7 21
	07:41	7.4 226		09:36	7.2 219
F	14:21	0.4 12	Sa	15:57	0.5 15
	20:24	7.1 216		22:03	7.3 223
4	02:45	0.6 18	**19**	04:23	0.5 15
	08:49	7.7 235		10:25	7.3 223
Sa	15:22	0.0 0	Su	16:41	0.5 15
	21:26	7.7 235		22:45	7.5 229
5	03:47	0.0 0	**20**	05:05	0.4 12
	09:51	8.1 247		11:06	7.3 223
Su	16:15	-0.4 -12	M	17:19	0.5 15
	22:20	8.4 256		23:20	7.6 232
6	04:42	-0.6 -18	**21**	05:42	0.2 6
	10:45	8.5 259		11:41	7.3 223
M	17:04	-0.8 -24	Tu	17:51	0.6 18
	23:09	8.9 271		23:48	7.7 235
7	05:33	-1.1 -34	**22**	06:14	0.1 3
	11:36	8.8 268		12:11	7.3 223
Tu	17:51	-1.0 -30	W	18:18	0.6 18
	23:56	9.4 287			
8	06:22	-1.5 -46	**23**	00:13	7.8 238
	12:25	8.9 271		06:43	0.1 3
W	18:38	-1.1 -34	Th	12:37	7.3 223
○			●	18:45	0.6 18
9	00:43	9.6 293	**24**	00:40	8.0 244
	07:11	-1.6 -49		07:11	0.1 3
Th	13:13	8.8 268	F	13:06	7.4 226
	19:25	-1.1 -34		19:14	0.7 21
10	01:30	9.6 293	**25**	01:12	8.0 244
	07:59	-1.5 -46		07:43	0.0 0
F	14:02	8.6 262	Sa	13:40	7.3 223
	20:12	-0.8 -24		19:47	0.7 21
11	02:19	9.4 287	**26**	01:49	8.1 247
	08:49	-1.2 -37		08:18	0.1 3
Sa	14:52	8.3 253	Su	14:19	7.3 223
	21:03	-0.4 -12		20:25	0.8 24
12	03:09	8.9 271	**27**	02:31	8.0 244
	09:43	-0.8 -24		08:59	0.2 6
Su	15:46	7.9 241	M	15:03	7.2 219
	21:58	0.1 3		21:08	0.9 27
13	04:04	8.4 256	**28**	03:17	7.9 241
	10:42	-0.2 -6		09:46	0.3 9
M	16:46	7.4 226	Tu	15:51	7.1 216
	23:01	0.5 15		21:59	1.0 30
14	05:07	7.8 238	**29**	04:09	7.8 238
	11:49	0.2 6		10:40	0.5 15
Tu	17:55	7.1 216	W	16:46	7.1 216
◑				22:59	1.1 34
15	00:13	0.9 27	**30**	05:06	7.6 232
	06:19	7.4 226		11:41	0.5 15
W	12:59	0.5 15	Th	17:46	7.1 216
	19:08	6.9 210	◐		

May

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	00:07	1.0 30	**16**	01:59	1.1 34
	06:09	7.5 229		07:59	6.9 210
F	12:46	0.5 15	Sa	14:22	0.9 27
	18:51	7.3 223		20:32	7.2 219
2	01:17	0.8 24	**17**	02:57	0.9 27
	07:17	7.6 232		08:58	6.9 210
Sa	13:50	0.3 9	Su	15:13	0.9 27
	19:57	7.8 238		21:21	7.4 226
3	02:26	0.3 9	**18**	03:48	0.7 21
	08:27	7.7 235		09:48	7.0 213
Su	14:51	0.1 3	M	15:59	0.9 27
	20:59	8.3 253		22:04	7.6 232
4	03:28	-0.2 -6	**19**	04:32	0.5 15
	09:31	8.0 244		10:31	7.1 216
M	15:47	-0.2 -6	Tu	16:38	0.9 27
	21:55	8.8 268		22:40	7.7 235
5	04:25	-0.8 -24	**20**	05:10	0.3 9
	10:27	8.3 253		11:08	7.1 216
Tu	16:39	-0.5 -15	W	17:12	0.9 27
	22:46	9.3 283		23:10	7.9 241
6	05:16	-1.2 -37	**21**	05:44	0.2 6
	11:19	8.5 259		11:40	7.2 219
W	17:28	-0.7 -21	Th	17:43	0.9 27
	23:34	9.5 290		23:38	8.0 244
7	06:06	-1.4 -43	**22**	06:15	0.1 3
	12:08	8.6 262		12:09	7.2 219
Th	18:17	-0.7 -21	F	18:14	0.9 27
○			●		
8	00:22	9.6 293	**23**	00:09	8.1 247
	06:54	-1.4 -43		06:47	0.1 3
F	12:57	8.6 262	Sa	12:41	7.3 223
	19:05	-0.6 -18		18:47	0.9 27
9	01:10	9.5 290	**24**	00:45	8.2 250
	07:42	-1.3 -40		07:20	0.0 0
Sa	13:46	8.4 256	Su	13:17	7.3 223
	19:53	-0.4 -12		19:23	0.8 24
10	01:58	9.2 280	**25**	01:25	8.3 253
	08:31	-0.9 -27		07:58	0.0 0
Su	14:35	8.1 247	M	13:58	7.4 226
	20:43	0.0 0		20:04	0.8 24
11	02:47	8.7 265	**26**	02:09	8.3 253
	09:22	-0.5 -15		08:39	0.0 0
M	15:27	7.8 238	Tu	14:43	7.5 229
	21:37	0.4 12		20:50	0.8 24
12	03:40	8.2 250	**27**	02:56	8.2 250
	10:17	0.0 0		09:26	0.1 3
Tu	16:24	7.4 226	W	15:32	7.5 229
	22:38	0.8 24		21:43	0.8 24
13	04:38	7.7 235	**28**	03:49	8.0 244
	11:18	0.4 12		10:19	0.2 6
W	17:27	7.2 219	Th	16:27	7.6 232
	23:46	1.1 34		22:44	0.8 24
14	05:44	7.3 223	**29**	04:46	7.8 238
	12:22	0.7 21		11:17	0.2 6
Th	18:32	7.1 216	F	17:26	7.7 235
◑				23:51	0.7 21
15	00:55	1.2 37	**30**	05:49	7.7 235
	06:53	7.0 213		12:19	0.3 9
F	13:24	0.8 24	Sa	18:28	8.0 244
	19:35	7.1 216	◐		
			31	00:59	0.4 12
				06:56	7.6 232
			Su	13:22	0.2 6
				19:32	8.3 253

June

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	02:07	0.1 3	**16**	03:04	0.9 27
	08:05	7.7 235		09:02	6.7 204
M	14:23	0.1 3	Tu	15:08	1.2 37
	20:35	8.6 262		21:15	7.5 229
2	03:10	-0.3 -9	**17**	03:52	0.7 21
	09:12	7.8 238		09:51	6.8 207
Tu	15:22	-0.1 -3	W	15:52	1.2 37
	21:33	9.0 274		21:56	7.7 235
3	04:08	-0.7 -21	**18**	04:34	0.5 15
	10:11	8.0 244		10:32	6.8 207
W	16:17	-0.2 -6	Th	16:32	1.1 34
	22:27	9.2 280		22:32	7.8 238
4	05:01	-1.0 -30	**19**	05:12	0.3 9
	11:04	8.2 250		11:08	7.0 213
Th	17:10	-0.3 -9	F	17:09	1.1 34
	23:17	9.3 283		23:06	8.0 244
5	05:52	-1.1 -34	**20**	05:48	0.2 6
	11:55	8.2 250		11:42	7.1 216
F	18:00	-0.2 -6	Sa	17:45	1.0 30
○				23:43	8.2 250
6	00:05	9.3 283	**21**	06:23	0.0 0
	06:40	-1.1 -34		12:18	7.3 223
Sa	12:44	8.2 250	Su	18:23	0.8 24
	18:49	-0.1 -3	●		
7	00:53	9.1 277	**22**	00:22	8.3 253
	07:28	-0.9 -27		07:00	-0.1 -3
Su	13:32	8.1 247	M	12:57	7.5 229
	19:37	0.1 3		19:04	0.7 21
8	01:40	8.8 268	**23**	01:05	8.4 256
	08:14	-0.6 -18		07:39	-0.2 -6
M	14:19	7.9 241	Tu	13:40	7.7 235
	20:25	0.3 9		19:48	0.6 18
9	02:27	8.4 256	**24**	01:51	8.5 259
	09:01	-0.3 -9		08:22	-0.3 -9
Tu	15:07	7.7 235	W	14:26	7.9 241
	21:15	0.6 18		20:36	0.4 12
10	03:15	8.0 244	**25**	02:40	8.4 256
	09:49	0.1 3		09:08	-0.3 -9
W	15:56	7.5 229	Th	15:15	8.0 244
	22:10	0.9 27		21:30	0.4 12
11	04:05	7.6 232	**26**	03:32	8.3 253
	10:41	0.4 12		09:59	-0.2 -6
Th	16:49	7.3 223	F	16:08	8.2 250
	23:09	1.1 34		22:29	0.3 9
12	05:01	7.2 219	**27**	04:29	8.0 244
	11:36	0.7 21		10:55	-0.1 -3
F	17:45	7.2 219	Sa	17:05	8.3 253
				23:34	0.3 9
13	00:12	1.2 37	**28**	05:30	7.8 238
	06:02	6.9 210		11:55	0.1 3
Sa	12:32	0.9 27	Su	18:06	8.4 256
◑	18:41	7.2 219	◐		
14	01:13	1.2 37	**29**	00:41	0.1 3
	07:05	6.7 204		06:36	7.6 232
Su	13:26	1.1 34	M	12:57	0.1 3
	19:36	7.3 223		19:09	8.6 262
15	02:11	1.0 30	**30**	01:48	-0.1 -3
	08:06	6.6 201		07:46	7.5 229
M	14:19	1.2 37	Tu	14:00	0.2 6
	20:28	7.4 226		20:14	8.7 265

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

StationId: 8516299
Source: NOAA/NOS/CO-OPS
Station Type: Primary
Time Zone: LST_LDT
Datum: MLLW

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2020

(40 54.2N / 73 33.0W)

Times and Heights of High and Low Waters

July

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	02:53	-0.3 -9	**16**	03:07	0.9 27
	08:55	7.6 232		09:02	6.5 198
W	15:03	0.2 6	Th	15:05	1.4 43
	21:16	8.8 268		21:10	7.6 232
2	03:54	-0.5 -15	**17**	03:57	0.7 21
	09:58	7.7 235		09:53	6.7 204
Th	16:02	0.1 3	F	15:53	1.3 40
	22:13	8.9 271		21:56	7.8 238
3	04:50	-0.7 -21	**18**	04:40	0.5 15
	10:53	7.8 238		10:36	6.9 210
F	16:57	0.1 3	Sa	16:37	1.1 34
	23:05	8.9 271		22:38	8.0 244
4	05:41	-0.7 -21	**19**	05:21	0.2 6
	11:45	7.9 241		11:15	7.1 216
Sa	17:49	0.1 3	Su	17:20	0.9 27
	23:54	8.9 271		23:20	8.3 253
5	06:29	-0.7 -21	**20**	05:59	0.0 0
	12:33	7.9 241		11:55	7.5 229
Su	18:37	0.2 6	M	18:03	0.6 18
○			●		
6	00:40	8.7 265	**21**	00:03	8.5 259
	07:14	-0.5 -15		06:39	-0.3 -9
M	13:18	7.8 238	Tu	12:37	7.8 238
	19:23	0.3 9		18:47	0.3 9
7	01:24	8.4 256	**22**	00:48	8.7 265
	07:56	-0.3 -9		07:19	-0.5 -15
Tu	14:01	7.7 235	W	13:21	8.2 250
	20:07	0.5 15		19:34	0.1 3
8	02:06	8.2 250	**23**	01:35	8.7 265
	08:37	-0.1 -3		08:02	-0.6 -18
W	14:41	7.6 232	Th	14:07	8.5 259
	20:51	0.7 21		20:23	-0.1 -3
9	02:47	7.9 241	**24**	02:24	8.7 265
	09:17	0.2 6		08:48	-0.6 -18
Th	15:22	7.5 229	F	14:55	8.7 265
	21:37	0.9 27		21:15	-0.2 -6
10	03:30	7.5 229	**25**	03:16	8.5 259
	09:59	0.5 15		09:37	-0.5 -15
F	16:04	7.5 229	Sa	15:47	8.8 268
	22:26	1.0 30		22:12	-0.2 -6
11	04:16	7.2 219	**26**	04:11	8.2 250
	10:44	0.8 24		10:32	-0.3 -9
Sa	16:49	7.4 226	Su	16:43	8.8 268
	23:20	1.1 34		23:15	-0.1 -3
12	05:07	6.9 210	**27**	05:11	7.9 241
	11:34	1.0 30		11:31	0.0 0
Su	17:38	7.3 223	M	17:43	8.7 265
◑			◐		
13	00:17	1.2 37	**28**	00:22	0.0 0
	06:02	6.7 204		06:18	7.6 232
M	12:26	1.2 37	Tu	12:35	0.2 6
	18:30	7.3 223		18:48	8.6 262
14	01:15	1.1 34	**29**	01:30	0.0 0
	07:02	6.5 198		07:30	7.4 226
Tu	13:19	1.4 43	W	13:42	0.4 12
	19:24	7.3 223		19:57	8.5 259
15	02:13	1.1 34	**30**	02:39	-0.1 -3
	08:04	6.4 195		08:43	7.4 226
W	14:13	1.4 43	Th	14:50	0.5 15
	20:19	7.4 226		21:05	8.5 259
			31	03:43	-0.2 -6
				09:48	7.5 229
			F	15:54	0.4 12
				22:05	8.5 259

August

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	04:40	-0.3 -9	**16**	04:07	0.6 18
	10:44	7.6 232		10:04	7.0 213
Sa	16:50	0.4 12	Su	16:10	1.0 30
	22:58	8.5 259		22:13	8.1 247
2	05:31	-0.4 -12	**17**	04:52	0.2 6
	11:34	7.7 235		10:48	7.4 226
Su	17:41	0.4 12	M	16:58	0.6 18
	23:46	8.5 259		22:59	8.4 256
3	06:17	-0.3 -9	**18**	05:33	-0.1 -3
	12:20	7.7 235		11:31	7.9 241
M	18:27	0.4 12	Tu	17:44	0.2 6
○				23:45	8.7 265
4	00:29	8.4 256	**19**	06:14	-0.5 -15
	06:58	-0.2 -6		12:14	8.4 256
Tu	13:01	7.8 238	W	18:30	-0.2 -6
	19:09	0.4 12	●		
5	01:08	8.2 250	**20**	00:31	8.9 271
	07:35	-0.1 -3		06:57	-0.7 -21
W	13:37	7.7 235	Th	12:59	8.8 268
	19:47	0.5 15		19:18	-0.5 -15
6	01:43	8.0 244	**21**	01:18	9.0 274
	08:08	0.1 3		07:40	-0.8 -24
Th	14:10	7.7 235	F	13:45	9.1 277
	20:23	0.6 18		20:06	-0.7 -21
7	02:17	7.8 238	**22**	02:07	8.9 271
	08:41	0.3 9		08:26	-0.8 -24
F	14:42	7.7 235	Sa	14:33	9.3 283
	21:01	0.7 21		20:57	-0.7 -21
8	02:54	7.6 232	**23**	02:58	8.7 265
	09:16	0.6 18		09:15	-0.6 -18
Sa	15:18	7.7 235	Su	15:24	9.2 280
	21:42	0.8 24		21:53	-0.6 -18
9	03:35	7.3 223	**24**	03:52	8.3 253
	09:55	0.8 24		10:09	-0.3 -9
Su	15:59	7.6 232	M	16:20	9.0 274
	22:28	1.0 30		22:54	-0.3 -9
10	04:20	7.0 213	**25**	04:52	7.9 241
	10:39	1.1 34		11:10	0.1 3
M	16:44	7.5 229	Tu	17:21	8.7 265
	23:20	1.1 34	◐		
11	05:10	6.7 204	**26**	00:02	0.0 0
	11:29	1.4 43		06:01	7.5 229
Tu	17:34	7.4 226	W	12:17	0.5 15
◑				18:30	8.4 256
12	00:18	1.2 37	**27**	01:13	0.2 6
	06:05	6.5 198		07:16	7.3 223
W	12:24	1.5 46	Th	13:30	0.7 21
	18:29	7.3 223		19:44	8.2 250
13	01:18	1.2 37	**28**	02:24	0.2 6
	07:06	6.4 195		08:31	7.3 223
Th	13:22	1.6 49	F	14:42	0.7 21
	19:27	7.3 223		20:55	8.2 250
14	02:20	1.1 34	**29**	03:29	0.1 3
	08:10	6.4 195		09:36	7.4 226
F	14:22	1.6 49	Sa	15:47	0.6 18
	20:26	7.5 229		21:56	8.2 250
15	03:17	0.9 27	**30**	04:26	0.0 0
	09:12	6.6 201		10:32	7.6 232
Sa	15:19	1.3 40	Su	16:42	0.5 15
	21:23	7.7 235		22:48	8.2 250
			31	05:15	-0.1 -3
				11:19	7.7 235
			M	17:31	0.4 12
				23:34	8.2 250

September

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	05:58	0.0 0	**16**	05:05	-0.2 -6
	12:01	7.8 238		11:06	8.5 259
Tu	18:13	0.4 12	W	17:25	-0.3 -9
				23:26	8.8 268
2	00:14	8.1 247	**17**	05:48	-0.6 -18
	06:36	0.1 3		11:50	9.1 277
W	12:37	7.9 241	Th	18:12	-0.8 -24
○	18:50	0.4 12	●		
3	00:48	8.0 244	**18**	00:13	9.1 277
	07:08	0.2 6		06:32	-0.8 -24
Th	13:07	7.9 241	F	12:35	9.5 290
	19:23	0.4 12		19:00	-1.1 -34
4	01:18	7.8 238	**19**	01:01	9.1 277
	07:37	0.4 12		07:17	-0.9 -27
F	13:34	7.9 241	Sa	13:22	9.7 296
	19:54	0.5 15		19:48	-1.2 -37
5	01:47	7.7 235	**20**	01:50	9.0 274
	08:05	0.5 15		08:03	-0.8 -24
Sa	14:03	7.9 241	Su	14:10	9.7 296
	20:26	0.5 15		20:38	-1.1 -34
6	02:20	7.6 232	**21**	02:40	8.8 268
	08:36	0.7 21		08:53	-0.5 -15
Su	14:37	7.9 241	M	15:01	9.4 287
	21:02	0.7 21		21:32	-0.8 -24
7	02:58	7.4 226	**22**	03:34	8.3 253
	09:12	0.9 27		09:48	-0.1 -3
M	15:16	7.8 238	Tu	15:57	9.0 274
	21:43	0.8 24		22:33	-0.3 -9
8	03:41	7.1 216	**23**	04:34	7.9 241
	09:53	1.2 37		10:50	0.3 9
Tu	16:00	7.6 232	W	16:59	8.5 259
	22:31	1.0 30		23:41	0.1 3
9	04:29	6.9 210	**24**	05:45	7.5 229
	10:42	1.4 43		12:02	0.7 21
W	16:50	7.5 229	Th	18:12	8.1 247
	23:27	1.2 37	◐		
10	05:22	6.6 201	**25**	00:55	0.3 9
	11:38	1.6 49		07:02	7.3 223
Th	17:45	7.3 223	F	13:18	0.9 27
◑				19:29	7.8 238
11	00:29	1.3 40	**26**	02:06	0.4 12
	06:22	6.5 198		08:15	7.3 223
F	12:40	1.7 52	Sa	14:31	0.8 24
	18:45	7.3 223		20:40	7.8 238
12	01:34	1.2 37	**27**	03:10	0.3 9
	07:27	6.6 201		09:18	7.5 229
Sa	13:45	1.6 49	Su	15:34	0.7 21
	19:49	7.4 226		21:40	7.9 241
13	02:37	1.0 30	**28**	04:05	0.3 9
	08:33	6.8 207		10:11	7.7 235
Su	14:49	1.3 40	M	16:27	0.5 15
	20:52	7.7 235		22:31	7.9 241
14	03:32	0.6 18	**29**	04:52	0.2 6
	09:31	7.3 223		10:56	7.8 238
M	15:46	0.8 24	Tu	17:13	0.3 9
	21:49	8.1 247		23:15	7.9 241
15	04:20	0.2 6	**30**	05:33	0.2 6
	10:20	7.9 241		11:35	7.9 241
Tu	16:37	0.2 6	W	17:53	0.3 9
	22:39	8.5 259		23:53	7.9 241

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

StationId: 8516299
Source: NOAA/NOS/CO-OPS
Station Type: Primary
Time Zone: LST_LDT
Datum: MLLW

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2020

(40 54.2N / 73 33.0W)

Times and Heights of High and Low Waters

October

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	06:08	0.3 9	**16**	05:22	-0.6 -18
	12:08	8.0 244		11:26	9.5 290
Th	18:27	0.3 9	F	17:54	-1.2 -37
○			●	23:55	8.9 271
2	00:25	7.8 238	**17**	06:08	-0.8 -24
	06:37	0.5 15		12:12	9.8 299
F	12:34	8.0 244	Sa	18:42	-1.5 -46
	18:57	0.3 9			
3	00:52	7.7 235	**18**	00:43	9.0 274
	07:03	0.6 18		06:54	-0.9 -27
Sa	12:58	8.0 244	Su	13:00	9.9 302
	19:25	0.3 9		19:30	-1.5 -46
4	01:18	7.6 232	**19**	01:32	8.9 271
	07:30	0.7 21		07:42	-0.7 -21
Su	13:26	8.0 244	M	13:49	9.7 296
	19:55	0.4 12		20:20	-1.2 -37
5	01:50	7.5 229	**20**	02:23	8.6 262
	08:01	0.9 27		08:33	-0.4 -12
M	14:01	8.0 244	Tu	14:40	9.3 283
	20:29	0.5 15		21:13	-0.8 -24
6	02:27	7.3 223	**21**	03:17	8.2 250
	08:36	1.0 30		09:28	0.0 0
Tu	14:40	7.9 241	W	15:35	8.8 268
	21:08	0.6 18		22:12	-0.4 -12
7	03:09	7.2 219	**22**	04:17	7.8 238
	09:16	1.2 37		10:31	0.5 15
W	15:24	7.7 235	Th	16:37	8.2 250
	21:53	0.8 24		23:19	0.1 3
8	03:56	6.9 210	**23**	05:26	7.4 226
	10:04	1.4 43		11:44	0.8 24
Th	16:13	7.5 229	F	17:50	7.7 235
	22:46	1.0 30	◐		
9	04:49	6.8 207	**24**	00:30	0.4 12
	11:01	1.6 49		06:40	7.3 223
F	17:09	7.4 226	Sa	13:00	0.9 27
	23:48	1.1 34		19:05	7.5 229
10	05:48	6.7 204	**25**	01:39	0.5 15
	12:06	1.6 49		07:50	7.3 223
Sa	18:10	7.3 223	Su	14:10	0.9 27
◑				20:15	7.4 226
11	00:53	1.1 34	**26**	02:41	0.5 15
	06:52	6.8 207		08:50	7.4 226
Su	13:15	1.4 43	M	15:11	0.7 21
	19:16	7.4 226		21:15	7.4 226
12	01:57	0.8 24	**27**	03:35	0.5 15
	07:58	7.2 219		09:42	7.6 232
M	14:22	1.0 30	Tu	16:03	0.4 12
	20:23	7.6 232		22:06	7.5 229
13	02:55	0.5 15	**28**	04:21	0.4 12
	08:59	7.7 235		10:26	7.8 238
Tu	15:22	0.4 12	W	16:48	0.3 9
	21:24	8.0 244		22:49	7.5 229
14	03:48	0.1 3	**29**	05:01	0.5 15
	09:52	8.4 256		11:04	7.9 241
W	16:16	-0.2 -6	Th	17:27	0.2 6
	22:18	8.4 256		23:27	7.5 229
15	04:36	-0.3 -9	**30**	05:36	0.6 18
	10:40	9.0 274		11:35	7.9 241
Th	17:06	-0.8 -24	F	18:01	0.1 3
	23:07	8.7 265		23:59	7.4 226
			31	06:05	0.7 21
				12:00	7.9 241
			Sa	18:30	0.1 3
			○		

November

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	00:26	7.4 226	**16**	05:35	-0.8 -24
	05:32	0.7 21		11:41	9.6 293
Su	11:25	8.0 244	M	18:15	-1.5 -46
	17:59	0.1 3			
	23:52	7.3 223	**17**	00:17	8.5 259
				06:25	-0.6 -18
2	06:00	0.8 24	Tu	12:30	9.4 287
	11:55	8.0 244		19:04	-1.3 -40
M	18:28	0.2 6			
			18	01:08	8.2 250
3	00:24	7.3 223		07:16	-0.3 -9
	06:31	0.9 27	W	13:21	9.0 274
Tu	12:31	8.0 244		19:55	-0.9 -27
	19:02	0.2 6			
			19	02:01	7.9 241
4	01:01	7.2 219		08:11	0.1 3
	07:07	1.0 30	Th	14:15	8.4 256
W	13:11	7.9 241		20:51	-0.4 -12
	19:40	0.3 9			
			20	02:58	7.6 232
5	01:43	7.1 216		09:11	0.4 12
	07:48	1.1 34	F	15:13	7.9 241
Th	13:56	7.8 238		21:51	0.0 0
	20:24	0.5 15			
			21	04:01	7.3 223
6	02:29	7.0 213		10:20	0.7 21
	08:36	1.2 37	Sa	16:19	7.4 226
F	14:45	7.6 232		22:57	0.3 9
	21:16	0.6 18			
			22	05:08	7.2 219
7	03:22	6.9 210		11:31	0.9 27
	09:34	1.3 40	Su	17:30	7.0 213
Sa	15:40	7.4 226	◐		
	22:14	0.7 21			
			23	00:00	0.5 15
8	04:20	7.0 213		06:13	7.2 219
	10:40	1.3 40	M	12:38	0.8 24
Su	16:41	7.3 223		18:38	6.9 210
◑	23:17	0.7 21			
			24	01:00	0.6 18
9	05:22	7.2 219		07:11	7.3 223
	11:49	1.0 30	Tu	13:38	0.6 18
M	17:47	7.3 223		19:39	6.8 207
			25	01:54	0.6 18
10	00:20	0.5 15		08:04	7.4 226
	06:26	7.6 232	W	14:31	0.4 12
Tu	12:57	0.6 18		20:32	6.9 210
	18:54	7.5 229			
			26	02:43	0.7 21
11	01:20	0.3 9		08:49	7.5 229
	07:28	8.1 247	Th	15:17	0.3 9
W	13:59	0.0 0		21:18	6.9 210
	19:59	7.8 238			
			27	03:25	0.7 21
12	02:16	-0.1 -3		09:28	7.6 232
	08:24	8.6 262	F	15:58	0.1 3
Th	14:55	-0.6 -18		21:58	7.0 213
	20:57	8.1 247			
			28	04:01	0.7 21
13	03:08	-0.4 -12		10:01	7.7 235
	09:15	9.1 277	Sa	16:34	0.0 0
F	15:47	-1.1 -34		22:32	7.0 213
	21:49	8.4 256			
			29	04:33	0.8 24
14	03:58	-0.6 -18		10:29	7.8 238
	10:04	9.5 290	Su	17:06	0.0 0
Sa	16:37	-1.4 -43		23:01	7.0 213
	22:39	8.5 259			
			30	05:03	0.8 24
15	04:46	-0.8 -24		10:57	7.8 238
	10:52	9.7 296	M	17:36	0.0 0
Su	17:26	-1.6 -49	○	23:29	7.0 213
●	23:28	8.6 262			

December

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	05:34	0.8 24	**16**	00:06	8.0 244
	11:30	7.9 241		06:12	-0.5 -15
Tu	18:07	-0.1 -3	W	12:16	8.9 271
				18:50	-1.2 -37
2	00:02	7.0 213	**17**	00:55	7.9 241
	06:08	0.8 24		07:02	-0.3 -9
W	12:07	7.9 241	Th	13:05	8.5 259
	18:42	-0.1 -3		19:38	-0.9 -27
3	00:40	7.1 216	**18**	01:44	7.7 235
	06:46	0.8 24		07:53	0.0 0
Th	12:48	7.9 241	F	13:54	8.1 247
	19:20	-0.1 -3		20:27	-0.5 -15
4	01:22	7.1 216	**19**	02:34	7.5 229
	07:29	0.8 24		08:47	0.3 9
F	13:33	7.8 238	Sa	14:45	7.6 232
	20:03	0.0 0		21:18	-0.2 -6
5	02:08	7.2 219	**20**	03:27	7.3 223
	08:17	0.8 24		09:46	0.6 18
Sa	14:23	7.7 235	Su	15:41	7.1 216
	20:51	0.1 3		22:13	0.2 6
6	02:59	7.3 223	**21**	04:23	7.1 216
	09:13	0.8 24		10:50	0.7 21
Su	15:17	7.5 229	M	16:42	6.7 204
	21:45	0.2 6	◐	23:10	0.5 15
7	03:55	7.4 226	**22**	05:21	7.0 213
	10:17	0.7 21		11:53	0.8 24
M	16:16	7.3 223	Tu	17:46	6.5 198
	22:45	0.2 6			
8	04:54	7.6 232	**23**	00:07	0.7 21
	11:25	0.4 12		06:18	7.0 213
Tu	17:20	7.2 219	W	12:53	0.7 21
◑	23:46	0.2 6		18:49	6.3 192
9	05:56	7.9 241	**24**	01:03	0.8 24
	12:32	0.1 3		07:13	7.1 216
W	18:28	7.3 223	Th	13:49	0.5 15
				19:48	6.3 192
10	00:47	0.0 0	**25**	01:55	0.9 27
	06:58	8.2 250		08:04	7.2 219
Th	13:36	-0.3 -9	F	14:40	0.4 12
	19:35	7.4 226		20:40	6.4 195
11	01:48	-0.1 -3	**26**	02:43	0.9 27
	07:59	8.6 262		08:48	7.3 223
F	14:36	-0.8 -24	Sa	15:25	0.2 6
	20:38	7.6 232		21:25	6.5 198
12	02:45	-0.3 -9	**27**	03:25	0.9 27
	08:55	8.9 271		09:27	7.4 226
Sa	15:32	-1.2 -37	Su	16:05	0.1 3
	21:34	7.9 241		22:03	6.5 198
13	03:39	-0.5 -15	**28**	04:02	0.8 24
	09:48	9.2 280		10:01	7.5 229
Su	16:24	-1.4 -43	M	16:41	-0.1 -3
	22:26	8.0 244		22:37	6.6 201
14	04:31	-0.6 -18	**29**	04:38	0.7 21
	10:38	9.2 280		10:34	7.7 235
M	17:14	-1.5 -46	Tu	17:15	-0.2 -6
●	23:16	8.1 247		23:09	6.8 207
15	05:22	-0.6 -18	**30**	05:13	0.6 18
	11:27	9.1 277		11:09	7.8 238
Tu	18:02	-1.4 -43	W	17:48	-0.3 -9
			○	23:43	7.0 213
			31	05:50	0.5 15
				11:48	7.9 241
			Th	18:23	-0.4 -12

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2021

The NOAA Tide Predictions application provides predictions in both graphical and tabular formats, with many user selected options, for over 3000 stations broken down by key areas in each state. Users can also access stations via the Google map interface. Additional information can be found in the help page.

Station Types: The NOAA Tide Predictions application provides predictions from 2 distinct categories of stations at over 3000 locations:
Harmonic - The predicted height values for Harmonic stations are conducted by combining the harmonic constituents into a single tide curve.
Subordinate - The high and low height values for Subordinate stations are obtained by means and differences, and ratios applied to the full harmonic constant predictions at a specific Harmonic station (a Reference station).

Disclaimer: The official Tide prediction tables are published annually on October 1, for the following calendar year. Tide predictions generated prior to the publishing date of the official tables are subject to change. The predictions from the web based NOAA Tidal Predictions are based upon the latest information available as of the date of your request. Tide predictions generated may differ from the official published predictions if information for the station requested has been updated since the publishing date of the official published tables.

StationId: 8516299
Source: NOAA/NOS/CO-OPS
Station Type: Primary
Time Zone: LST_LDT
Datum: MLLW

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2021

(40 54.2N / 73 33.0W)

Times and Heights of High and Low Waters

January

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	00:22	7.1 216	**16**	01:25	7.6 232
	06:29	0.4 12		07:35	-0.1 -3
F	12:30	8.0 244	Sa	13:34	7.7 235
	19:01	-0.5 -15		20:00	-0.5 -15
2	01:04	7.4 226	**17**	02:06	7.4 226
	07:13	0.2 6		08:21	0.1 3
Sa	13:16	7.9 241	Su	14:16	7.4 226
	19:43	-0.5 -15		20:42	-0.1 -3
3	01:49	7.6 232	**18**	02:48	7.3 223
	08:01	0.1 3		09:09	0.4 12
Su	14:04	7.8 238	M	15:01	7.0 213
	20:28	-0.5 -15		21:26	0.2 6
4	02:37	7.7 235	**19**	03:32	7.2 219
	08:55	0.1 3		10:01	0.5 15
M	14:56	7.6 232	Tu	15:50	6.6 201
	21:19	-0.3 -9		22:14	0.5 15
5	03:30	7.9 241	**20**	04:19	7.0 213
	09:55	0.0 0		10:58	0.7 21
Tu	15:53	7.4 226	W	16:44	6.3 192
	22:14	-0.2 -6	◐	23:06	0.8 24
6	04:26	8.0 244	**21**	05:11	6.9 210
	10:59	-0.1 -3		11:57	0.7 21
W	16:55	7.1 216	Th	17:44	6.0 183
◑	23:15	-0.1 -3			
7	05:27	8.1 247	**22**	00:01	1.0 30
	12:06	-0.2 -6		06:07	6.8 207
Th	18:02	7.0 213	F	12:58	0.7 21
				18:50	5.9 180
8	00:18	0.0 0	**23**	00:58	1.2 37
	06:31	8.2 250		07:06	6.8 207
F	13:14	-0.4 -12	Sa	13:56	0.6 18
	19:13	7.0 213		19:54	5.9 180
9	01:23	0.0 0	**24**	01:55	1.2 37
	07:37	8.3 253		08:02	7.0 213
Sa	14:19	-0.7 -21	Su	14:49	0.4 12
	20:22	7.1 216		20:48	6.1 186
10	02:27	-0.1 -3	**25**	02:47	1.1 34
	08:40	8.4 256		08:51	7.1 216
Su	15:19	-0.9 -27	M	15:35	0.2 6
	21:23	7.3 223		21:33	6.3 192
11	03:27	-0.2 -6	**26**	03:32	0.9 27
	09:37	8.6 262		09:33	7.4 226
M	16:14	-1.1 -34	Tu	16:15	0.0 0
	22:18	7.4 226		22:12	6.5 198
12	04:22	-0.3 -9	**27**	04:13	0.7 21
	10:30	8.6 262		10:12	7.6 232
Tu	17:05	-1.1 -34	W	16:52	-0.2 -6
	23:09	7.6 232		22:47	6.8 207
13	05:14	-0.3 -9	**28**	04:53	0.4 12
	11:19	8.5 259		10:51	7.8 238
W	17:53	-1.1 -34	Th	17:27	-0.5 -15
●	23:57	7.6 232	○	23:23	7.2 219
14	06:03	-0.3 -9	**29**	05:33	0.1 3
	12:06	8.3 253		11:31	8.0 244
Th	18:37	-1.0 -30	F	18:03	-0.7 -21
15	00:42	7.6 232	**30**	00:02	7.6 232
	06:50	-0.2 -6		06:14	-0.2 -6
F	12:51	8.1 247	Sa	12:14	8.2 250
	19:19	-0.8 -24		18:41	-0.8 -24
			31	00:43	7.9 241
				06:58	-0.5 -15
			Su	12:59	8.2 250
				19:21	-0.9 -27

February

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	01:27	8.2 250	**16**	02:05	7.5 229
	07:46	-0.6 -18		08:28	0.2 6
M	13:46	8.1 247	Tu	14:22	7.0 213
	20:05	-0.8 -24		20:39	0.3 9
2	02:15	8.4 256	**17**	02:42	7.4 226
	08:37	-0.6 -18		09:11	0.4 12
Tu	14:37	7.8 238	W	15:04	6.7 204
	20:54	-0.7 -21		21:20	0.6 18
3	03:05	8.4 256	**18**	03:25	7.2 219
	09:34	-0.5 -15		10:00	0.6 18
W	15:32	7.5 229	Th	15:51	6.4 195
	21:49	-0.4 -12		22:08	0.9 27
4	04:01	8.3 253	**19**	04:13	7.0 213
	10:37	-0.4 -12		10:56	0.8 24
Th	16:33	7.2 219	F	16:44	6.1 186
◑	22:50	-0.1 -3	◐	23:02	1.2 37
5	05:02	8.1 247	**20**	05:07	6.8 207
	11:45	-0.3 -9		11:58	0.9 27
F	17:41	6.9 210	Sa	17:45	5.9 180
	23:57	0.1 3			
6	06:10	8.0 244	**21**	00:03	1.4 43
	12:57	-0.3 -9		06:06	6.7 204
Sa	18:58	6.8 207	Su	13:04	0.9 27
				18:55	5.8 177
7	01:08	0.2 6	**22**	01:06	1.4 43
	07:24	7.9 241		07:11	6.8 207
Su	14:08	-0.4 -12	M	14:06	0.7 21
	20:13	6.8 207		20:03	6.0 183
8	02:19	0.2 6	**23**	02:08	1.2 37
	08:33	8.0 244		08:12	7.0 213
M	15:11	-0.6 -18	Tu	14:59	0.5 15
	21:17	7.1 216		20:57	6.3 192
9	03:23	0.0 0	**24**	03:02	0.9 27
	09:33	8.1 247		09:04	7.3 223
Tu	16:06	-0.7 -21	W	15:43	0.1 3
	22:11	7.3 223		21:40	6.8 207
10	04:19	-0.1 -3	**25**	03:48	0.5 15
	10:25	8.1 247		09:48	7.7 235
W	16:56	-0.8 -24	Th	16:22	-0.2 -6
	23:00	7.5 229		22:19	7.2 219
11	05:09	-0.2 -6	**26**	04:31	0.1 3
	11:12	8.1 247		10:30	8.0 244
Th	17:40	-0.8 -24	F	16:59	-0.5 -15
●	23:44	7.6 232		22:58	7.8 238
12	05:54	-0.3 -9	**27**	05:14	-0.4 -12
	11:55	8.0 244		11:13	8.3 253
F	18:19	-0.7 -21	Sa	17:37	-0.8 -24
			○	23:38	8.3 253
13	00:23	7.6 232	**28**	05:57	-0.8 -24
	06:34	-0.2 -6		11:56	8.4 256
Sa	12:34	7.8 238	Su	18:17	-1.0 -30
	18:55	-0.5 -15			
14	00:58	7.6 232			
	07:12	-0.1 -3			
Su	13:09	7.6 232			
	19:29	-0.3 -9			
15	01:31	7.6 232			
	07:49	0.0 0			
M	13:44	7.3 223			
	20:03	0.0 0			

March

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	00:20	8.7 265	**16**	01:54	7.8 238
	06:41	-1.0 -30		08:18	0.0 0
M	12:42	8.5 259	Tu	14:13	7.3 223
	18:58	-1.1 -34		20:25	0.3 9
2	01:05	8.9 271	**17**	02:25	7.7 235
	07:28	-1.1 -34		08:51	0.1 3
Tu	13:29	8.3 253	W	14:47	7.1 216
	19:43	-1.0 -30		20:59	0.5 15
3	01:52	9.0 274	**18**	03:01	7.6 232
	08:18	-1.0 -30		09:29	0.3 9
W	14:19	8.1 247	Th	15:26	6.9 210
	20:32	-0.7 -21		21:37	0.8 24
4	02:43	8.8 268	**19**	03:42	7.4 226
	09:14	-0.8 -24		10:13	0.6 18
Th	15:13	7.7 235	F	16:10	6.6 201
	21:28	-0.3 -9		22:22	1.1 34
5	03:39	8.5 259	**20**	04:29	7.2 219
	10:17	-0.4 -12		11:06	0.9 27
F	16:15	7.3 223	Sa	17:01	6.3 192
	22:32	0.1 3		23:15	1.4 43
6	04:43	8.1 247	**21**	05:22	7.0 213
	11:27	-0.2 -6		12:06	1.0 30
Sa	17:27	6.9 210	Su	17:59	6.1 186
◑	23:44	0.4 12	◐		
7	05:56	7.8 238	**22**	00:17	1.5 46
	12:43	0.0 0		06:21	6.8 207
Su	18:48	6.8 207	M	13:11	1.1 34
				19:04	6.1 186
8	01:02	0.5 15	**23**	01:23	1.5 46
	07:16	7.7 235		07:25	6.8 207
M	13:55	-0.1 -3	Tu	14:17	0.9 27
	20:04	6.9 210		20:13	6.3 192
9	02:15	0.4 12	**24**	02:30	1.3 40
	08:27	7.7 235		08:32	7.0 213
Tu	14:59	-0.2 -6	W	15:14	0.7 21
	21:06	7.2 219		21:14	6.7 204
10	03:18	0.2 6	**25**	03:30	0.9 27
	09:25	7.8 238		09:31	7.4 226
W	15:53	-0.4 -12	Th	16:03	0.3 9
	21:58	7.5 229		22:04	7.3 223
11	04:11	0.0 0	**26**	04:21	0.3 9
	10:16	7.9 241		10:21	7.8 238
Th	16:39	-0.4 -12	F	16:46	-0.1 -3
	22:43	7.7 235		22:47	7.9 241
12	04:58	-0.2 -6	**27**	05:07	-0.3 -9
	11:00	7.9 241		11:07	8.1 247
F	17:20	-0.4 -12	Sa	17:27	-0.5 -15
	23:23	7.8 238		23:28	8.5 259
13	05:38	-0.2 -6	**28**	05:52	-0.8 -24
	11:39	7.8 238		11:52	8.4 256
Sa	17:56	-0.3 -9	Su	18:09	-0.8 -24
●	23:57	7.8 238	○		
14	07:14	-0.2 -6	**29**	00:11	9.0 274
	13:12	7.6 232		06:37	-1.2 -37
Su	19:27	-0.1 -3	M	12:37	8.6 262
				18:51	-0.9 -27
15	01:26	7.8 238	**30**	00:55	9.3 283
	07:46	-0.1 -3		07:22	-1.4 -43
M	13:42	7.5 229	Tu	13:23	8.6 262
	19:56	0.1 3		19:35	-1.0 -30
			31	01:42	9.4 287
				08:10	-1.4 -43
			W	14:12	8.5 259
				20:23	-0.8 -24

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

StationId: 8516299
Source: NOAA/NOS/CO-OPS
Station Type: Primary
Time Zone: LST_LDT
Datum: MLLW

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2021

(40 54.2N / 73 33.0W)

Times and Heights of High and Low Waters

April

	Time	Height			Time	Height			Time	Height			Time	Height			Time	Height		
	h m	ft	cm		h m	ft	cm		h m	ft	cm		h m	ft	cm		h m	ft	cm	
1	02:30	9.3	283	**16**	02:26	7.8	238	**1**	03:06	9.0	274	**16**	02:40	7.8	238	**1**	04:52	7.8	238	**16**	03:54	7.7	235
	09:00	-1.2	-37		08:56	0.4	12		09:41	-0.7	-21		09:11	0.5	15		11:26	0.1	3		10:20	0.4	12
Th	15:02	8.2	250	F	14:55	7.0	213	Sa	15:46	7.9	241	Su	15:14	7.0	213	Tu	17:39	7.6	232	W	16:29	7.6	232
	21:14	-0.5	-15		21:02	1.0	30		21:58	0.2	6		21:21	1.3	40						22:49	0.9	27
2	03:23	9.0	274	**17**	03:08	7.6	232	**2**	04:05	8.5	259	**17**	03:27	7.6	232	**2**	00:01	0.7	21	**17**	04:48	7.5	229
	09:56	-0.8	-24		09:38	0.6	18		10:43	-0.3	-9		09:57	0.6	18		06:00	7.4	226		11:14	0.5	15
F	15:58	7.8	238	Sa	15:39	6.8	207	Su	16:50	7.6	232	M	16:03	7.0	213	W	12:30	0.4	12	Th	17:24	7.8	238
	22:11	-0.1	-3		21:47	1.3	40		23:07	0.5	15		22:13	1.4	43	◑	18:43	7.6	232		23:51	0.8	24
3	04:20	8.5	259	**18**	03:54	7.4	226	**3**	05:12	7.9	241	**18**	04:18	7.4	226	**3**	01:09	0.7	21	**18**	05:47	7.4	226
	10:59	-0.4	-12		10:27	0.8	24		11:53	0.1	3		10:50	0.7	21		07:08	7.2	219		12:10	0.5	15
Sa	17:02	7.4	226	Su	16:29	6.6	201	M	18:03	7.4	226	Tu	16:56	7.0	213	Th	13:30	0.6	18	F	18:20	8.0	244
	23:19	0.3	9		22:39	1.5	46	◑					23:13	1.4	43		19:43	7.6	232	◐			
4	05:27	8.0	244	**19**	04:46	7.2	219	**4**	00:23	0.7	21	**19**	05:15	7.3	223	**4**	02:11	0.7	21	**19**	00:54	0.5	15
	12:11	0.0	0		11:24	1.0	30		06:28	7.5	229		11:48	0.8	24		08:12	7.0	213		06:49	7.4	226
Su	18:17	7.1	216	M	17:25	6.5	198	Tu	13:03	0.3	9	W	17:54	7.2	219	F	14:27	0.7	21	Sa	13:08	0.5	15
◑					23:41	1.6	49		19:15	7.4	226	◐					20:39	7.7	235		19:19	8.3	253
5	00:35	0.6	18	**20**	05:45	7.0	213	**5**	01:37	0.7	21	**20**	00:18	1.2	37	**5**	03:08	0.5	15	**20**	01:57	0.2	6
	06:45	7.6	232		12:26	1.0	30		07:41	7.4	226		06:15	7.2	219		09:10	7.0	213		07:53	7.4	226
M	13:26	0.2	6	Tu	18:26	6.6	201	W	14:08	0.4	12	Th	12:46	0.7	21	Sa	15:19	0.8	24	Su	14:07	0.4	12
	19:36	7.1	216	◐					20:20	7.5	229		18:53	7.5	229		21:28	7.7	235		20:19	8.6	262
6	01:54	0.7	21	**21**	00:48	1.5	46	**6**	02:43	0.6	18	**21**	01:23	0.9	27	**6**	03:58	0.4	12	**21**	02:59	-0.2	-6
	08:04	7.5	229		06:47	7.0	213		08:47	7.3	223		07:19	7.3	223		10:00	7.0	213		08:57	7.6	232
Tu	14:37	0.2	6	W	13:28	0.9	27	Th	15:07	0.4	12	F	13:44	0.6	18	Su	16:06	0.9	27	M	15:06	0.2	6
	20:47	7.2	219		19:30	6.8	207		21:17	7.7	235		19:52	7.9	241		22:12	7.8	238		21:17	9.0	274
7	03:05	0.5	15	**22**	01:55	1.2	37	**7**	03:40	0.4	12	**22**	02:25	0.4	12	**7**	04:43	0.3	9	**22**	03:57	-0.6	-18
	09:12	7.5	229		07:53	7.2	219		09:44	7.4	226		08:23	7.5	229		10:44	7.0	213		09:58	7.8	238
W	15:38	0.1	3	Th	14:27	0.7	21	F	15:58	0.4	12	Sa	14:40	0.4	12	M	16:47	1.0	30	Tu	16:03	0.0	0
	21:46	7.5	229		20:31	7.3	223		22:06	7.8	238		20:49	8.4	256		22:49	7.8	238		22:13	9.2	280
8	04:04	0.3	9	**23**	02:57	0.7	21	**8**	04:30	0.2	6	**23**	03:23	-0.2	-6	**8**	05:23	0.3	9	**23**	04:52	-0.9	-27
	10:09	7.6	232		08:56	7.4	226		10:32	7.4	226		09:23	7.7	235		11:23	7.0	213		10:53	8.0	244
Th	16:30	0.0	0	F	15:20	0.4	12	Sa	16:43	0.5	15	Su	15:34	0.1	3	Tu	17:23	1.1	34	W	16:59	-0.1	-3
	22:36	7.7	235		21:25	7.9	241		22:47	7.9	241		21:42	8.9	271		23:21	7.8	238		23:07	9.4	287
9	04:55	0.1	3	**24**	03:52	0.1	3	**9**	05:13	0.1	3	**24**	04:17	-0.7	-21	**9**	05:58	0.3	9	**24**	05:45	-1.0	-30
	10:58	7.7	235		09:52	7.8	238		11:14	7.4	226		10:18	8.0	244		11:56	7.0	213		11:47	8.1	247
F	17:15	0.0	0	Sa	16:09	0.0	0	Su	17:22	0.6	18	M	16:26	-0.2	-6	W	17:55	1.1	34	Th	17:53	-0.2	-6
	23:19	7.8	238		22:13	8.5	259		23:23	7.9	241		22:33	9.3	283		23:50	7.8	238	○	23:59	9.4	287
10	05:39	-0.1	-3	**25**	04:42	-0.5	-15	**10**	05:51	0.1	3	**25**	05:08	-1.1	-34	**10**	06:30	0.3	9	**25**	06:36	-1.1	-34
	11:40	7.7	235		10:42	8.2	250		11:51	7.3	223		11:09	8.3	253		12:26	7.0	213		12:39	8.2	250
Sa	17:54	0.1	3	Su	16:55	-0.3	-9	M	17:55	0.7	21	Tu	17:16	-0.4	-12	Th	18:27	1.1	34	F	18:46	-0.2	-6
	23:55	7.9	241		22:59	9.0	274		23:53	7.9	241		23:23	9.6	293	●							
11	06:17	-0.1	-3	**26**	05:29	-1.0	-30	**11**	06:24	0.1	3	**26**	05:58	-1.3	-40	**11**	00:21	7.9	241	**26**	00:52	9.2	280
	12:17	7.6	232		11:30	8.5	259		12:22	7.2	219		12:00	8.4	256		07:02	0.3	9		07:27	-1.0	-30
Su	18:27	0.2	6	M	17:40	-0.6	-18	Tu	18:24	0.8	24	W	18:06	-0.5	-15	F	12:56	7.0	213	Sa	13:32	8.2	250
					23:45	9.5	290	●				○					18:59	1.1	34		19:39	-0.1	-3
12	00:26	7.9	241	**27**	06:16	-1.4	-43	**12**	00:19	7.9	241	**27**	00:13	9.7	296	**12**	00:56	7.9	241	**27**	01:44	9.0	274
	06:50	-0.1	-3		12:17	8.6	262		06:54	0.1	3		06:48	-1.4	-43		07:34	0.3	9		08:16	-0.8	-24
M	12:48	7.5	229	Tu	18:27	-0.7	-21	W	12:49	7.2	219	Th	12:51	8.4	256	Sa	13:30	7.1	216	Su	14:23	8.2	250
●	18:56	0.4	12	○					18:53	0.9	27		18:58	-0.5	-15		19:36	1.1	34		20:33	0.0	0
13	00:52	7.9	241	**28**	00:32	9.7	296	**13**	00:47	7.9	241	**28**	01:04	9.5	290	**13**	01:35	7.9	241	**28**	02:36	8.6	262
	07:19	0.0	0		07:04	-1.5	-46		07:23	0.2	6		07:39	-1.2	-37		08:09	0.3	9		09:06	-0.5	-15
Tu	13:15	7.4	226	W	13:06	8.6	262	Th	13:18	7.1	216	F	13:43	8.4	256	Su	14:09	7.2	219	M	15:15	8.1	247
	19:23	0.6	18		19:15	-0.7	-21		19:23	1.0	30		19:51	-0.3	-9		20:16	1.1	34		21:28	0.3	9
14	01:18	7.9	241	**29**	01:21	9.7	296	**14**	01:20	7.9	241	**29**	01:56	9.3	283	**14**	02:17	7.9	241	**29**	03:28	8.2	250
	07:48	0.1	3		07:53	-1.4	-43		07:55	0.3	9		08:31	-1.0	-30		08:48	0.3	9		09:57	-0.2	-6
W	13:43	7.3	223	Th	13:56	8.5	259	F	13:51	7.1	216	Sa	14:36	8.2	250	M	14:52	7.3	223	Tu	16:08	7.9	241
	19:52	0.7	21		20:05	-0.6	-18		19:57	1.1	34		20:46	0.0	0		21:00	1.1	34		22:26	0.5	15
15	01:49	7.9	241	**30**	02:12	9.4	287	**15**	01:58	7.9	241	**30**	02:51	8.8	268	**15**	03:03	7.8	238	**30**	04:24	7.7	235
	08:20	0.2	6		08:45	-1.1	-34		08:30	0.4	12		09:25	-0.6	-18		09:32	0.3	9		10:51	0.2	6
Th	14:16	7.1	216	F	14:48	8.3	253	Sa	14:30	7.0	213	Su	15:33	8.0	244	Tu	15:39	7.4	226	W	17:03	7.8	238
	20:24	0.9	27		20:58	-0.2	-6		20:36	1.2	37		21:45	0.3	9		21:51	1.0	30		23:28	0.7	21
												31	03:49	8.3	253								
													10:24	-0.2	-6								
												M	16:34	7.8	238								
													22:51	0.6	18								

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2021

(40 54.2N / 73 33.0W)

Times and Heights of High and Low Waters

July

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1 Th ◑	05:23	7.3 223	**16** F	04:24	7.8 238
	11:47	0.6 18		10:43	0.2 6
	17:59	7.6 232		16:55	8.3 253
				23:25	0.3 9
2 F	00:30	0.8 24	**17** Sa ◐	05:21	7.5 229
	06:24	7.0 213		11:39	0.3 9
	12:44	0.8 24		17:51	8.4 256
	18:55	7.5 229			
3 Sa	01:30	0.8 24	**18** Su	00:28	0.2 6
	07:27	6.7 204		06:23	7.4 226
	13:39	1.1 34		12:39	0.4 12
	19:51	7.5 229		18:52	8.5 259
4 Su	02:27	0.8 24	**19** M	01:33	0.1 3
	08:27	6.6 201		07:29	7.3 223
	14:34	1.2 37		13:42	0.5 15
	20:44	7.5 229		19:55	8.6 262
5 M	03:21	0.7 21	**20** Tu	02:40	-0.1 -3
	09:22	6.6 201		08:39	7.4 226
	15:25	1.3 40		14:47	0.4 12
	21:32	7.6 232		21:01	8.8 268
6 Tu	04:10	0.6 18	**21** W	03:43	-0.3 -9
	10:11	6.7 204		09:45	7.6 232
	16:11	1.3 40		15:51	0.3 9
	22:15	7.6 232		22:02	8.9 271
7 W	04:54	0.5 15	**22** Th	04:42	-0.6 -18
	10:53	6.7 204		10:45	7.8 238
	16:52	1.3 40		16:50	0.1 3
	22:52	7.7 235		22:59	9.0 274
8 Th	05:33	0.4 12	**23** F	05:36	-0.7 -21
	11:31	6.8 207		11:39	8.0 244
	17:29	1.2 37		17:46	0.0 0
	23:26	7.8 238		23:52	9.0 274
9 F	06:08	0.4 12	**24** Sa ○	06:26	-0.8 -24
	12:03	6.9 210		12:30	8.2 250
	18:04	1.2 37		18:38	-0.1 -3
	23:59	7.9 241			
10 Sa ●	06:40	0.3 9	**25** Su	00:43	8.9 271
	12:35	7.1 216		07:13	-0.8 -24
	18:40	1.1 34		13:19	8.2 250
				19:28	-0.1 -3
11 Su	00:35	8.0 244	**26** M	01:31	8.7 265
	07:13	0.2 6		07:58	-0.6 -18
	13:10	7.3 223		14:05	8.2 250
	19:17	0.9 27		20:16	0.0 0
12 M	01:15	8.1 247	**27** Tu	02:17	8.4 256
	07:48	0.1 3		08:42	-0.3 -9
	13:48	7.5 229		14:49	8.2 250
	19:58	0.8 24		21:04	0.2 6
13 Tu	01:57	8.1 247	**28** W	03:02	8.0 244
	08:25	0.0 0		09:25	0.0 0
	14:29	7.8 238		15:32	8.0 244
	20:42	0.6 18		21:52	0.5 15
14 W	02:43	8.1 247	**29** Th	03:48	7.6 232
	09:06	0.0 0		10:09	0.4 12
	15:14	8.0 244		16:17	7.8 238
	21:31	0.5 15		22:44	0.7 21
15 Th	03:31	7.9 241	**30** F	04:37	7.2 219
	09:52	0.1 3		10:58	0.8 24
	16:03	8.2 250		17:04	7.6 232
	22:25	0.4 12		23:40	0.9 27
			31 Sa ◑	05:30	6.9 210
				11:50	1.1 34
				17:56	7.4 226

August

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1 Su	00:39	1.0 30	**16** M	00:06	0.2 6
	06:29	6.6 201		06:02	7.4 226
	12:45	1.4 43		12:18	0.5 15
	18:52	7.3 223		18:30	8.5 259
2 M	01:40	1.1 34	**17** Tu	01:15	0.2 6
	07:34	6.4 195		07:13	7.2 219
	13:43	1.5 46		13:27	0.7 21
	19:51	7.3 223		19:41	8.4 256
3 Tu	02:39	1.1 34	**18** W	02:27	0.1 3
	08:38	6.4 195		08:30	7.3 223
	14:42	1.6 49		14:39	0.6 18
	20:50	7.3 223		20:54	8.4 256
4 W	03:35	0.9 27	**19** Th	03:34	-0.1 -3
	09:35	6.5 198		09:40	7.5 229
	15:36	1.5 46		15:47	0.4 12
	21:41	7.4 226		21:59	8.6 262
5 Th	04:23	0.8 24	**20** F	04:33	-0.3 -9
	10:23	6.6 201		10:39	7.8 238
	16:23	1.4 43		16:48	0.2 6
	22:25	7.6 232		22:56	8.7 265
6 F	05:05	0.6 18	**21** Sa	05:26	-0.5 -15
	11:03	6.9 210		11:30	8.1 247
	17:04	1.2 37		17:41	0.0 0
	23:03	7.8 238		23:46	8.7 265
7 Sa	05:41	0.4 12	**22** Su ○	06:13	-0.5 -15
	11:37	7.1 216		12:17	8.2 250
	17:42	1.0 30		18:29	-0.1 -3
	23:39	8.0 244			
8 Su ●	06:14	0.2 6	**23** M	00:32	8.6 262
	12:10	7.4 226		06:56	-0.4 -12
	18:19	0.7 21		13:00	8.3 253
				19:14	-0.1 -3
9 M	00:16	8.2 250	**24** Tu	01:15	8.4 256
	06:47	0.0 0		07:35	-0.3 -9
	12:45	7.8 238		13:39	8.3 253
	18:58	0.5 15		19:55	0.0 0
10 Tu	00:55	8.3 253	**25** W	01:54	8.2 250
	07:22	-0.1 -3		08:12	0.0 0
	13:23	8.1 247		14:15	8.2 250
	19:39	0.2 6		20:34	0.2 6
11 W	01:37	8.4 256	**26** Th	02:31	7.9 241
	07:59	-0.2 -6		08:48	0.3 9
	14:04	8.4 256		14:50	8.1 247
	20:22	0.0 0		21:15	0.4 12
12 Th	02:22	8.3 253	**27** F	03:10	7.6 232
	08:40	-0.2 -6		09:25	0.6 18
	14:48	8.7 265		15:28	7.9 241
	21:09	-0.1 -3		21:58	0.7 21
13 F	03:10	8.2 250	**28** Sa	03:51	7.2 219
	09:26	-0.1 -3		10:07	1.0 30
	15:36	8.8 268		16:10	7.7 235
	22:02	-0.1 -3		22:47	1.0 30
14 Sa	04:02	8.0 244	**29** Su	04:38	6.8 207
	10:16	0.1 3		10:55	1.4 43
	16:29	8.7 265		16:58	7.4 226
	23:01	0.0 0		23:43	1.2 37
15 Su ◐	04:59	7.7 235	**30** M ◑	05:32	6.5 198
	11:14	0.3 9		11:51	1.6 49
	17:26	8.6 262		17:53	7.2 219
			31 Tu	00:46	1.3 40
				06:34	6.3 192
				12:52	1.8 55
				18:55	7.1 216

September

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1 W	01:52	1.3 40	**16** Th	02:17	0.3 9
	07:46	6.3 192		08:25	7.4 226
	13:58	1.8 55		14:38	0.7 21
	20:01	7.1 216		20:50	8.1 247
2 Th	02:54	1.2 37	**17** F	03:24	0.1 3
	08:54	6.4 195		09:32	7.7 235
	15:00	1.7 52		15:45	0.4 12
	21:04	7.3 223		21:54	8.3 253
3 F	03:47	1.0 30	**18** Sa	04:21	-0.1 -3
	09:47	6.7 204		10:28	8.0 244
	15:53	1.4 43		16:42	0.2 6
	21:54	7.5 229		22:48	8.4 256
4 Sa	04:30	0.7 21	**19** Su	05:10	-0.2 -6
	10:29	7.1 216		11:16	8.2 250
	16:37	1.0 30		17:32	0.0 0
	22:36	7.8 238		23:35	8.4 256
5 Su	05:07	0.4 12	**20** M ○	05:54	-0.2 -6
	11:05	7.5 229		11:58	8.4 256
	17:17	0.6 18		18:15	-0.1 -3
	23:15	8.1 247			
6 M	05:42	0.1 3	**21** Tu	00:17	8.3 253
	11:40	8.0 244		06:33	-0.1 -3
	17:56	0.2 6		12:35	8.4 256
	23:54	8.3 253		18:54	-0.1 -3
7 Tu ●	06:17	-0.1 -3	**22** W	00:55	8.1 247
	12:16	8.4 256		07:08	0.1 3
	18:36	-0.1 -3		13:08	8.3 253
				19:30	0.0 0
8 W	00:34	8.5 259	**23** Th	01:28	7.9 241
	06:53	-0.3 -9		07:40	0.4 12
	12:55	8.8 268		13:38	8.2 250
	19:17	-0.4 -12		20:03	0.2 6
9 Th	01:17	8.6 262	**24** F	02:00	7.7 235
	07:33	-0.4 -12		08:11	0.6 18
	13:38	9.1 277		14:09	8.1 247
	20:01	-0.6 -18		20:38	0.4 12
10 F	02:02	8.6 262	**25** Sa	02:33	7.4 226
	08:15	-0.4 -12		08:44	0.9 27
	14:23	9.2 280		14:45	7.9 241
	20:49	-0.6 -18		21:16	0.6 18
11 Sa	02:50	8.4 256	**26** Su	03:12	7.2 219
	09:02	-0.2 -6		09:23	1.2 37
	15:12	9.2 280		15:26	7.7 235
	21:41	-0.4 -12		21:59	0.9 27
12 Su	03:42	8.1 247	**27** M	03:56	6.9 210
	09:54	0.1 3		10:08	1.5 46
	16:06	8.9 271		16:12	7.4 226
	22:40	-0.1 -3		22:52	1.2 37
13 M ◐	04:40	7.7 235	**28** Tu	04:47	6.6 201
	10:55	0.4 12		11:03	1.8 55
	17:06	8.6 262		17:06	7.2 219
	23:48	0.2 6		23:53	1.4 43
14 Tu	05:47	7.4 226	**29** W ◑	05:46	6.4 195
	12:05	0.7 21		12:07	1.9 58
	18:16	8.3 253		18:06	7.0 213
15 W	01:02	0.3 9	**30** Th	01:00	1.4 43
	07:05	7.3 223		06:54	6.4 195
	13:22	0.8 24		13:15	1.9 58
	19:34	8.1 247		19:13	7.0 213

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

StationId: 8516299
Source: NOAA/NOS/CO-OPS
Station Type: Primary
Time Zone: LST_LDT
Datum: MLLW

NOAA Tide Predictions

BAYVILLE BRIDGE, OYSTER BAY, NY,2021

(40 54.2N / 73 33.0W)

Times and Heights of High and Low Waters

October

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	02:05	1.3 40	**16**	03:05	0.2 6
	08:04	6.5 198		09:16	7.8 238
F	14:22	1.6 49	Sa	15:35	0.3 9
	20:20	7.1 216		21:41	7.9 241
2	03:01	1.0 30	**17**	04:01	0.1 3
	09:03	6.9 210		10:09	8.1 247
Sa	15:19	1.2 37	Su	16:29	0.0 0
	21:18	7.4 226		22:33	8.0 244
3	03:48	0.7 21	**18**	04:49	0.0 0
	09:49	7.4 226		10:54	8.3 253
Su	16:07	0.7 21	M	17:15	-0.1 -3
	22:05	7.8 238		23:18	8.0 244
4	04:28	0.4 12	**19**	05:30	0.1 3
	10:28	8.0 244		11:34	8.3 253
M	16:50	0.2 6	Tu	17:56	-0.2 -6
	22:48	8.1 247		23:58	7.9 241
5	05:06	0.1 3	**20**	06:07	0.3 9
	11:07	8.5 259		12:08	8.3 253
Tu	17:31	-0.3 -9	W	18:33	-0.1 -3
	23:29	8.4 256	○		
6	05:45	-0.2 -6	**21**	00:32	7.7 235
	11:46	9.0 274		06:39	0.5 15
W	18:13	-0.7 -21	Th	12:36	8.2 250
●				19:05	0.0 0
7	00:12	8.6 262	**22**	01:02	7.5 229
	06:25	-0.4 -12		07:08	0.7 21
Th	12:28	9.4 287	F	13:03	8.1 247
	18:56	-1.0 -30		19:35	0.1 3
8	00:56	8.7 265	**23**	01:31	7.4 226
	07:07	-0.5 -15		07:37	0.8 24
F	13:13	9.6 293	Sa	13:34	8.0 244
	19:41	-1.1 -34		20:07	0.3 9
9	01:42	8.6 262	**24**	02:02	7.2 219
	07:53	-0.5 -15		08:10	1.0 30
Sa	14:00	9.5 290	Su	14:09	7.8 238
	20:30	-1.0 -30		20:42	0.5 15
10	02:32	8.4 256	**25**	02:40	7.0 213
	08:42	-0.2 -6		08:47	1.2 37
Su	14:51	9.3 283	M	14:50	7.6 232
	21:23	-0.7 -21		21:23	0.7 21
11	03:26	8.1 247	**26**	03:23	6.8 207
	09:37	0.1 3		09:31	1.5 46
M	15:47	8.9 271	Tu	15:36	7.4 226
	22:24	-0.3 -9		22:11	1.0 30
12	04:26	7.7 235	**27**	04:12	6.6 201
	10:42	0.5 15		10:24	1.7 52
Tu	16:50	8.4 256	W	16:28	7.1 216
	23:33	0.1 3		23:08	1.2 37
13	05:38	7.5 229	**28**	05:08	6.5 198
	11:58	0.7 21		11:27	1.8 55
W	18:05	8.0 244	Th	17:26	6.9 210
◐			◑		
14	00:49	0.3 9	**29**	00:10	1.2 37
	06:58	7.4 226		06:10	6.6 201
Th	13:18	0.8 24	F	12:35	1.7 52
	19:26	7.8 238		18:29	6.9 210
15	02:01	0.3 9	**30**	01:12	1.1 34
	08:13	7.5 229		07:13	6.8 207
F	14:32	0.6 18	Sa	13:41	1.4 43
	20:39	7.8 238		19:35	7.0 213
			31	02:09	0.9 27
				08:13	7.2 219
			Su	14:41	0.9 27
				20:37	7.2 219

November

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	03:00	0.6 18	**16**	03:21	0.3 9
	09:04	7.7 235		09:27	8.1 247
M	15:33	0.3 9	Tu	15:53	-0.2 -6
	21:31	7.6 232		21:55	7.4 226
2	03:47	0.3 9	**17**	04:03	0.4 12
	09:51	8.3 253		10:06	8.1 247
Tu	16:20	-0.2 -6	W	16:34	-0.2 -6
	22:19	7.9 241		22:35	7.3 223
3	04:30	0.0 0	**18**	04:40	0.5 15
	10:35	8.9 271		10:39	8.0 244
W	17:05	-0.8 -24	Th	17:10	-0.1 -3
	23:05	8.2 250		23:10	7.2 219
4	05:14	-0.3 -9	**19**	05:12	0.7 21
	11:18	9.3 283		11:08	7.9 241
Th	17:50	-1.2 -37	F	17:42	0.0 0
●	23:50	8.4 256	○	23:39	7.1 216
5	05:59	-0.5 -15	**20**	05:41	0.8 24
	12:04	9.6 293		11:35	7.8 238
F	18:36	-1.4 -43	Sa	18:12	0.1 3
6	00:37	8.5 259	**21**	00:07	7.0 213
	06:45	-0.6 -18		06:11	0.9 27
Sa	12:51	9.7 296	Su	12:05	7.8 238
	19:24	-1.4 -43		18:43	0.2 6
7	01:26	8.5 259	**22**	00:38	6.9 210
	06:34	-0.5 -15		06:44	1.0 30
Su	12:41	9.5 290	M	12:42	7.7 235
	19:14	-1.2 -37		19:17	0.3 9
8	01:17	8.3 253	**23**	01:15	6.9 210
	07:27	-0.3 -9		07:21	1.1 34
M	13:34	9.2 280	Tu	13:22	7.5 229
	20:08	-0.9 -27		19:55	0.4 12
9	02:13	8.1 247	**24**	01:57	6.8 207
	08:25	0.0 0		08:04	1.2 37
Tu	14:31	8.7 265	W	14:07	7.4 226
	21:09	-0.5 -15		20:39	0.6 18
10	03:15	7.8 238	**25**	02:44	6.8 207
	09:31	0.4 12		08:54	1.3 40
W	15:36	8.1 247	Th	14:57	7.2 219
	22:16	-0.1 -3		21:29	0.7 21
11	04:27	7.6 232	**26**	03:35	6.8 207
	10:48	0.6 18		09:52	1.4 43
Th	16:51	7.7 235	F	15:52	7.0 213
◐	23:28	0.1 3		22:25	0.8 24
12	05:41	7.5 229	**27**	04:31	6.9 210
	12:04	0.6 18		10:56	1.2 37
F	18:08	7.4 226	Sa	16:51	6.9 210
			◑	23:22	0.8 24
13	00:36	0.2 6	**28**	05:29	7.1 216
	06:49	7.6 232		12:00	0.9 27
Sa	13:14	0.4 12	Su	17:53	6.9 210
	19:18	7.4 226			
14	01:38	0.2 6	**29**	00:19	0.7 21
	07:50	7.8 238		06:26	7.5 229
Su	14:14	0.2 6	M	13:01	0.5 15
	20:18	7.4 226		18:56	7.0 213
15	02:33	0.2 6	**30**	01:14	0.5 15
	08:42	8.0 244		07:22	8.0 244
M	15:07	0.0 0	Tu	13:59	0.0 0
	21:10	7.4 226		19:56	7.3 223

December

	Time	Height		Time	Height
	h m	ft cm		h m	ft cm
1	02:07	0.2 6	**16**	03:33	0.6 18
	08:16	8.5 259		09:37	7.6 232
W	14:52	-0.6 -18	Th	16:10	-0.1 -3
	20:51	7.6 232		22:11	6.8 207
2	02:58	-0.1 -3	**17**	04:13	0.7 21
	09:06	8.9 271		10:13	7.6 232
Th	15:42	-1.0 -30	F	16:48	-0.1 -3
	21:42	7.9 241		22:48	6.7 204
3	03:48	-0.4 -12	**18**	04:48	0.8 24
	09:55	9.3 283		10:44	7.6 232
F	16:31	-1.4 -43	Sa	17:22	0.0 0
	22:32	8.1 247		23:20	6.7 204
4	04:38	-0.6 -18	**19**	05:19	0.8 24
	10:45	9.5 290		11:13	7.6 232
Sa	17:21	-1.5 -46	Su	17:54	0.0 0
●	23:22	8.2 250	○	23:49	6.7 204
5	05:29	-0.7 -21	**20**	05:51	0.9 27
	11:35	9.5 290		11:45	7.6 232
Su	18:11	-1.5 -46	M	18:24	0.0 0
6	00:13	8.2 250	**21**	00:19	6.8 207
	06:21	-0.6 -18		06:24	0.8 24
M	12:27	9.3 283	Tu	12:21	7.5 229
	19:02	-1.4 -43		18:57	0.0 0
7	01:06	8.2 250	**22**	00:55	6.8 207
	07:16	-0.5 -15		07:02	0.8 24
Tu	13:21	8.9 271	W	13:00	7.5 229
	19:55	-1.1 -34		19:32	0.0 0
8	02:02	8.0 244	**23**	01:34	6.9 210
	08:14	-0.2 -6		07:43	0.8 24
W	14:18	8.4 256	Th	13:44	7.4 226
	20:51	-0.7 -21		20:12	0.1 3
9	03:01	7.8 238	**24**	02:18	7.0 213
	09:18	0.1 3		08:30	0.8 24
Th	15:19	7.9 241	F	14:31	7.3 223
	21:53	-0.4 -12		20:56	0.2 6
10	04:05	7.7 235	**25**	03:05	7.2 219
	10:28	0.3 9		09:22	0.7 21
F	16:27	7.4 226	Sa	15:22	7.1 216
	22:57	0.0 0		21:45	0.3 9
11	05:11	7.6 232	**26**	03:56	7.3 223
	11:38	0.4 12		10:21	0.6 18
Sa	17:38	7.1 216	Su	16:18	6.9 210
◐				22:39	0.3 9
12	00:01	0.2 6	**27**	04:50	7.5 229
	06:15	7.5 229		11:23	0.4 12
Su	12:44	0.3 9	M	17:17	6.8 207
	18:45	6.9 210	◑	23:36	0.3 9
13	01:01	0.4 12	**28**	05:47	7.8 238
	07:14	7.6 232		12:25	0.1 3
M	13:45	0.2 6	Tu	18:20	6.8 207
	19:47	6.8 207			
14	01:57	0.5 15	**29**	00:34	0.3 9
	08:08	7.6 232		06:46	8.0 244
Tu	14:39	0.1 3	W	13:28	-0.3 -9
	20:41	6.8 207		19:24	7.0 213
15	02:48	0.6 18	**30**	01:34	0.1 3
	08:56	7.6 232		07:46	8.4 256
W	15:27	0.0 0	Th	14:28	-0.6 -18
	21:29	6.8 207		20:27	7.2 219
			31	02:33	-0.1 -3
				08:44	8.7 265
			F	15:24	-1.0 -30
				21:25	7.4 226

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

Friends OF THE Bay
PROTECTING OYSTER BAY & COLD SPRING HARBOR

Appendix E

2020-2021 Open Water Body Monitoring Results

Friends of the Bay 2020 Water Quality Data - **Site 1, Cold Spring Cove South**

	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 1	7/13/2020	12:12PM	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												1.10		29.1		107	<1							1	2	5	6	3	2	1	2	0
Site 1	7/20/2020	11:19AM	25.90	24.79	23.48	24.03	24.38	25.46	8.07	7.92	7.42	6.06	4.68	3.51	0.9	5.87	34.1		65	<1							0	4	5	6	1	1	1	2	0
Site 1	7/27/2020	11:54AM	26.33	26.38	24.22	24.31	24.35	25.71	8.04	8.03	7.23	7.23	5.05	2.68	0.8	3.64	32.4		SAMPLE BOTTLE DROPPED								0	3	1	6	1	8	1	2	0
Site 1	8/3/2020	10:33AM	24.41	24.25	23.09	24.81	25.03	25.97	7.63	7.62	7.37	4.91	3.92	3.20	1.3	5.85	32.0		46	2							0	4	5	6	0	7	1	1	0
Site 1	8/10/2020	11:37AM	25.32	23.85	23.42	24.89	25.81	26.50	7.73	7.26	7.12	3.50	2.91	3.59	1.2	4.15	28.4		15	<1							0	4	5	4	1	1	1	2	0
Site 1	8/17/2020	10:21AM	22.82	23.19	23.34	22.52	24.87	26.09	7.51	7.43	7.33	3.59	3.03	3.31	1.2	5.90	22.7		180	11							2	1	5	6	1	8	1	1	1
Site 1	8/24/2020	11:52AM	25.07	24.58	24.20	24.76	26.12	26.70	7.47	7.49	7.23	4.41	3.90	3.40	1.1	3.89	31.9		27	1							0	4	5	4	1	8	1	2	1
Site 1	8/31/2020	10:46AM	23.44	24.32	24.47	24.21	25.37	26.53	pH sensor broken			6.14	5.95	6.18	1	5.99	23.2		30	12							1	4	5	6	4	0	0	3	0
Site 1	9/8/2020	11:21AM	24.14	24.00	24.01	25.90	26.24	26.99	pH sensor broken			4.08	3.75	3.91	1.1	4.53	27.2		3	<1							0	4	5	4 -1	2	1	1	2	1
Site 1	9/14/2020	9:32AM	Water quality monitoring equipment malfunction														22.6		34	7							0	1	5	6	4	8	2	3	2
Site 1	9/21/2020	10:30AM	17.52	17.51	19.26	24.89	24.86	26.26	pH sensor broken			7.55	7.02	6.82	0.9	3.69	16.0		290	3							0	4	5	6	0	2	2	1	1
Site 1	9/28/2020		Anchor not holding																																
Site 1	10/5/2020	9:50 AM	18.34	18.36	19.73	24.79	24.85	26.49	pH sensor broken			7.34	7.13	7.29	1.1	4.30	16.1		86	6							0	4	5	6	4	3	1	3	1
Site 1	10/14/2020	11:20AM	16.91	17.17	17.21	24.14	25.09	26.38	pH sensor broken			7.79	7.67	7.76	1.40	6.03	21.7		520	4							2	2	5	6	0	7	1	1	0
Site 1	10/19/2020	9:48AM	15.78	15.92	16.42	25.92	26.06	26.64	pH sensor broken			7.75	7.82	8.07	2.1	4.25	17.4		67	13							0	4	5	6	1	0	0	2	1
Site 1	10/27/2020	11:08AM	15.80	16.10	16.45	24.31	24.20	26.79	pH sensor broken			8.14	8.03	7.61	2.2	5.49	13.8		49	2							0	2	5	6	2	1	1	2	1

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data **- Site 2, Cold Spring Cove North**

	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 2	7/13/2020	12:00pm	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING												.9m		29.5		119	<1							1	1	5	6	3	2	1	1	0
Site 2	7/20/2020	10:54am	24.81	24.77	23.40	24.96	24.99	25.46	7.90	7.89	7.43	5.86	5.11	3.16	0.9m	7.10	35.1		120	<1							0	4	5	2	1	8	1	2	0
Site 2	7/27/2020	11:40AM	25.97	25.69	24.33	24.30	4.38	25.66	8.04	7.98	7.30	7.43	5.1	2.68	0.9m	3.19	35.5		54	1							0	3	5	6	1	8	1	2	0
Site 2	8/3/2020	10:21AM	24.21	24.15	23.54	24.57	25.29	25.47	7.55	7.58	7.41	4.42	3.65	3.70	1.4m	3.45	28.3		26	1							0	4	5	6	1	7	1	1	1
Site 2	8/10/2020	11:24AM	24.099	23.77	23.00	25.49	25.69	26.76	7.56	7.46	7.19	3.58	2.73	1.89	1.2m	5.17	31.6		17	3							0	4	5	6	1	7	1	2	0
Site 2	8/17/2020	10:09am	23.52	23.20	23.17	25.00	25.23	25.85	7.55	7.60	7.35	5.24	4.28	4.08	1	3.80	22.4		68	2							2	4	5	6	1	8	1	1	1
Site 2	8/24/2020	11:41am	24.85	24.18	24.13	25.61	26.14	26.91	7.35	7.34	7.34	3.85	3.76	3.94	1.1	5.35	35.9		32	<1							0	4	5	6	1	1	1	2	0
Site 2	8/31/2020	10:34am	24.09	24.07	24.56	25.90	26.01	26.71	pH sensor broken			6.14	6.12	6.32	1.0m	7.25	23.4		10	1							1	4	5	6	4	3	1	3	1
Site 2	9/8/2020	11:06am	23.84	23.89	23.96	25.94	26.51	27.25	pH sensor broken			3.89	3.87	3.76	1.4m	6.45	27.9		8	<1							0	4	5	6	2	1	1	2	1
Site 2	9/14/2020	9:27am	Water quality monitoring equipment malfunction														22.7		29	<1							0	1	5	6	4	8	2	3	3
Site 2	9/21/2020	10:19am	18.72	18.82	19.14	25.35	25.61	26.05	pH sensor broken			7.93	7.85	7.87	1.1M	2.66	15.7		220	2							0	4	5	6	0	2	1	1	1
Site 2	9/28/2020	12:05 pm	24.1	Anchor not holding															210	7							1	2	5	6	4	4	1	3	1
Site 2	10/5/2020	9:39 am	19.41	19.43	19.81	25.86	25.87	26.87	pH sensor broken			7.17	7.21	7.44	1.1	6.63	15.3		22	3							0	4	5	3	4	2	1	3	1
Site 2	10/14/2020	11:10am	17.04	17.09	17.19	25.57	26.04	26.81	pH sensor broken			7.81	7.9	8.04	1.5	7.90	18.6		600	20							2	2	5	6	0	7	1	1	0
Site 2	10/19/2020	09:36am	16.10	16.26	16.58	26.12	26.39	26.97	pH sensor broken			7.78	7.80	7.93	1.8m	5.84	17.4		59	11							0	4	5	6	2	5	1	2	0
Site 2	10/27/2020	10:51am	16.09	16.18	16.47	25.79	26.19	26.95	pH sensor broken			8.02	7.69	7.58	1.6	6.37	13.4		8	1							0	2	5	6	2	1	1	2	1

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 3, Cold Spring Harbor South**

	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m	H_20 Temp 0.5m	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 3	7/13/2020	11:46AM	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEAL												1.1m		27.2		36	<1							1	2	5	6	2	8	1	1	1
Site 3	7/20/2020	10:08AM	24.76	24.14	23.27	25.02	25.49	25.56	7.88	7.81	7.40	5.80	4.34	2.55	1.1m	6.35	31.2		36	<1							0	4	5	6	1	8	1	2	0
Site 3	7/27/2020	11:27AM	25.52	25.46	23.87	25.42	25.49	26.23	7.79	7.79	7.33	5.12	4.23	2.33	0.9m	4.41	32.5		31	2							0	3	5	6	1	2	1	2	1
Site 3	8/3/2020	10:07AM	23.87	23.84	21.88	25.76	25.86	26.28	7.64	7.63	7.35	4.84	4.25	2.28	1.6m	6.29	27.6		6	<1							0	4	5	6	1	7	1	1	0
Site 3	8/10/2020	11:09AM	24.31	24.15	22.99	26.33	26.54	26.80	7.60	7.61	7.29	5.15	4.20	3.26	1.2m	4.75	30.2		8	<1							0	3	5	4	1	0	0	1	0
Site 3	8/17/2020	9:59am	23.15	23.08	23.14	25.95	25.94	26.63	7.63	7.61	7.60	5.50	5.22	5.29	1.2m	6.89	23.5		16	1							2	4	5	6	1	0	0	1	1
Site 3	8/24/2020	11:28am	25.00	24.73	24.09	26.69	26.64	27.15	7.48	7.46	7.37	4.55	4.02	4.15	1.2m	4.49	27.7		11	1							0	4	5	6	1	8	1	2	1
Site 3	8/31/2020	10:22am	24.08	24.25	24.50	26.05	26.32	26.77	pH sensor broken			6.73	6.50	6.50	1.0m	6.57	24.2		4	2							1	4	5	6	4	2	1	3	1
Site 3	9/8/2020	10:54am	24.14	24.08	23.93	26.83	26.82	27.29	pH sensor broken			4.54	4.30	4.33	1.5m	5.17	24.7		6	<1							0	4	5	6	3	1	1	2	1
Site 3	9/14/2020	9:23am	Water quality monitoring equipment malfunction														22.3		9	<1							0	1	5	6	3	8	2	3	4
Site 3	9/21/2020	10:06am	18.95	18.95	19.73	26.31	26.92	27.03	pH sensor broken			8.31	8.21	8.18	1.5m	4.77	15.3		56	1							0	4	5	6	0	2	1	1	3
Site 3	9/28/2020	11:57am	20.56	20.54	20.20	27.15	27.15	27.35	pH sensor broken			8.43	7.76	7.89	1.55m	6.47	23.0		48	<1							1	2	5	6	4	4	1	3	1
Site 3	10/5/2020	9:28 AM	19.43	19.45	19.86	26.56	26.59	27.18	pH sensor broken			7.76	7.49	7.6	1.2m	4.93	16.2		14	1							0	4	5	6	4	2	1	3	1
Site 3	10/14/2020	11:00AM	17.19	17.1	17.15	26.4	26.41	27.18	pH sensor broken			8.28	8.26	8.28	1.6	6.69	19.8		42	<1							2	2	5	6	0	7	1	1	1
Site 3	10/19/2020	09:26am	16.09	16.23	16.76	26.61	26.71	27.20	pH sensor broken			8.05	7.97	8.17	2.1	4.77	17.6		36	4							0	4	5	6	2	0	0	2	0
Site 3	10/27/2020	10:41am	16.24	16.22	16.75	26.76	26.79	27.30	pH sensor broken			8.25	7.97	7.49	1.6	6.4	13		12	<1							0	2	5	6	2	1	1	2	1

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 4, Cold Spring Harbor North**																																		
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 4	7/13/2020	11:34am	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												2m		27.7		1	<1							1	2	5	6	2	2	1	1	0
Site 4	7/20/2020	9:54AM	25.27	25.17	22.70	25.37	25.49	25.87	8.04	8.02	7.61	6.65	5.92	3.99	1.1m	6.73	36.2		5	1							0	4	5	6	1	6	1	2	0
Site 4	7/27/2020	11:13AM	26.07	26.07	23.39	26.14	26.09	26.53	8.06	8.06	7.48	8.70	7.34	4.10	1.3m	5.00	31.3		<1	<1							0	3	5	6	1	6	1	2	0
Site 4	8/3/2020	9:56AM	24.29	24.25	21.82	25.84	26.02	26.38	7.71	7.70	7.36	5.18	4.42	2.66	1.8m	6.89	30.9		1	<1							0	4	5	6	1	7	1	1	1
Site 4	8/10/2020	10:56AM	24.85	24.41	22.63	26.36	26.50	27.01	7.83	7.75	7.40	5.97	5.26	4.15	1.2m	5.58	28.0		1	1							0	3-4	5	6	0	5	1	1	0
Site 4	8/17/2020	9:45am	22.97	22.74	22.50	26.81	26.86	26.97	7.54	7.51	7.48	3.99	3.92	4.03	1.9m	7.72	21.6		5	1							2	4	5	6	1	8	1	1	1
Site 4	8/24/2020	11:10am	25.50	24.79	26.33	26.88	27.06	27.32	7.83	7.75	7.58	7.10	6.56	6.06	1.1m	5.15	28.8		3	<1							0	4	5	6	1	8	1	2	1
Site 4	8/31/2020	10:05am	24.13	24.13	24.12	27.20	27.12	27.13	pH sensor broken			6.18	6.23	6.36	1.4m	7.28	24.4		2	<1							1	4	5	6	4	2	1	3	1
Site 4	9/8/2020	10:36am	24.25	24.23	23.63	27.06	27.07	27.66	pH sensor broken			6.15	5.58	5.71	1.3m	5.69	26.1		1	<1							0	4	5	6	4	1	1	3	1
Site 4	9/14/2020	9:16am	Water quality monitoring equipment malfunction														22.4		<1	1							0	1	5	6	3	8	2	3	5
Site 4	9/21/2020	9:55am	19.31	19.32	19.65	27.09	27.12	27.23	pH sensor broken			8.58	8.39	8.40	1.3m	5.54	14.2		3	<1							0	4	5	6	0	2	2	1	3
Site 4	9/28/2020	11:43am	20.75	20.76	20.60	27.43	27.47	27.64	pH sensor broken			9.0	8.70	8.17	2	7.21	22.9		2	<1							1	2	5	6	4	4	2	3	2
Site 4	10/5/2020	9:12 am	19.35	19.36	19.9	26.96	26.96	27.43	pH sensor broken			8.26	7.90	7.836	1.6	5.53	15.7		3	<1							0	4	5	6	4	2	1	3	1
Site 4	10/14/2020	10:51AM	17.37	17.55	17.70	27.03	27.41	27.72	pH sensor broken			8.19	8.14	8.31	2.0	7.30	16.5		8	<1							2	2	5	6	0	7	1	1	1
Site 4	10/19/2020	09:17am	16.26	16.26	16.90	27.05	27.06	27.40	pH sensor broken			8.40	8.41	8.45	3.0	5.27	15.3		7	<1							0	4	5	6	1	5	1	2	1
Site 4	10/27/2020	10:30am	16.66	16.67	16.89	27.38	27.39	27.56	pH sensor broken			7.60	7.54	7.50	2.6	6.91	13.2		<1	<1							0	2	5	6	2	1	1	2	1-2

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 5, Plum Point**																																				
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 5	7/13/2020	11:26am	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												1.6m		30.4		1	3							1	2	5	6	1	2	0	1	1
Site 5	7/20/2020	9:33AM	24.95	24.56	23.30	25.48	25.52	25.92	7.98	7.94	7.70	6.86	6.16	4.93	1.5m	13.19	32.2		1	1							0	4	5	6	3	6	1	2	0
Site 5	7/27/2020	11:01AM	25.67	25.10	24.52	26.20	26.29	26.35	7.85	7.85	7.79	6.86	6.63	6.27	1.0m	10.17	35.0		<1	<1							0	2	5	6	1	7	1	2	0
Site 5	8/3/2020	9:44AM	23.81	23.65	22.94	26.07	26.02	26.22	7.57	7.55	7.47	4.5	4.34	3.86	1.7m	12.42	26.9		3	1							0	4	5	6	1	7	1	1	1
Site 5	8/10/2020	10:26AM	24.83	24.59	23.46	26.73	26.69	26.94	7.74	7.71	7.48	6.55	5.70	4.80	1.6m	10.11	33.3		<1	<1							0	2	5	6	0	4	1	1	0
Site 5	8/17/2020	9:30am	23.00	22.82	22.48	26.73	26.77	26.92	7.58	7.55	7.50	4.47	4.32	4.15	2.3m	11.6	21.1		2	1							2	4	5	6	1	8	2	2	1
Site 5	8/24/2020	10:55am	25.60	24.85	24.59	27.23	27.17	27.27	7.78	7.63	7.57	6.91	6.44	6.16	1.4m	10.54	32.7		<1	<1							0	4	5	6	1	8	1	2	1
Site 5	8/31/2020	9:52am	24.17	24.16	23.93	27.09	27.08	27.07	pH sensor broken			6.26	6.44	6.78	1.7m	3.00	24.5		1	8							1	4	5	6	4	2	1	3	0
Site 5	9/8/2020	10:22am	24.04	ake reading	24.03	27.24	e reading	27.25	pH sensor broken			6.30	ke reading	6.58	1.0m	1.86	26.6		<1	1							0	4	5	6	2	1	1	2	0
Site 5	9/14/2020	9:10am	Water quality monitoring equipment malfunction														22.6		1	1							0	1	5	6	3	8	2	3	2
Site 5	9/21/2020	9:40am	19.51	19.61	19.67	27.26	27.27	27.32	pH sensor broken			7.81	7.83	7.87	1.8m	9.38	14.3		2	<1							0	4	5	6	0	2	2	1	3
Site 5	9/28/2020	11:33am	Anchor not holding, position close to rocks																2	<1							1	2	5	6	4	4	1	2	1
Site 5	10/5/2020	8:58 am	19.57	19.51	19.18	27.23	27.24	27.30	pH sensor broken			8.00	7.94	7.94	1.9	5.28	15.9		1	<1							0	4	5	6	4	2	1	3	2
Site 5	10/14/2020	10:40AM	17.54	17.56	17.62	27.66	27.73	27.86	pH sensor broken			7.92	8.01	8.19	3.0	5.21	16.3		4	1							2	2	5	6	0	7	1	1	1
Site 5	10/19/2020	9:05am	16.01	15.99	16.02	27.21	27.22	27.20	pH sensor broken			8.52	8.63	8.75	botttom	2.22	15.7		4	<1							0	2	5	6	1	0	0	2	0
Site 5	10/27/2020	10:18am	16.86	16.85	16.89	27.57	27.55	27.62	pH sensor broken			7.39	7.39	7.40	2.5	4.36	12.8		4	<1							0	2	5	6	2	1	2	2	1-2

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 6, Seawanhaka Yacht Club PSTP outfall**																																			
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m	H_20 Temp 0.5m from	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 6	7/13/2020	11:16am	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												1.6		27.3		5	<1							1	2	5	6	1	2	1	1	0
Site 6	7/20/2020	9:22AM	24.55	24.45	23.30	25.68	25.50	25.71	7.79	7.75	7.68	5.60	5.44	4.96	1.2m	6.37	30.8		2	<1							0	4	5	6	2	6	1	2	0
Site 6	7/27/2020	10:52AM	25.28	25.25	24.57	26.32	26.37	26.47	7.87	7.87	7.79	7.04	6.95	6.59	0.9m	5.08	31.2		<1	<1							0	2	5	6	1	7	1	2	0
Site 6	8/3/2020	9:30AM	24.31	24.07	23.08	25.86	25.97	26.13	7.61	7.59	7.48	5.54	4.51	3.90	1.6m	6.78	29.8		1	<1							0	4	5	6	1	7	1	2	1
Site 6	8/10/2020	19:26AM	24.36	24.31	24.15	26.47	26.71	26.69	7.68	7.67	7.65	6.67	6.54	6.55	1.5m	5.78	30.5		5	1							0	2	5	6	0	5	1	1	0
Site 6	8/17/2020	9:15am	23.12	23.05	22.54	26.76	26.70	26.85	7.58	7.58	7.52	4.77	4.64	4.38	1.9m	9.33	21.3		3	7							2	4	5	6	1	8	1	1	1
Site 6	8/24/2020	10:40am	25.61	25.23	24.80	27.13	27.02	27.06	7.67	7.66	7.62	7.18	6.96	6.81	1.5m	4.87	32.1		1	<1							0	4	5	6	1	8	1	2	0
Site 6	8/31/2020	9:42am	24.25	24.25	24.23	26.98	26.98	27.00	pH sensor broken			6.17	6.16	6.29	1.4m	7.13	21.6		1	7							1	4	5	6	4	2	1	3	0
Site 6	9/8/2020	10:12am	24.25	24.23	24.11	27.17	27.18	27.25	pH sensor broken			6.10	6.19	6.40	1.8m	5.55	27.7		<1	<1							0	4	5	6	2	6	1	2	0
Site 6	9/14/2020	9:06am	Water quality monitoring equipment malfunction														22.4		1	3							0	1	5	6	3	8	2	3	2
Site 6	9/21/2020	9:26am	19.73	19.71	19.64	27.32	27.30	27.37	pH sensor broken			7.60	7.49	7.41	1.7m	5.35	14.9		<1	<1							0	4	5	6	0	2	1	1	1
Site 6	9/28/2020	11:17am	20.69	20.70	20.62	27.37	27.34	27.38	pH sensor broken			9.37	9.19	9.0	2.5	7.19	25.3		4	<,1							1	2	5	6	4	4	2	3	1
Site 6	10/5/2020	8:40 am	19.65	19.67	19.58	27.17	27.17	27.20	pH sensor broken			7.97	7.91	8.01	2.1	5.32	14.9		<1	<1							0	4	5	6	4	3	1	3	1
Site 6	10/14/2020	10:32am	17.36	17.36	17.50	27.35	27.35	27.55	pH sensor broken			8.04	8.07	8.14	2.0	7.33	15.6		12	<1							2	2	5	6	0	7	1	1	1
Site 6	10/19/2020	08:55am	16.30	16.30	16.30	27.03	27.06	27.06	pH sensor broken			8.52	8.62	8.81	3.0	4.75	12.7		4	2							0	4	5	6	1	0	0	2	0
Site 6	10/27/2020	10:08am	16.65	16.66	16.88	27.46	27.46	27.59	pH sensor broken			7.40	7.35	7.33	2.7	6.94	12.5		2	<1							0	1	5	6	3	1	1	4	1

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 7, Oyster Bay Cove**

	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 7	7/13/2020	10:54am	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												1.4m		28.0		9	1							1	2	5	6	1	2	0	1	0
Site 7	7/20/2020	11:48AM	26.70	25.88	24.81	25.68	25.61	25.42	7.91	7.89	7.80	6.79	6.61	6.12	1.1m	3.76	30.3		<1	<1							0	1	5	6	1	8	1	2	0
Site 7	7/27/2020		Tide too low /depth too shallow																																
Site 7	8/3/2020	10:59AM	25.64	25.54	25.32	25.85	25.84	25.88	7.74	7.74	7.73	6.46	6.44	6.46	1.6m	3.30	27.7		2	<1							0	4	5	6	1	7	1	1	1
Site 7	8/10/2020		Tide too low /depth too shallow																								0								
Site 7	8/17/2020	8:55am	23.32	23.47	23.52	26.05	26.37	26.32	7.61	7.60	7.58	5.33	5.09	5.08	1.4m	3.59	20.8		42	10							2	4	5	1	1	8	1	1	1
Site 7	8/24/2020		Tide too low /depth too shallow																																
Site 7	8/31/2020	9:24am	23.76	23.80	23.80	26.67	26.72	26.76	pH sensor broken			6.67	6.69	6.86	1.1m	3.20	21.9		11	10							1	4	5	6	4	2	1	3	0
Site 7	9/8/2020		Tide too low /depth too shallow																																
Site 7	9/14/2020	8:58am	Water quality monitoring equipment malfunction														22.2		5	2							0	1	5	6	3	8	2	3	2
Site 7	9/21/2020		Tide too low /depth too shallow																																
Site 7	9/28/2020	10:57AM	20.57	20.54	20.35	27.14	27.12	27.16	pH sensor broken			9.20	8.99	8.82	2.1	3.82	24.1		5	<1							1	2	5	6	4	4	1	3	1
Site 7	10/5/2020	10:13 am	18.85	18.9	18.82	26.81	26.86	26.81	pH sensor broken			8.16	8.20	8.29	1.5	2.45	18.1		15	2							0	4	5	3	4	2	1	3	1
Site 7	10/14/2020	10:18am	16.54	16.71	16.69	26.60	26.81	26.86	pH sensor broken			8.30	8.39	8.49	1.8	3.87	18.0		59	2							2	2	5	6	0	7	1	1	0
Site 7	10/19/2020	10:10am	15.52	15.74	15.80	26.86	26.93	27.04	pH sensor broken			8.74	8.93	9.02	1.4	2.36	15.8		17	1							0	4	5	6	1	1	1	2	1
Site 7	10/27/2020	9:56am	16.00	15.95	16.03	26.87	26.86	26.98	pH sensor broken			7.83	7.84	7.90	2.3	3.69	12.3		4	<1							0	1	5	6	4	1	1	3	2

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 8, Oyster Bay STP at White's Creek**																																				
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 8	7/13/2020	10:38AM	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												1.2m		35.3		27	<1							1	2	5	6	1	7	0	1	0
Site 8	7/20/2020	12:05AM	26.53	25.14	24.52	25.55	25.56	25.57	7.85	7.85	7.65	6.20	5.68	4.88	1.2m	3.75	31.1		2	<1							0	4	5	6	1	8	1	2	0
Site 8	7/27/2020	10:25AM	25.45	25.14	25.03	26.14	26.22	26.27	7.77	7.75	7.73	6.44	6.29	6.20	1.0m	1.80	31.5		8	4							0	2	5	6	1	7	2	2	0
Site 8	8/3/2020	11:14AM	25.22	25.46	24.34	25.85	25.80	25.90	7.70	7.73	7.53	5.73	5.29	4.49	1.8m	4.37	31.7		4	1							0	4	5	6	1	7	1	1	1
Site 8	8/10/2020	10:10AM	24.45	24.19	23.92	26.57	26.56	26.60	7.65	7.61	7.51	6.07	5.72	5.69	1.6m	2.38	29.7		8	<1							0	2	5	6	0	8	1	1	0
Site 8	8/17/2020	8:37am	23.59	23.60	23.55	26.37	26.30	26.35	7.60	7.60	7.59	5.36	5.40	5.57	1.5m	3.78	20.1		8	7							2	4	5	6	1	8	1	1	1
Site 8	8/24/2020	10:19AM	25.26	24.98	25.01	26.91	26.99	26.98	7.69	7.63	7.64	7.30	7.19	7.12	1.3m	1.87	31.5		4	<1							0	3	5	6	1	8	1	2	0
Site 8	8/31/2020	9:09am	24.17	24.18	24.22	26.78	26.82	26.81	pH sensor broken			6.53	6.52	6.52	1.4m	3.58	22..7		6	8							1	4	5	6	4	2	1	3	1
Site 8	9/8/2020	9:52am	24.02	24.00	23.86	26.93	26.91	26.93	pH sensor broken			5.93	5.99	6.10	1.6m	2.28	24.1		<1	<1							0	3	5	6	4	7	1	3	0
Site 8	9/14/2020	8:51am	Water quality monitoring equipment malfunction														22.0		5	<1							0	1	5	6	3	8	2	3	2
Site 8	9/21/2020	9:04AM	19.13	shallow	19.15	27.16	his depth	27.15	pH sensor broken			7.91	shallow	7.94	1.6m	2.0	14.5		1	1							0	2	5	6	0	2	2	1	3
Site 8	9/28/2020	10:39	20.55	20.43	20.44	27.10	27.16	27.21	pH sensor broken			9.11	8.97	8.67	2.1	4.09	22.7		18	2							1	2	5	6	4	4	1	3	1
Site 8	10/5/2020	10:27	19.36	19.36	19.36	27.05	27.04	27.08	pH sensor broken			8.17	8.20	8.24	1.8	2.66	16.1		1	<1							0	4	5	6	4	2	1	3	1
Site 8	10/14/2020	10:07AM	16.85	16.76	16.84	26.54	26.78	26.93	pH sensor broken			8.13	8.20	8.36	2.1	4.40	16.3		15	<1							2	1	5	6	0	7	1	1	1
Site 8	10/19/2020	8:38am	16.14	shallow	16.15	26.94	o shallow	26.91	pH sensor broken			8.40		8.63	bottom	1.64	13.3		4	2							0	4	5	6	0	0	0	2	0
Site 8	10/27/2020	9:40am	16.05	16.06	16.08	26.91	26.96	26.99	pH sensor broken			7.79	7.80	7.86	2.2	3.68	12.3		3	1							0	1	5	6	4	1	1	3	1-2

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay **2020** Water Quality Data - **Site 9, Roosevelt Beach**																																				
	Date	Time	H_20 Temp Top 0.5m	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]	
Site 9	7/13/2020	10:22am	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												1.9m		27.1		6	1							1	2	5	6	1	7	0	1	0		
Site 9	7/20/2020	9:02AM	24.67	24.49	24.38	25.71	25.69	25.73	7.68	7.66	7.65	5.12	5.08	5.08	1.1m	2.71	32.2		6	<1							0	4	5	6	2	7	1	2	0		
Site 9	7/27/2020	10:14AM	25.38	25.34	25.38	26.11	26.18	26.02	7.76	7.75	7.75	6.39	6.38	6.35	0.9m	2.10	30.9		3	<1							0	2	5	6	1	6	1	2	0		
Site 9	8/3/2020	9:09AM	24.67	24.27	23.98	25.80	25.82	25.98	7.60	7.58	7.51	4.92	4.56	4.14	1.3m	3.06	27.9		8	2							0	2	5	6	1	7	1	1	1		
Site 9	8/10/2020	9:42AM	24.37	24.35	24.35	26.50	26.58	26.51	7.53	7.53	7.52	5.53	5.53	5.57	1.9m	2.22	32.4		3	3							0	2	5	6	0	N/A	0	1	0		
Site 9	8/17/2020	08:24am	23.53	23.58	23.53	26.31	26.37	26.68	7.59	7.58	7.56	5.17	4.97	7.98	1.3m	3.41	21.6		24	15							2	4	5	6	1	8	1	1	1		
Site 9	8/24/2020	10:08AM	25.30	shallow	25.17	26.88	shallow	26.84	7.62	low tide	7.59	6.90	shallow	6.85	1.6m	1.66	29.5		7	<1							0	3	5	6	1	8	1	2	0		
Site 9	8/31/2020	8:50am	24.23	24.35	24.35	26.77	26.87	26.87	pH sensor broken			6.04	6.00	6.02	1.2m	3.06	20.2		33	2							1	4	5	6	4	3	1	3	1		
Site 9	9/8/2020	9:41am	24.03	24.03	24.03	27.01	26.98	26.99	pH sensor broken			5.56	5.74	5.86	1.7m	2.10	24.3		4	<1							0	3	5	6	4	5	1	3	0		
Site 9	9/14/2020	8:45am	Water quality monitoring equipment malfunction														22.7		3	1							0	1	5	6	3	8	2	3	2		
Site 9	9/21/2020	8:35AM	19.05	shallow	19.05	27.14	shallow	27.12	pH sensor broken			7.98	shallow	8.02	shallow	1.84	13.4		8	3							0	2	5	6	0	2	2	1	2		
Site 9	9/28/2020	10:27AM	20.58	20.54	20.44	27.17	27.20	27.25	pH sensor broken			8.97	8.80	8.67	2.35	3.99	23.4		25	2							1	2	5	6	4	4	1	3	1		
Site 9	10/5/2020	8:23 am	19.43	low tide	19.48	26.97	shallow	27.0	pH sensor broken			7.77	shallow	7.87	1.8	1.84	15.6		4	1							0	4	5	6	4	2	1	3	1		
Site 9	10/14/2020	9:55am	16.83	16.87	17.15	26.83	26.87	27.09	pH sensor broken			7.98	8.01	8.11	2.2	4.0	15.8		15	1							2	1	5	6	0	6	1	1	1		
Site 9	10/19/2020	10:26am	16.26	16.25	16.22	26.98	26.96	26.97	pH sensor broken			8.70	8.71	8.73	2.6	2.70			3	8							0	4	5	6	2	2	1	2	1		
Site 9	10/27/2020	9:22am	16.16	16.16	16.16	27.03	27.03	27.03	pH sensor broken			7.70	7.70	7.71	2.5	3.53	12.6		3	1							0	1	5	6	4	1	1	3	1-2		

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 10, Beekman Beach**																																			
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 10	7/13/2020	10:10am	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												1.6m		35.2		23	1							1	2	5	6	1	7	1	1	1
Site 10	7/20/2020	8:48AM	25.63	25.57	24.79	25.24	25.35	25.42	7.78	7.75	7.59	5.73	5.45	4.85	1.0m	5.04	32.2		15	2							0	4	5	6	2	7	0	2	0
Site 10	7/27/2020	9:55AM	25.67	25.27	25.08	25.39	26.01	26.16	7.76	7.78	7.70	6.31	6.22	6.00	1.4m	4.08	31.8		11	1							0	2	5	6	1	7	1	2	0
Site 10	8/3/2020	8:48AM	25.73	25.84	25.62	25.03	25.29	26.70	7.71	7.71	7.63	6.06	5.80	5.45	1.3m	4.75	28.0		120	13							0	4	5	6	1	7	1	1	0
Site 10	8/10/2020	9:24AM	24.47	24.48	24.15	26.38	26.47	26.44	7.60	7.62	7.48	5.77	5.52	5.28	1.4m	4.18	30.4		25	1							0	2	5	6	0	0	1	1	0
Site 10	8/17/2020	08:11am	23.67	24.07	23.97	25.52	26.11	26.31	7.62	7.61	7.58	5.61	5.47	5.58	1.2m	5.14	20.3		170	71							2	4	5	4	1	8	1	1	1
Site 10	8/24/2020	9:54am	25.11	24.99	24.78	26.52	26.82	26.82	7.61	7.64	7.56	6.91	6.75	6.60	1.4m	3.73	27.4		36	17							0	2	5	6	1	8	1	2	1
Site 10	8/31/2020	8:32am	24.1	24.56	24.53	26.61	26.74	26.77	pH sensor broken			6.37	6.29	6.36	1.2m	5.00	20.9		18	11							1	4	5	6	4	2	1	3	0
Site 10	9/8/2020	9:29am	24.15	24.13	24.10	26.77	26.82	26.98	pH sensor broken			6.03	5.87	5.90	1.5m	4.22	27.1		6	<1							0	2	5	6	3	5	1	3	0
Site 10	9/14/2020	8:38am	Water quality monitoring equipment malfunction														22.0		5	1							0	1	5	6	3	8	2	3	2
Site 10	9/21/2020	8:22AM	18.37	18.68	19.00	26.13	26.88	27.08	pH sensor broken			7.97	7.90	7.91	1.3m	3.94	13.5		54	28							0	2	5	6	0	2	1	1	1
Site 10	9/28/2020	10:12 am	20.53	20.48	20.35	26.77	27.08	27.15	pH sensor broken			8.8	8.67	8.56	2.1	5.9	23.1		39	2							1	2	5	6	4	4	1	3	1
Site 10	10/5/2020	8:11am	19.3	19.27	19.33	26.65	26.80	26.88	pH sensor broken			7.68	7.78	7.93	1.80	3.95	14.80		93	26							0	3	5	3	4	2	1	3	1
Site 10	10/14/2020	9:45am	16.72	16.73	16.64	26.69	26.72	26.76	pH sensor broken			7.98	8.94	8.32	2.6	6.2	14.5		8	<1							2	1	5	6	0	8	1	1	1
Site 10	10/19/2020	08:20am	15.84	15.94	16.13	26.72	26.74	26.89	pH sensor broken			8.42	8.46	8.67	3.2	3.8	11.3		31	16							0	4	5	6	2	0	1	2	0
Site 10	10/27/2020	9:08am	15.73	15.77	15.80	26.76	26.77	26.80	pH sensor broken			7.83	7.84	7.87	2.5	4.92	12.6		5	<1							0	1	5	6	4	1	2	3	2

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 11, West Harbor**																																			
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 11	7/13/2020	9:35am	26.01	25.84	23.09	25.41	25.46	25.92	7.89	7.88	7.59	6.87	6.45	5.46	1.5m	2.62	28.6	un and having problems with motor									1	2	5	6	1	7	1	1	1
Site 11	7/20/2020	8:31AM	26.13	25.84	25.35	25.22	25.36	25.50	7.76	7.74	7.66	6.01	5.94	5.65	1.0m	2.55	332.6		2	<1							0	4	5	6	2		0	2	0
Site 11	7/27/2020	9:15AM	26.68	26.75	25.37	26.01	26.02	26.18	7.97	7.96	7.72	7.87	7.33	6.36	0.8m	2.91	30.5		1	<1							0	2	5	6	1	6	1	2	0
Site 11	8/3/2020	8:12AM	25.95	25.91	25.55	25.36	25.52	25.65	7.58	7.56	7.51	5.13	4.89	4.68	1.2m	3.18	27.3		<1	1							0	4	5	6	3	7	1	2	1
Site 11	8/10/2020	8:57AM	25.37	25.35	25.20	26.20	26.20	26.33	7.61	7.61	7.60	5.88	5.86	5.87	1.1m	3.69	28.7		4	<1							0	2	5	6	0	5	1	1	0
Site 11	8/17/2020	07:36am	24.03	24.05	24.04	26.27	26.33	26.23	7.58	7.57	7.56	5.48	5.45	5.46	1.4m	4.24	19.8		2	<1							2	4	5	6	1	8	1	1	1
Site 11	8/24/2020	9:12am	25.67	25.42	25.23	26.83	26.85	26.89	7.76	7.72	7.65	7.35	7.16	7.01	1.0m	2.48	29.6		1	2							0	2	5	6	1	0	0	2	0
Site 11	8/31/2020	7:55am	24.48	24.47	24.44	26.72	26.73	26.73	pH sensor broken			6.48	6.50	6.59	1.0m	3.44	19.1		1	<1							1	3	5	6	4	2	1	3	0
Site 11	9/8/2020	8:49am	24.31	24.29	24.26	26.71	26.73	26.82	pH sensor broken			6.21	6.12	6.14	1.1m	2.87	25.1		3	<1							0	2	5	6	3	0	0	2	0
Site 11	9/14/2020	8:22am	Water quality monitoring equipment malfunction														21.7		4	<1							0	4	5	6	3	8	2	3	2
Site 11	9/21/2020	7:38AM	17.57	17.58	17.58	26.96	26.98	26.99	pH sensor broken			8.23	8.23	8.27	1.0m	2.82	13.2		<1	<1							0	2	5	6	0	2	3	1	3
Site 11	9/28/2020	9:47am	20.44	20.44	20.40	27.15	27.14	27.11	pH sensor broken			8.93	8.80	8.70	2.2	4.57	22.9		5	3							1	4	5	6	4	4	2	3	1
Site 11	10/5/2020	7:44 am	18.58	18.58	18.58	26.97	26.98	27.0	pH sensor broken			7.54	7.64	7.79	1.6	2.9	14.1		<1	<1							0	3	5	6	4	2	1	3	1
Site 11	10/14/2020	9:25 am	16.76	16.75	16.78	26.88	26.90	26.91	pH sensor broken			8.11	8.24	8.43	2.9	4.56	15.5		12	<1							2	1	5	6	0	6	1	1	0
Site 11	10/19/2020	7:43am	15.54	15.55	15.56	26.29	26.29	26.35	pH sensor broken			8.29	8.39	8.42	2.1	2.1	11.3		18	11							0	2	5	6	2	5	1	2	0
Site 11	10/27/2020	8:42am	15.87	15.89	15.89	26.87	26.88	26.86	pH sensor broken			7.76	7.77	7.86	2.6	4.3	12.6		7	<1							0	1	5	6	4	1	1	3	2

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 12, Turtle Cove**																																				
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 12	7/13/2020	9:46am	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												1.3m		26.5		<1	<1							1	2	5	6	1	7	1	1	1
Site 12	7/20/2020	11:37AM	28.32	27.94	25.54	25.44	25.36	25.53	7.87	7.97	7.63	6.26	5.85	4.84	0.9m	3.71	32.4		2	<1							0	1	5	6	2	1	1	2	0
Site 12	7/27/2020	9:32AM	27.27	27.26	25.51	25.94	26.01	26.01	7.64	7.63	7.46	4.79	4.11	4.26	0.9m	2.00	30.5		1	<1							0	2	5	6	1	6	1	2	0
Site 12	8/3/2020	8:23AM	26.64	26.64	26.64	25.45	25.54	25.51	7.57	7.57	7.57	5.31	5.32	5.37	1.1m	2.06	27.4		15	8							0	4	5	6	3	8	1	2	1
Site 12	8/10/2020	9:08AM	26.32	26.20	26.94	26.33	26.34	26.29	7.69	7.67	7.58	5.74	5.50	5.12	1.2m	1.97	27.6		<1	<1							0	2	5	4	0	7	1	1	0
Site 12	8/17/2020	7:56am	23.83	23.83	23.80	26.24	26.33	26.46	7.60	7.60	7.59	5.44	5.45	5.56	1.5m	3.07	19.9		11	<1							2	4	5	6	1	8	1	1	1
Site 12	8/24/2020	9:33am	26.45	shallow	26.37	26.80	shallow	26.86	7.62	low tide	7.61	6.14	shallow	6.25	0.5m	1.64	27.8		4	<1							0	2	5	6	1	4	1	2	0
Site 12	8/31/2020	8:10am	24.01	24.04	23.45	26.67	26.69	26.77	pH sensor broken			5.84	5.74	6.10	0.7m	2.83	20.3		2	1							1	4	5	6	4	1	1	3	0
Site 12	9/8/2020	9:03am	24.20	24.13	24.12	26.59	26.58	26.59	pH sensor broken			6.28	6.27	6.38	0.7m	2.10	24.3		2	<1							0	2	5	6	4	0	0	3	0
Site 12	9/14/2020	8:28am	Water quality monitoring equipment malfunction														21.9		1	<1							0	4	5	6	3	8	2	3	2
Site 12	9/21/2020	8:01AM	17.20	17.20	17.21	26.97	26.99	26.98	pH sensor broken			8.03	8.04	8.10	1.3m	1.97	12.7		2	2							0	2	5	6	0	2	2	1	2
Site 12	9/28/2020	9:57am	20.87	20.87	20.85	26.89	26.88	26.87	pH sensor broken			7.53	7.53	7.55	1.2	3.81	22.5		18	4							1	4	5	6	4	4	2	3	1
Site 12	10/5/2020	7:58 am	17.91	shallow	17.85	26.69	shallow	26.79	pH sensor broken			7.10	shallow	7.54	1.6	1.78	14.2		3	1							0	3	5	6	4	2	1	3	1
Site 12	10/14/2020	9:32am	16.15	16.17	15.85	26.73	26.74	26.75	pH sensor broken			8.21	8.27	8.50	1.7	3.79	14.9		6	<1							2	1	5	6	0	8	1	1	0
Site 12	10/19/2020	8:02am	14.91	shallow	14.91	26.36	shallow	26.36	pH sensor broken			8.44	shallow	8.5	1.5	1.51	12.4		14	1							0	4	5	6	1	5	1	2	1
Site 12	10/27/2020	8:52am	15.57	15.55	15.57	26.79	26.77	26.77	pH sensor broken			7.46	7.49	7.61	1.7	3.55	12.6		10	1							0	1	5	6	4	1	2	3	1-2

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 13, Mill Neck Creek East**																																		
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 13	7/13/2020	8:12am	25.41	24.96	24.6	24.64	25.41	25.50	7.52	7.58	7.57	5.20	5.25	4.95	1.0m	2.73	28.8		MOTOR PROBLEM								1	2	5	6	1	8	1	1	1
Site 13	7/20/2020	8:14AM	26.41	26.33	26.17	24.97	25.02	25.10	7.56	7.53	7.49	4.69	4.51	4.14	0.9m	2.43	30.6		49	13							0	4	5	6	2	6	0	2	0
Site 13	7/27/20	8:47AM	26.50	26.48	26.30	25.05	25.48	25.72	7.63	7.61	7.57	5.50	5.21	5.18	0.4m	2.94	31.7		51	5							0	2	5	6	2	5	1	2	0
Site 13	8/3/20	12:33PM	26.49	26.47	25.89	25.55	25.57	25.58	7.70	7.70	7.57	5.99	5.68	5.09	1.0m	4.11	35.1		5	<1							0	1	5	6	0	8	1	1	1
Site 13	8/10/20	8:14AM	25.55	25.47	25.42	25.93	26.23	26.19	7.49	7.50	7.50	4.95	4.93	4.97	0.7m	2.6	28.6		11	<1							0	2	5	6	1	N/A	0	2	0
Site 13	8/17/20	11:58am	24.78	24.30	24.04	26.24	26.32	26.35	7.69	7.69	7.59	6.36	6.05	6.01	1.0m	3.99	26.4		5	<1							2	2	5	6	1	0	0	1	1
Site 13	8/24/20	8:38am	25.48	25.45	25.45	26.07	26.05	26.11	7.32	7.33	7.33	4.45	4.52	4.64	0.8m	2.37	27.7		55	21							0	2	5	6	1	4	1	2	0
Site 13	8/31/20	12:22pm	24.42	24.40	24.34	26.70	26.70	26.75	pH sensor broken			6.24	6.13	6.28	0.9m	4.27	22.0		10	1							1	4	5	6	4	2	2	3	1
Site 13	9/8/20	8:10am	23.74	23.73	23.72	25.71	25.77	25.81	pH sensor broken			4.40	4.41	4.50	0.7m	2.80	21.8		14	1							0	2	5	6	1	7	1	1	0
Site 13	9/14/20	7:44am	Water quality monitoring equipment malfunction														21.5		6	6							0	4	5	6	3	8	2	3	2
Site 13	9/21/20	11:22AM	Wind and Tide too strong to hold position - unable to use sonde														15.6		42	5							0	4	5	6	0	2	2	1	2
Site 13	9/28/2020	8:31am	20.71	20.71	20.66	26.70	26.75	26.79	pH sensor broken			8.09	8.07	8.07	1.65	4.13	21.7		10	5							1	4	5	6	4	6	1	3	1
Site 13	10/5/2020	11:19 am	18.83	18.81	18.80	26.65	26.59	26.62	pH sensor broken			7.45	7.47	7.52	1.3	3.43	17.6		6	<1							0	4	5	6	3	2	1	2	1
Site 13	10/14/2020	08:17am	16.19	16.18	16.25	26.45	26.41	26.50	pH sensor broken			8.04	8.16	8.32	2.0	4.10	12.7		46	2							2	4	5	6	0	0	0	1	0
Site 13	10/19/2020	11:21am	15.93	15.92	15.92	26.47	26.50	26.52	pH sensor broken			8.58	8.63	8.72	2.0	3.71	20.8		15	3							0	4	5	6	1	4	1	2	1
Site 13	10/27/2020	08:10am	15.37	15.40	15.46	26.45	26.49	26.55	pH sensor broken			7.72	7.75	7.79	2.1	3.97	12.8		15	<1							0	4	5	6	4	1	1	3	1

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 14, Mill Neck Creek West**																																				
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 14	7/13/2020		MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH																MOTOR PROBLEM																		
Site 14	7/20/2020	7:53AM	26.53	N/A	26.53	24.66	N/A	24.69	7.29	N/A	7.29	2.96	N/A	3.15	0.7m	1.14	28.7		210	41							0	4	5	6	4	7	1	3	0
Site 14	7/27/2020	8:38AM	26.69	26.66	26.64	25.16	25.22	25.45	7.63	7.60	7.53	5.66	5.36	5.51	0.6m	2.35	31.2		46	6							0	2	5	6	2	5	1	2	0
Site 14	8/3/2020	12:22PM	27.12	27.0	26.03	25.39	25.39	25.75	7.65	7.66	7.59	5.80	5.60	5.14	0.8m	3.78	33.7		15	<1							0	1	5	6	0	7	1	1	1
Site 14	8/10/2020	7:55AM	25.70	25.78	25.81	25.16	25.81	25.66	7.39	7.36	7.35	4.10	4.03	3.97	0.7m	1.46	26.7		24	<1							0	2	5	6	1	6	1	2	0
Site 14	8/17/2020	11:47am	24.36	24.00	23.91	25.46	25.83	26.28	7.54	7.57	7.53	5.35	5.32	5.47	0.8m	3.19	25.9		57	4							2	2	5	6	1	8	1	1	1
Site 14	8/24/2020	7:51am	25.39	25.38	25.30	25.89	25.96	25.94	7.23	7.24	7.22	3.92	4.02	4.30	0.8m	1.95	25.7		52	43							0	2	5	6	1	0	0	2	0
Site 14	8/31/2020	n/a	BOAT ENGINE BREAK																																		
Site 14	9/8/2020	7:53am	23.69	23.65	23.59	25.70	25.70	25.74	pH sensor broken			4.46	4.49	4.67	0.9m	1.38	22.9		12	1							0	2	5	6	1	0	0	1	0
Site 14	9/14/2020	7:48am	Water quality monitoring equipment malfunction														21.4		14	2							0	4	5	6	3	8	2	3	2
Site 14	9/21/2020	11:11AM	16.05	16.01	15.98	25.72	25.71	25.65	pH sensor broken			7.07	7.11	7.16	1.0m	2.15	15.09		110	21							0	4	5	6	0	2	2	1	2
Site 14	9/28/2020	8:47 am	20.74	20.73	20.72	26.75	26.75	26.73	pH sensor broken			7.94	7.94	7.94	1.6	2.61	21.9		13	8							1	4	5	6	4	4	1	3	1
Site 14	10/5/2020	11:28 am	18.69	18.70	18.70	26.51	26.54	26.54	pH sensor broken			7.37	7.40	7.47	1.4	2.75	17.4		15	2							0	4	5	6	3	2	1	2	1
Site 14	10/14/2020	08:32am	15.67	16.09	16.12	25.73	26.29	26.33	pH sensor broken			7.94	7.99	8.24	1.9	3.55	13.1		330	18							2	4	5	6	0	5	0	1	0
Site 14	10/19/2020	11:30am	15.94	15.94	15.95	26.47	26.47	26.50	pH sensor broken			8.58	8.63	8.68	2.1	3.18	20.5		8	<1							0	4	5	6	2	3	1	2	1
Site 14	10/27/2020	08:19am	15.37	15.38	15.41	26.47	26.47	26.50	pH sensor broken			7.73	7.76	7.83	2.0	3.34	12.5		23	3							0	4	5	6	4	1	1	3	1

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 15, Mill Neck Creek South**																																			
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m fro BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 15	7/13/2020	7:59am	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH												0.7m		25.9		51	10							1	1	5	6	2	NW	1	1	0
Site 15	7/20/2020		Tide too low /depth too shallow																																	
Site 15	7/27/2020	7:55AM	27.21	shallow	27.23	25.15	shallow	25.40	7.46	shallow	7.47	4.72	shallow	4.72	0.6m	1.36	30.5		130	26							0	2	5	6	2	N/A	0	2	0
Site 15	8/3/2020	11:59AM	27.76	27.55	27.23	24.84	25.00	25.08	7.51	7.56	7.59	5.24	5.44	5.54	0.8m	2.22	32.6		60	1							0	4	5	6	0	2	1	1	1
Site 15	8/10/2020		Tide too low /depth too shallow																								0	3								
Site 15	8/17/2020	11:31am	23.56	23.66	23.66	24.60	25.36	25.40	7.46	7.48	7.47	4.79	4.83	4.97	0.6m	2.14	24.1		780	51							2	2	5	6	1	8	1	1	1
Site 15	8/24/202		Tide too low /depth too shallow																								Tide too low /depth too shallow									
Site 15	8/31/2020		BOAT ENGINE BREAK																								Tide too low /depth too shallow									
Site 15	9/8/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow									
Site 15	9/14/2020	7:54am	Water quality monitoring equipment malfunction														21.5		22	15							0	4	5	6	3	8	2	3	2
Site 15	9/21/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow									
Site 15	9/28/2020	9:20	21.16	21.06	21.06	25.03	26.39	26.38	pH sensor broken			7.49	7.49	7.52	0.8	2.24	23.7		77	28							1	4	5	6	4	4	1	3	1
Site 15	10/5/2020	1:240 am	18.63	shallow	18.58	25.67	shallow	25.81	pH sensor broken			7.43	shallow	7.58	0.9	1.58	19.5		57	2							0	4	5	6	3	2	1	2	1
Site 15	10/14/2020	09:02am	15.53	15.77	15.76	24.47	25.23	25.22	pH sensor broken			7.76	7.93	8.20	0.8m	2.20	16.9		600	55							2	1	5	6	0	6	1	1	0
Site 15	10/19/2020	1:48 am	15.76	shallow	15.69	25.84	shallow	25.92	pH sensor broken			8.34	shallow	8.45	1.6	2.05	21.2		67	1							0	4	5	6	3	5	1	2	1
Site 15	10/27/2020		Anchor issues																								Anchor issues									

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 16, Mill Neck Creek North**																																		
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m fro	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m fro BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 16	7/13/2020	MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH																	MOTOR PROBLEM																	
Site 16	7/20/2020		Tide too low /depth too shallow																								0	1	5						
Site 16	7/27/2020	8:10AM	26.56	shallow	26.47	25.52	low tide	25.75	7.49	low tide	7.56	5.08	low tide	5.30	0.7m	1.36	30.1		SAMPLE BOTTLE DROPPED								0	2	5	6	2	6	1	2	0
Site 16	8/3/2020	12:13PM	27.57	26.44	26.15	25.23	25.51	25.58	7.61	7.61	7.60	5.67	5.45	5.48	0.9m	2.33	30.4		36	<1							0	1	5	6	0	8	1	1	0
Site 16	8/10/2020		Tide too low /depth too shallow																								0	3							
Site 16	8/17/2020	11:41AM	23.86	23.96	23.93	25.50	26.01	26.20	7.53	7.59	7.58	5.56	5.66	5.67	0.8m	2.15	23.5		260	7							2	2	5	6	1	8	1	1	1
Site 16	8/24/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow								
Site 16	8/31/2020		BOAT ENGINE BREAK																								BOAT ENGINE BREAK								
Site 16	9/8/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow								
Site 16	9/14/2020	8:02am	Water quality monitoring equipment malfunction														21.6		7	7							0	4	5	6	3	8	2	3	2
Site 16	9/21/2020	o shallow	Tide too low /depth too shallow																																
Site 16	9/28/2020	9.09 am	21.03	20.98	20.89	26.41	26.52	26.64	pH sensor broken			7.65	7.66	7.63	1.2	2.42	21.8		61	5							1	4	5	6	4	4	1	3	1
Site 16	10/5/2020	11:52AM	18.71	shallow	18.70	26.57	low tide	26.6	pH sensor broken			7.59	shallow	7.76	1.2	1.87	18.9		12	1							0	4	5	6	3	2	1	2	1
Site 16	10/14/2020	08:51am	15.53	15.82	16.03	25.38	25.73	26.04	pH sensor broken			7.83	7.80	7.85	1.5	2.41	15.3		210	55							2	1	5	6	0	6	1	1	0
Site 16	10/19/2020	11:37am	15.73	shallow	15.72	26.22	low tide	26.23	pH sensor broken			8.30	shallow	8.51	1.8	2.10	20.8		31	2							0	4	5	6	3	4	1	2	1
Site 16	10/27/2020	R ISSUE	Anchor issues																								Anchor issues								

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 17, The Birches STP**																																			
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m fro BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 17	7/13/2020		MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH																MOTOR PROBLEM																		
Site 17	7/20/2020		Tide too low /depth too shallow																								0	1	5		2		1	2	0
Site 17	7/27/2020	8:23AM	Shallow		26.69	Shallow		25.09	Shallow		7.25	Shallow		3.19	0.4M	0.91	29.9		32	9							0	2	5	6	2	7	0	2	0
Site 17	8/3/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow									
Site 17	8/10/2020		Tide too low /depth too shallow																								0	3								
Site 17	8/17/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow									
Site 17	8/24/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow									
Site 17	8/31/2020		BOAT END																								BOAT ENGINER BREAK									
Site 17	9/8/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow									
Site 17	9/14/2020	8:05am	Water quality monitoring equipment malfunction														21.6		33	10							0	4	5	6	3	8	2	3	2
Site 17	9/21/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow									
Site 17	9/28/2020	9:00	21.15	Shallow	21.13	26.14	Shallow	26.23	pH sensor broken			6.86	Shallow	7.10	0.9	1.90	21.9		52	14							1	4	5	6	4	4	1	3	1
Site 17	10/5/2020		Tide too low /depth too shallow																																	
Site 17	10/14/2020	08:41am	15.48	15.52	15.57	24.97	24.99	25.04	pH sensor broken			7.56	7.59	7.65	1.2	2.08	15.1		400	6							2	4	5	6	0	6	1	1	0
Site 17	10/19/2020		Tide too low /depth too shallow																								Tide too low /depth too shallow									
Site 17	10/27/2020		Anchor Issues																								Anchor Issues									

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 18, Mill Neck Cove**																																		
	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m fro BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 18	7/13/2020		MANTA APHIBIAN HANDHELD AND SENSOR NOT WORKING - WATER SAPLE COLLECTED FOR DEPT OF HEALTH																MOTOR PROBLEM																	
Site 18	7/20/2020		Tide too low /depth too shallow																									1	5		2		1	2	0
Site 18	7/27/2020	9:02AM	26.15	26.13	26.08	25.95	25.99	25.04	7.68	7.71	7.73	6.34	6.37	6.37	0.9m	1.77	31.6		SAMPLE BOTTLE DROPPED								0	2	5	6	2	5	1	2	0
Site 18	8/3/2020	12:44PM	26.45	26.41	25.77	25.60	25.55	25.57	7.70	7.70	7.59	5.82	5.65	5.13	1.1m	3.09	31.6		2	<1							0	1	5	6	0	8	1	1	1
Site 18	8/10/2020	8:32AM	25.44	N/A	25.39	26.21	N/A	26.20	7.59	N/A	7.57	5.78	N/A	5.81	1.3m	1.63	28.6		3	1							0	2	5	6	0	6	1	1	0
Site 18	8/17/2020	12:06pm	24.72	24.52	24.05	26.15	26.15	26.37	7.60	7.66	7.60	6.05	5.88	5.96	1.2m	2.91	25.3		12	1							2	2	5	6	0	8	1	1	1
Site 18	8/24/220	8:54AM	25.61	Shallow	25.42	26.30	Shallow	26.54	7.38	Shallow	7.46	5.26	Shallow	5.70	0.7M	1.49	31.9										0	2	5	6	1	4	1	2	0
Site 18	8/31/2020	12:11PM	24.45	24.43	24.36	26.82	26.85	26.91	pH sensor broken			6.80	6.66	6.72	1.1m	3.25	26.4		8	<1							1	4	5	6	4	2	1	3	1
Site 18	9/8/2020	8:28am	24.16	Shallow	Shallow	26.55	Shallow	Shallow	pH sensor broken			6.06	Shallow	Shallow	1.1m	1.62	24.3		2	<1							0	2	5	6	2	5	1	2	0
Site 18	9/14/2020	7:38am	Water quality monitoring equipment malfunction														21.3		23	9							0	4	5	6	3	8	2	3	2
Site 18	9/21/2020	11:35AM	17.34	17.34	17.37	26.62	26.64	26.64	pH sensor broken			8.54	8.54	8.54	1.4m	2.10	15.9		33	4							0	4	5	6	0	2	2	1	1
Site 18	9/28/2020	8:13am	20.75	20.73	20.69	26.70	26.71	26.72	pH sensor broken			8.08	8.07	8.06	1.7	3.05	21.3		20	3							1	4	5	6	4	5	1	3	1
Site 18	10/5/2020	11:08AM	18.88	18.87	18.83	26.50	26.53	26.57	pH sensor broken			7.66	7.78	7.93	1.4	2.30	18.4		8	2							0	4	5	6	4	2	1	3	1
Site 18	10/14/2020	8:00am	16.07	16.16	16.17	26.25	26.33	26.37	pH sensor broken			7.90	7.98	8.16	1.9	2.99	12.9		54	1							2	4	5	6	0	0	0	1	0
Site 18	10/19/2020	11:10 am	16.00	15.95	15.93	26.17	26.44	26.45	pH sensor broken			8.57	8.58	8.60	2.3	2.66	25.1		21	<1							0	4	5	6	2	4	1	2	1
Site 18	10/27/2020	07:54AM	15.37	15.40	15.41	26.46	26.45	26.46	pH sensor broken			7.70	7.70	7.69	2.0	2.78	13.0		24	<1							0	4	5	6	4	1	1	3	1

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

	Friends of the Bay 2020 Water Quality Data - **Site 19, Flowers Oyster Hatchery**																																		
	Date	Time	H_20 Temp Top 0.5m	H_20 Temp 1.0m	H_20 Temp 0.5m from	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m fro BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	Secchi (m)	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Conditio n[2]	Cloud Cover[2]	Wind Direction[2]	Wind Speed[2]	Weather[2]	Wave Height[2]
Site 19	7/13/2020	9:11am	24.89	24.80	24.35	25.45	25.54	25.66	7.72	7.74	7.65	6.39	6.10	5.70	1.4m	3.82	26.6		MOTOR PROBLEM								1	2	5	6	1	8	1	1	1
Site 19	7/20/2020	12:56PM	27.41	26.46	25.53	25.37	25.31	25.39	7.80	7.78	7.61	6.65	5.98	4.77	0.9m	5.13	31.2		7	<1							0	1	5	6	2	1	1	2	0
Site 19	7/27/2020	12:42PM	27.69	27.44	26.46	25.62	25.82	25.92	7.88	7.86	7.7	7.27	6.56	5.85	0.7m	3.7	32.6		SAMPLE BOTTLE DROPPED								0	3	5	6	1	8	1	2	0
Site 19	8/3/2020	12:55PM	27.13	26.92	25.51	25.43	25.45	25.76	7.67	7.69	7.55	5.88	5.57	4.92	1.3m	6.6	32.4		2	<1							0	2	5	6	0	7	1	1	1
Site 19	8/10/2020	12:26PM	26.54	26.14	25.45	26.03	26.15	26.29	7.69	7.65	7.47	6.22	6.10	4.69	0.9m	4.3	30.7		1	<1							0	4	5	6	1	1	2	0	
Site 19	8/17/2020	12:14pm	24.64	24.39	24.01	26.27	26.25	26.33	7.67	7.66	7.57	6.00	5.74	5.66	1.1m	6.68	24.0		13	<1							2	2	5	6	0	8	1	1	1
Site 19	8/24/2020	ON TIME	RAN SHORT ON TIME NEEDED TO GET SAMPLES TO LAB - NO SAMPLE TAKEN																																
Site 19	8/31/2020	7:36AM	24.50	24.04	24.04	26.32	26.33	26.43	pH sensor broken			5.24	5.27	5.34	0.8m	4.13	19.4		14	1							1	3	5	6	4	8	1	3	0
Site 19	9/8/2020	12:28pm	25.26	25.09	24.45	26.53	26.65	26.82	pH sensor broken			6.33	6.06	6.23	1.100	4.51	28.1		6	<1							0	4	5	6	3	2	1	2	0
Site 19	9/14/2020	7:33am	Water quality monitoring equipment malfunction														21.3		18	3							0	4	5	6	3	8	2	3	2
Site 19	9/21/2020	11:45AM	17.58	17.57	17.54	26.71	26.74	26.74	pH sensor broken			8.68	8.68	8.68	1.3m	4.87	16.6		19	<1							0	4	5	6	0	2	1	1	1
Site 19	9/28/2020	7:40 AM	21.05	21.03	20.80	26.24	26.35	26.60	pH sensor broken			7.54	7.65	7.68	1.1	5.68	21.3		54	17							1	4	5	6	4	4	1	3	1
Site 19	10/5/2020	12:07PM	19.01	18.99	18.88	26.57	26.58	26.68	pH sensor broken			7.59	7.54	7.57	1.30	5.53	22.4		4	<1							0	4	5	6	3	2	1	2	1
Site 19	10/14/2020	07:45am	15.46	15.84	16.15	25.37	25.79	26.25	pH sensor broken			7.94	7.95	8.18	1.6	4.93	11.3		520	4							2	4	5	6	0	0	0	1	0
Site 19	10/19/2020	10:57am	15.65	15.72	15.78	26.03	26.11	26.35	pH sensor broken			8.28	8.28	8.28	2.0	5.07	22.1		33	6							0	4	5	6	1	0	0	2	0
Site 19	10/27/2020	07:36am	15.20	15.24	15.40	26.14	26.18	26.39	pH sensor broken			7.66	7.71	7.69	1.9	4.47	13.1		22	1							0	4	5	6	4	1	1	3	1

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 Water Quality Data **- Site 1, Cold Spring Cove South**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 1	4/19/2021	11:06am	12.59	11.72	10.02	22.99	24.50	26.11	8.35	8.25	8.19	11.57	12.04	11.76	125.47	128.37	122.9	1.1m	3.75	18.4		<1	<1							0	3	5	6	1	NE	3.4	1	0.5
Site 1	4/26/2021	10:56 AM	10.84	10.82	10.78	22.98	23.41	24.65	7.95	7.96	7.99	8.91	8.92	8.68	93.2	93.5	91.4	1.7	6.66	15.7		9	4							1	4	5	6	0	NW	3	1	1
Site 1	5/3/2021	10:59 AM	13.27	13.20	11.83	22.78	23.70	25.72	7.76	7.88	7.93	8.65	8.67	8.62	95.5	96.5	94.0	1.8	4.12	18.2		5	3							0	2	5	6	4	NE	1.7	3	0
Site 1	5/10/2021	10:06 AM	12.02	12.19	11.73	22.11	24.31	25.83	8.05	8.05	7.97	9.74	9.92	9.68	105.1	109	105.7	1.25	6.05	15.2		29	55							2	4	5	6	4	W	2.5	3	0.5
Site 1	5/17/2021	10:32 AM	15.04	14.93	13.83	24.04	24.65	26.04	7.96	7.90	7.91	8.72	8.95	9.02	100.1	102.5	101.5	1.7	3.81	24.7		1	<1							0	3	5	6	0	N	2	1	0
Site 1	5/24/2021	10:01 AM	19.09	19.09	17.99	24.31	24.38	25.75	7.92	7.94	7.86	7.97	8.20	7.97	99.3	101.9	97.3	1.1	6.61	17.5		37	10							0	1	5	6	4	SW	3.5	3	0
Site 1	6/1/2021	10:50 AM	15.43	15.39	14.89	20.46	23.59	25.25	7.65	7.53	7.61	7.97	7.87	7.32	89.7	90.1	83.0	1.4	3.64	27.2		2	1							0	2	5	6	4	NE	1.1	3	0
Site 1	6/7/2021	11:13 AM	19.70	17.74	16.67	24.34	25.60	26.05	8.02	7.98	7.81	9.36	9.67	8.72	118.2	118.3	104.4	1.05	5.83	33.0		11	1							0	1	5	6	0	0	0	1	0
Site 1	6/15/2021	10:37 AM	18.07	17.26	16.74	25.09	25.69	26.48	8.06	7.75	7.67	8.10	8.74	7.11	100.3	105.3	84.6	0.8	4.15	25.8		63	7							1	3	5	6	3	N	0.4	3	0
Site 1	6/21/2021	11:28 AM	21.02	21.01	20.12	25.34	25.55	26.15	8.02	8.01	7.93	7.46	7.73	7.09	98.0	101.0	91.6	0.7	5.84	24.4		320	43							0	2	5	6	4	S	3.3	3	0.5
Site 1	6/28/2021	10:57 AM	19.42	19.03	18.60	25.99	26.05	26.50	7.55	7.51	7.43	5.97	5.73	5.23	75.0	72.1	64.8	0.8	3.85	30.0		150	11							0	4	5	4	1	SW	1.5	1	0
Site 1	7/6/2021	11:33 AM	21.39	20.48	19.23	25.35	26.45	26.99	pH sensor broken			5.40	5.67	4.66	72.0	72.5	57.5	1.6	5.30	31.0		39	3							0	2	5	6	1	SW	4.1	1	0
Site 1	7/12/2021	9:40 AM	22.18	22.11	21.72	24.51	24.78	25.71	7.35	7.32	7.26	4.91	4.79	3.09	64.6	62.9	40.1	0.9	4.04	25.0		60	16							1	4	5	6	4	SW	1.0	3	0
Site 1	7/19/2021	11:19 AM	24.05	23.98	23.53	24.10	24.84	25.55	7.93	7.63	7.34	5.38	6.66	5.32	75.0	91.5	70.3	1.0	4.55	24.0		220	35							0	2	5	6	4	NW	1.4	3	0
Site 1	7/26/2021	9:27 AM	23.16	23.18	22.93	24.96	24.90	25.85	7.28	7.31	7.32	3.57	3.22	2.82	46.1	43.4	37.6	1.9	4.07	26.0		250	52							2	4	5	6	1	W	1.0	1	0
Site 1	8/2/2021	11:30 AM	23.68	23.65	23.47	24.38	24.30	25.55	pH sensor broken			5.58	5.83	4.78	76.3	79.9	64.8	1.1	4.58	22.8		13	1							0	2	5	6	2	NW	2.7	1	0.5
Site 1	8/9/2021	9:47 AM	22.24	22.28	22.28	25.18	25.41	26.03	7.30	7.30	7.25	3.82	3.34	2.62	50.1	43.7	33.9	1.6	4.86	22.0		90	70							1	4	5	6	4	NE	2.8	4	0
Site 1	8/24/2021	9:32 AM	24.10	24.17	24.12	24.42	24.60	25.40	7.39	7.41	7.42	4.31	3.88	3.53	57.0	53.0	48.3	1.1	4.23	25.6		45	6							1	4	4	6	1	W	8	1	0
Site 1	8/31/2021	10:29 AM	24.71	24.61	23.67	25.00	25.29	26.53	pH sensor broken			5.20	5.70	5.13	73.3	81.7	67.6	0.8	4.60	26.1		16	<1							1	2	5	6	3	NW	6.0	1	0
Site 1	9/7/2021	9:52 AM	23.29	23.27	23.42	24.72	24.73	25.21	pH sensor broken			5.45	5.35	4.86	73.3	72.2	65.7	0.9	5.26	21.1		28	11							0	4	4	6	0	WNW	8	1	0
Site 1	9/13/2021	11:15 AM	23.35	23.29	23.00	23.92	24.01	24.41	pH sensor broken			5.82	5.92	5.92	78.3	79.4	78.8	0.7	3.87	26.1		21	1							0	4	5	6	1	NW	11.0	1	0.5
Site 1	9/21/2021	10:23 AM	22.31	22.38	22.75	24.70	24.87	25.56	pH sensor broken			5.18	5.41	5.23	68.1	71.3	68.1	1.3	5.77	18.8		24	<1							0	4	5	6	2	E	7	2	0
Site 1	9/27/2021	11:21 AM	21.97	21.99	22.38	23.39	23.70	24.72	pH sensor broken			8.27	9.21	9.30	109.1	121.9	122.1	0.6	4.63	22.0		19	<1							0	4	1	6	0	SW	2.0	1	0.5
Site 1	10/4/2021	11:21 AM	20.83	20.83	20.83	24.48	24.38	25.36	pH sensor broken			5.75	5.55	5.12	73.5	71.3	66.1	0.7	6.41	18.8										1	2	5	6	4	ENE	11.0	3	0.5
Site 1	10/11/2021	10:52 AM	18.92	19.22	20.16	22.69	23.82	25.33	pH sensor broken			6.05	5.95	5.34	74.1	73.6	66.6	1.5	4.28	18.8										1	4	5	6	4	NE	9	6	0.5
Site 1	10/18/2021	10:05 AM	18.17	18.28	18.80	23.02	24.62	25.27	pH sensor broken			7.78	7.42	7.38	93.6	91.6	92.1	1.1	6.10	12.2		30	7							1	4	5	6	3	W	13.0	2	0.5
Site 1	10/25/2021	10:22 AM	17.22	17.14	17.17	24.58	25.01	25.36	pH sensor broken			7.39	7.31	7.17	88.6	87.9	86.4	1.1	4.51	18.8		2	1							1	4	5	6	3	S	10	2	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 Water Quality Data - **Site 2, Cold Spring Cove North**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 2	4/19/2021	10:54 AM	10.85	10.45	9.83	24.92	25.40	26.32	8.22	8.17	8.18	11.12	11.31	10.90	118.4	119.4	113.5	1.1	4.45	18.4		2	<1							0	3	5	6	1	NE	2.4	1	0.0
Site 2	4/26/2021	10:39 AM	10.80	10.83	10.79	24.45	24.49	24.61	8.05	8.04	8.04	9.18	9.14	9.08	96.7	96.3	95.7	1.4	4.74	10.4		7	2							1	4	5	6	1	NW	5.6	1	1.5
Site 2	5/3/2021	10:48 AM	12.06	12.09	11.85	25.21	25.13	25.65	7.96	7.96	7.96	8.87	8.89	8.83	96.8	97.3	96.1	1.5	5.67	16.2		8	2							0	2	5	6	4	NE	1.6	3	0.0
Site 2	5/10/2021	9:49 AM	12.23	12.18	11.59	24.72	25.09	26.07	8.05	8.06	7.92	9.22	9.80	9.44	103.5	107.7	102.3	1.0	8.38	13.8		11	5							2	4	5	6	4	W	3.0	3	1.0
Site 2	5/17/2021	10:21 AM	14.85	14.40	13.72	24.87	25.40	26.19	7.94	7.95	7.83	8.52	8.88	8.42	97.9	100.8	94.5	1.7	6.96	26.6		5	2							0	3	5	6	0	N	1.5	1	0.0
Site 2	5/24/2021	9:49 AM	18.65	18.70	18.43	23.38	25.18	25.66	8.00	7.96	7.88	8.67	8.78	8.80	106.1	108.7	107.8	1.0	3.66	18.6		66	12							0	4	5	6	4	W	3.0	3	0.0
Site 2	6/1/2021	10:36 AM	15.28	14.99	14.48	24.08	24.73	25.82	7.70	7.71	7.70	7.05	7.25	6.92	80.9	83.0	78.7	1.3	6.63	22.3		15	5							0	2	5	6	4	NW	1.4	3	0.0
Site 2	6/7/2021	10:59 AM	19.02	17.54	16.33	25.06	25.76	26.22	8.10	7.99	7.73	8.95	9.61	8.15	112.3	117.2	95.7	1.1	8.51	27.1		26	5							0	1	5	6	1	N	1.0	1	0.0
Site 2	6/15/2021	10:21 AM	17.21	16.86	16.65	25.85	26.19	26.57	7.89	7.83	7.70	7.31	7.53	6.96	88.9	90.8	83.7	0.9	5.38	25.5		58	12							1	3	5	6	3	N	1.6	3	0.0
Site 2	6/21/2021	11:10 AM	21.92	20.61	19.89	24.88	25.86	26.36	8.20	8.03	7.94	8.71	9.22	7.75	117.2	119.7	99.0	0.7	7.38	25.9		80	15							0	2	5	6	4	S	3.2	3	0.5
Site 2	6/28/2021	10:43 AM	19.84	19.87	18.53	25.45	25.62	26.54	7.60	7.61	7.45	6.54	6.47	5.19	82.9	81.8	64.1	0.8	5.48	30.0		140	5							0	4	5	6	1	SW	2.3	1	0.0
Site 2	7/6/2021	11:21 AM	20.20	19.35	18.98	26.39	26.85	27.10	pH sensor broken			5.60	5.23	4.13	71.6	65.2	52.4	1.2	5.40	31.0		23	2							0	2	5	6	1	SW	2.5	1	0.0
Site 2	7/12/2021	9:24 AM	22.06	21.71	21.50	24.65	24.82	25.98	7.42	7.29	7.29	4.72	4.69	3.62	62.4	61.1	47.5	0.8	5.27	25.0		280	48							1	4	5	6	4	SW	1.0	3	0.0
Site 2	7/19/2021	11:07 AM	23.86	23.71	23.53	24.86	25.13	25.60	7.78	7.62	7.39	5.64	6.07	4.73	77.7	83.0	60.9	0.6	4.49	24.0		90	23							0	2	5	6	4	NW	2.2	3	0.0
Site 2	7/26/2021	9:14 AM	23.13	23.01	22.76	24.81	25.22	25.95	7.42	7.40	7.37	3.71	3.61	3.33	50.2	48.5	44.3	1.4	5.01	25.0		160	80							2	4	5	4	1	0	0.0	1	0.0
Site 2	8/2/2021	11:16 AM	23.45	23.41	23.32	24.79	24.80	25.62	pH sensor broken			4.58	4.82	4.28	62.4	65.9	57.6	1.3	6.28	22.8		6	<1							0	2	5	6	2	NW	3.8	1	0.5
Site 2	8/9/2021	9:33 AM	22.18	22.24	22.28	24.43	25.27	26.01	7.42	7.39	7.27	3.15	3.54	2.03	41.2	47.0	26.7	1.3	6.23	22.0		120	80							1	4	5	6	4	NE	2.7	3	0.0
Site 2	8/24/2021	9:18 AM	23.93	24.05	24.06	24.11	24.90	25.39	7.41	7.44	7.45	4.43	4.03	3.74	60.2	55.1	51.3	1.1	4.73	23.8		51	66							1	4	4	6	0	W	8.0	1	0.0
Site 2	8/31/2021	10:19 AM	24.19	23.92	23.43	24.99	26.02	26.77	pH sensor broken			3.63	3.71	2.52	48.8	52.5	33.6	0.9	6.55	25.0		24	2							1	2	5	6	2	NW	6.0	1	0.0
Site 2	9/7/2021	9:37 AM	23.23	23.20	23.44	24.99	24.99	25.24	pH sensor broken			4.83	4.74	4.44	65.1	64.1	60.2	1.0	7.54	20.0		14	4							0	4	4	3	0	WNW	7.0	1	0.0
Site 2	9/13/2021	11:02 AM	22.94	22.90	22.69	24.11	24.14	24.79	pH sensor broken			5.96	6.28	5.66	79.9	83.7	74.9	1.2	5.49	27.1		15	2							0	4	5	6	1	NW	11.0	1	0.5
Site 2	9/21/2021	10:10 AM	22.58	22.30	22.83	25.09	25.00	25.72	pH sensor broken			5.37	5.32	5.32	69.5	69.8	64.7	1.3	8.37	18.8		33	<1							0	4	5	6	2	E	6.0	1	0.0
Site 2	9/27/2021	11:08 AM	21.30	21.26	shallow	23.35	23.41	shallow	pH sensor broken			9.29	9.97	shallow	121.0	129.2	shallow	0.6	1.92	22.0		39	1							0	4	1	6	1	SW	11.0	1	0.5
Site 2	10/4/2021	11:10 AM	20.87	20.84	20.80	25.00	25.25	25.58	pH sensor broken			5.87	5.44	5.08	74.5	70.0	65.8	1.1	7.59	18.8										1	2	5	6	4	ENE	11.0	3	0.5
Site 2	10/11/2021	10:40 AM	20.00	19.99	20.27	24.96	25.01	25.80	pH sensor broken			5.80	5.51	5.00	73.2	69.2	63.6	1.1	6.38	17.7										1	4	5	6	4	NE	16.0	3	0.5
Site 2	10/18/2021	9:53 AM	18.58	18.60	18.83	25.06	25.06	25.37	pH sensor broken			7.90	7.74	7.63	97.4	96.3	95.2	1.3	4.16	12.2		14	2							1	4	5	6	3	W	13.0	2	1.5
Site 2	10/25/2021	10:05 AM	16.89	16.96	17.35	24.10	24.59	25.72	pH sensor broken			7.55	7.45	7.25	89.6	89.0	88.1	1.3	6.83	20.0		9	<1							1	4	5	6	4	S	11.0	2	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 Water Quality Data - Site 3, Cold Spring Harbor South

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 3	4/19/2021	10:43 AM	10.59	10.40	9.52	26.00	26.20	26.56	8.26	8.28	8.23	10.75	10.98	11.15	114.5	116.4	115.3	1.1	4.67	17.8		<1	<1							0	3	5	6	1	NE	1.1	1	0.5
Site 3	4/26/2021	10:18 AM	10.78	10.78	10.49	25.24	25.19	25.52	8.12	8.11	8.14	9.4	9.31	9.32	99.3	98.5	98.3	2.0	6.5	10.9		<1	<1							1	4	5	6	1	W	8.0	1	1.5
Site 3	5/3/2021	10:38 AM	12.21	12.16	11.29	25.27	25.48	25.99	8	8.01	7.95	8.86	9.1	8.93	97.6	99.9	96.3	1.3	4.58	18.5		2	1							0	2	5	6	4	0	0.0	3	0.0
Site 3	5/10/2021	9:38 AM	12.14	12.15	11.43	25.73	25.74	26.07	8.07	8.07	7.97	9.66	9.86	9.78	106.9	108.9	105.1	1.9	6.33	12.4		<1	<1							2	4	5	6	4	NW	2.5	3	0.5
Site 3	5/17/2021	10:06 AM	14.89	14.23	13.48	25.61	26.12	26.44	7.97	7.99	7.92	8.92	9.15	9.12	102.9	103.8	102.0	1.3	4.45	26.1		1	1							0	3	5	6	0	NW	2.1	1	0.0
Site 3	5/24/2021	9:36 AM	18.73	18.73	16.44	25.52	25.55	26.06	7.99	8.00	7.79	8.08	8.65	7.92	100.6	107.5	93.0	1.6	6.86	17.1		11	1							0	4	5	6	4	S	4.5	3	0.5
Site 3	6/1/2021	10:27 AM	15.05	14.83	14.32	25.43	25.70	26.31	7.76	7.84	7.73	7.55	7.51	7.46	86.5	86.1	84.5	1.2	4.60	23.0		12	4							0	2	5	6	4	NW	0.8	3	0.0
Site 3	6/7/2021	10:48 AM	19.81	19.38	16.17	25.76	26.06	26.30	8.14	8.17	7.75	9.92	10.41	9.29	127.0	131.1	109.0	1.6	6.45	33.2		7	2							0	1	5	6	1	N	2.0	1	0.0
Site 3	6/15/2021	10:12 AM	17.68	17.30	16.53	26.13	26.28	26.80	8.04	8.00	7.79	7.97	8.39	8.29	97.5	102.4	98.5	0.9	4.67	25.5		44	4							1	3	5	6	4	N	1.7	3	0.0
Site 3	6/21/2021	11:00 AM	20.93	20.89	19.78	26.05	26.11	26.42	8.16	8.16	7.98	7.86	8.42	8.10	104.7	111.3	103.0	0.9	6.27	26.6		17	4							0	2	5	6	4	S	3.5	3	1.0
Site 3	6/28/2021	10:27 AM	20.62	19.36	18.49	26.32	26.43	26.73	7.76	7.69	7.63	7.06	7.01	6.57	92.0	88.0	80.0	1.2	4.27	29.0		14	1							0	4	5	6	1	SW	2.9	1	0.0
Site 3	7/6/2021	11:09 AM	20.58	20.39	18.55	26.64	26.72	27.20	pH sensor broken			5.76	6.20	5.33	76.1	80.7	66.4	1.7	6.26	30.0		5	<1							0	2	5	6	1	SW	1.2	1	0.0
Site 3	7/12/2021	9:13 AM	22.09	21.95	21.35	25.07	25.50	26.05	7.47	7.44	7.39	4.44	4.54	4.33	57.5	60.0	56.4	1.2	4.64	25.0		70	14							1	4	5	6	4	SW	1.0	3	0.0
Site 3	7/19/2021	10:52 AM	24.02	24.00	23.68	25.50	25.54	25.92	7.87	7.90	7.48	5.06	6.11	5.47	71.5	84.9	73.2	1.1	5.53	24.0		24	5							0	2	5	6	4	NW	2.0	3	0.0
Site 3	7/26/2021	9:05 AM	22.96	22.88	22.36	25.51	25.52	26.15	7.51	7.52	7.49	4.61	4.49	4.27	62.4	60.5	56.8	1.6	4.44	25.0		62	46							2	4	5	6	2	0	0.0	2	0.0
Site 3	8/2/2021	11:01 AM	23.55	25.53	23.12	25.77	25.62	25.62	pH sensor broken			6.71	6.80	6.03	92.7	93.2	81.3	1.5	4.58	22.8		2	<1							0	2	5	6	0	NW	2.3	1	0.5
Site 3	8/9/2021	9:17 AM	22.42	22.41	22.33	25.49	25.66	26.40	7.69	7.63	7.37	4.84	5.17	3.83	64.9	68.8	50.7	1.3	5.26	22.0		38	20							1	4	5	6	4	NE	2.2	3	0.0
Site 3	8/24/2021	9:07 AM	24.07	24.06	23.83	24.98	25.59	26.03	7.64	7.59	7.49	5.31	5.27	4.64	73.1	72.6	63.2	1.3	4.73	22.8		27	9							1	4	4	6	0	W	8.0	1	0.0
Site 3	8/31/2021	10:06 AM	24.30	24.22	23.38	25.85	26.00	26.81	pH sensor broken			5.85	6.63	5.04	82.5	92.7	67.7	0.7	5.58	23.8		11	2							1	2	5	6	3	NW	6.0	3	0.0
Site 3	9/7/2021	9:20 AM	23.27	23.30	23.30	25.22	25.25	25.66	pH sensor broken			5.84	5.81	5.30	78.7	78.9	71.8	1.0	5.84	20.0		7	<1							0	4	4	6	0	WNW	7.0	1	0.0
Site 3	9/13/2021	10:52 AM	23.00	22.99	22.74	24.66	24.68	25.15	pH sensor broken			6.31	6.46	6.21	84.6	86.6	81.8	1.1	4.60	26.1		14	<1							0	3	5	6	0	NW	11.0	1	1.0
Site 3	9/21/2021	9:56 AM	22.57	22.56	22.97	25.63	25.65	26.02	pH sensor broken			5.98	6.12	5.61	78.7	80.9	74.4	1.2	6.12	18.8		<1	<1							0	4	5	6	2	E	6.0	2	0.0
Site 3	9/27/2021	10:55 AM	22.35	22.30	22.21	24.66	24.93	25.48	pH sensor broken			8.62	9.17	9.12	116.6	122.0	120.3	0.7	4.96	22.0		3	<1							0	4	1	6	2	SW	11.0	1	0.5
Site 3	10/4/2021	10:59 AM	20.89	20.89	20.80	25.31	25.34	25.72	pH sensor broken			6.72	6.60	6.35	86.6	85.4	82.3	1.5	7.14	20.0										1	2	5	6	4	ENE	11.0	3	0.5
Site 3	10/11/2021	10:27 AM	20.00	20.01	20.18	25.45	25.45	25.82	pH sensor broken			5.91	5.63	5.33	74.3	70.6	67.6	1.6	5.00	17.7										1	4	5	6	4	NE	16.0	3	1.0
Site 3	10/18/2021	9:39 AM	18.89	18.99	19.18	25.82	25.85	26.03	pH sensor broken			8.10	8.04	8.01	101.6	101.3	101.3	1.3	6.95	12.2		1	<1							1	4	5	6	1	W	12.0	2	1.5
Site 3	10/25/2021	9:57 AM	17.35	17.36	17.46	25.63	25.65	25.89	pH sensor broken			8.06	8.05	8.01	97.8	97.8	97.5	1.5	5.07	18.8		1	<1							1	4	5	6	4	S	11.0	3	1.0

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 Water Quality Data - Site 4, Cold Spring Harbor North

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 4	4/19/2021	10:30 AM	11.21	11.19	9.16	25.83	26.34	26.71	8.30	8.32	8.22	11.28	11.70	11.59	121.6	126.6	119.6	2.0	5.27	15.9		<1	<1							0	3	5	6	1	NE	1.7	1	0.0
Site 4	4/26/2021	10:00 AM	9.73	9.7	9.68	25.83	25.86	25.84	8.15	8.15	8.15	9.52	9.52	9.54	98.8	98.8	98.9	2.2	7.05	12.8		1	<1							1	4	5	6	1	NW	5.0	1	2.0
Site 4	5/3/2021	10:29 AM	12.36	12.37	10.67	25.54	25.60	26.27	8.10	8.10	8.04	9.42	9.62	9.63	104.4	106.4	102.3	2.1	5.39	16.7		<1	<1							0	2	5	6	4	S	1.0	3	0.0
Site 4	5/10/2021	9:29 AM	11.74	11.75	11.3	26.09	26.12	26.35	7.99	7.99	7.96	9.11	9.14	9.03	99.8	100.0	98	2.2	6.81	12.3		<1	<1							2	4	5	6	4	N	3.3	3	1.0
Site 4	5/17/2021	9:57 AM	15.10	15.01	13.3	26.05	26.08	26.59	8.05	8.05	7.94	9.30	9.58	9.54	107.9	110.7	105.8	2.0	5.05	26.8		<1	<1							0	3	5	6	0	N	1.5	1	0.0
Site 4	5/24/2021	9:18 AM	16.61	16.59	14.41	26.27	26.34	26.54	8.05	8.05	7.95	9.11	9.21	8.90	109.0	109.9	101.6	1.9	7.39	16.9		1	<1							0	4	5	6	4	SE	4.8	3	1.0
Site 4	6/1/2021	10:17 AM	15.35	15.01	13.63	25.16	25.49	26.51	7.95	7.99	7.81	8.56	9.09	9.15	99.8	104.8	102	1.6	5.17	23.0		5	1							0	2	5	6	4	NW	2.0	3	0.0
Site 4	6/7/2021	10:38 AM	19.39	19.16	15.93	25.98	26.10	26.51	8.15	8.14	7.85	9.86	10.35	9.60	124.8	131.0	113.4	1.7	7.13	30.5		2	<1							0	1	5	6	1	NE	0.6	1	0.0
Site 4	6/15/2021	9:57 AM	18.73	18.11	15.97	26.42	26.45	26.95	8.25	8.25	7.63	8.62	9.75	8.02	110.2	121.1	94.8	1.1	5.26	23.6		1	<1							1	3	5	6	4	SE	2.5	3	0.0
Site 4	6/21/2021	10:48 AM	21.66	21.65	16.90	26.23	26.29	26.88	8.24	8.24	7.90	8.53	8.81	8.18	114.2	117.9	99.7	1.3	6.96	23.7		5	<1							0	2	5	6	4	S	4.7	3	0.5
Site 4	6/28/2021	10:07 AM	20.26	20.23	18.63	26.56	26.60	26.80	7.83	7.83	7.65	7.64	7.67	6.57	98.0	98.5	81.2	1.4	4.82	28.3		5	1							0	4	5	6	1	SW	2.1	1	0.0
Site 4	7/6/2021	10:57 AM	21.06	20.96	18.58	26.69	26.74	27.21	pH sensor broken			6.54	7.10	7.06	87.3	93.6	87.3	1.6	6.85	29.0		<1	<1							0	2	5	6	1	SW	2.0	1	0.0
Site 4	7/12/2021	9:03 AM	22.68	22.54	20.88	25.44	25.46	26.25	7.85	7.82	7.56	7.05	7.68	7.10	96.6	103.3	92.2	1.1	5.21	25.0		2	<1							1	4	5	6	4	SW	1.0	3	0.0
Site 4	7/19/2021	10:38 AM	24.75	24.74	23.95	26.04	25.99	26.16	8.13	8.12	7.75	7.08	8.39	8.04	102.8	108.8	108.2	0.7	6.20	23.0		2	<1							0	2	5	6	4	NW	1.7	3	0.0
Site 4	7/26/2021	8:50 AM	23.51	23.48	21.79	25.68	25.79	26.44	7.76	7.77	7.51	5.76	5.99	5.41	79.1	82.4	71.7	1.7	4.99	24.0		2	<1							2	4	5	6	2	0	0.0	2	0.0
Site 4	8/2/2021	10:51 AM	23.43	23.37	22.14	25.83	25.81	26.36	pH sensor broken			6.81	7.05	5.53	94.6	96.6	74.2	1.5	6.13	22.2		<1	<1							0	2	5	6	1	NW	3.8	1	0.5
Site 4	8/9/2021	9:06 AM	22.55	22.54	22.32	26.49	26.55	26.70	7.67	7.67	7.62	5.48	5.35	4.95	73.2	71.8	66.1	1.8	5.63	22.0		5	<1							1	4	5	6	4	NE	3.4	3	0.0
Site 4	8/24/2021	8:57 AM	24.01	23.99	23.63	25.80	25.84	26.20	7.76	7.76	7.60	5.77	6.09	5.64	80.2	84.4	77.2	1.4	5.25	23.8		7	<1							1	4	4	6	1	W	7.0	1	0.0
Site 4	8/31/2021	9:56 AM	24.90	24.83	22.91	26.17	26.28	27.10	pH sensor broken			6.25	7.91	7.00	91.2	114.2	91.3	1.0	6.30	23.8		<1	<1							1	2	5	6	3	NW	5.0	3	0.0
Site 4	9/7/2021	9:10 AM	23.15	23.13	23.05	25.56	25.58	25.65	pH sensor broken			6.57	6.50	6.27	89.0	88.0	84.8	2.1	6.30	18.8		2	<1							0	4	4	6	0	WNW	8.0	1	0.0
Site 4	9/13/2021	10:42 AM	23.23	23.23	23.04	25.36	25.36	25.41	pH sensor broken			8.30	8.95	9.10	114.3	121.3	121.7	1.1	5.12	26.1		1	<1							0	2	5	6	1	NW	10.0	1	1.5
Site 4	9/21/2021	9:46 AM	22.95	22.92	22.85	26.04	26.03	26.08	pH sensor broken			7.56	7.67	7.62	100.9	102.1	101.0	1.5	6.63	17.7		1	<1							0	4	5	6	2	E	6.0	2	0.0
Site 4	9/27/2021	10:45 AM	22.29	22.27	22.22	25.73	25.76	25.77	pH sensor broken			8.78	8.91	8.79	117.0	118.7	116.4	1.3	5.50	21.0		<1	<1							0	4	1	6	2	SW	11.0	2	1.0
Site 4	10/4/2021	10:49 AM	21.16	21.16	21.16	25.97	25.99	25.96	pH sensor broken			7.70	7.68	7.67	100.5	100.4	100.3	2.2	7.79	18.8										>1	2	5	6	4	ENE	12.0	3	1.0
Site 4	10/11/2021	10:15 AM	20.01	20.01	20.35	26.02	26.05	26.42	pH sensor broken			6.83	8.76	6.55	86.7	86.0	84.0	2.2	5.53	17.7										1	4	5	6	4	NE	15.0	3	1.5
Site 4	10/18/2021	9:26 AM	19.42	19.42	19.42	26.19	26.18	26.19	pH sensor broken			8.13	7.94	7.85	103.0	100.7	99.7	1.5	7.29	12.2		<1	<1							1	4	5	6	1	W	13.0	2	2.0
Site 4	10/25/2021	9:47 AM	17.30	17.30	17.60	25.86	25.83	26.13	pH sensor broken			8.03	8.10	8.04	97.5	98.7	98.1	2.2	5.41	18.8		5	<1							1	4	5	6	4	SW	10.0	32	1.0

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 Water Quality Data - **Site 5, Plum Point**

Site	Date	Time	H_2O Temp Top 0.5m (°C)	H_2O Temp 1.0m (°C)	H_2O Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 5	4/19/2021	10:17 AM	10.38	10.46	10.16	26.42	26.53	26.58	8.22	8.22	8.23	10.34	10.48	10.69	109.9	111.4	113.1	1.9	4.68	14.6		<1	<1							0	3	5	6	1	N	1.2	1	0.5
Site 5	4/26/2021	Heavy wind and wave action																																				
Site 5	5/3/2021	10:19 AM	11.7	11.70	11.65	25.95	25.94	25.98	8.02	8.03	8.03	9.1	9.11	9.13	99.1	99.4	99.4	2	4.47	16.5		2	<1							0	2	5	6	4	SE	1.0	3	0.5
Site 5	5/10/2021	9:18 AM	11.58	11.53	11.32	26.13	26.15	26.27	7.98	7.98	7.96	9.05	9.08	8.99	98.7	98.9	97.4	2.4	6.83	12.7		<1	<1							2	4	5	6	4	N	1.2	3	0.0
Site 5	5/17/2021	9:41 AM	14.73	14.71	14.66	26.28	26.39	26.32	7.91	7.91	7.91	8.56	8.59	8.61	98.5	98.7	98.8	1.9	5.25	27.1		3	<1							0	3	5	6	0	NW	1.5	1	0.0
Site 5	5/24/2021	9:08 AM	16.57	16.63	16.36	26.28	26.27	26.31	8.03	8.02	8.01	8.93	9.05	9.17	106.7	108.2	108.9	1.6	2.95	17.8		1	2							0	4	5	6	4	SE	3.2	3	0.5
Site 5	6/1/2021	10:07 AM	14.58	14.59	14.3	25.95	26.01	26.19	7.83	7.83	7.82	8.16	8.14	8.04	93.2	93.0	91.4	1.6	4.85	18.3		<1	1							0	2	5	6	4	N	2.1	3	0.0
Site 5	6/7/2021	10:27 AM	18.97	18.31	17.58	26.16	26.21	26.17	8.09	8.04	7.92	9.38	9.78	8.99	118.5	121.1	109.8	1.7	2.87	27.2		1	<1							0	4	5	6	1	NE	1.3	1	0.0
Site 5	6/15/2021	9:48 AM	18.19	18.22	17.97	26.59	26.61	26.67	8.06	8.06	8.04	8.27	8.59	8.68	103.3	106.5	106.7	1.0	7.57	24.1		1	1							1	3	5	6	4	N	2.8	3	0.0
Site 5	6/21/2021	10:34 AM	20.02	20.39	18.94	26.33	26.44	26.58	8.15	8.12	8.07	8.42	8.56	8.05	111.4	111.1	102.1	1.1	3.93	25.7		5	4							0	2	5	6	4	S	3.4	3	0.5
Site 5	6/28/2021	9:49 AM	20.36	19.88	19.79	26.66	26.82	26.70	7.70	7.69	7.69	6.73	6.64	6.43	86.5	83.9	81.7	1.0	2.58	28.0		3	<1							0	4	5	6	0	SW	1.0	1	0.0
Site 5	7/6/2021	10:46 AM	19.78	19.27	18.86	27.03	27.09	27.14	pH sensor broken			5.53	5.70	5.26	71.3	72.6	66.5	1.2	12.42	28.0		7	1							0	2	5	6	1	SW	1.7	1	0.0
Site 5	7/12/2021	8:53 AM	22.47	22.17	21.94	25.57	25.69	25.82	7.63	7.59	7.57	6.05	6.11	5.92	81.0	81.1	78.1	1.0	4.70	25.0		4	<1							1	4	5	6	4	SW	1.0	2	0.0
Site 5	7/19/2021	10:29 AM	24.21	24.18	24.01	26.15	26.11	26.18	7.80	7.80	7.76	5.98	5.94	5.79	82.5	82.3	80.0	1.2	1.95	23.0		2	<1							0	2	5	6	4	NW	2.1	3	0.0
Site 5	7/26/2021	9:41 AM	23.65	23.45	shallow	25.88	26.02	shallow	7.77	7.75	shallow	6.37	6.36	shallow	87.6	86.9	shallow		1.65	24.0		5	6							2	4	5	6	2	W	0.5	2	0.0
Site 5	8/2/2021	10:41 AM	22.52	22.44	22.42	26.19	26.24	26.24	pH sensor broken			5.46	5.26	5.07	73.8	70.2	68.2	1.5	2.13	22.2		1	<1							0	2	5	6	1	NW	2.1	1	0.5
Site 5	8/9/2021	8:53 AM	22.72	22.72	22.75	26.40	26.46	26.48	7.66	7.66	7.67	5.84	5.64	5.44	77.5	75.7	73.1	1.4	5.96	22.0		9	9							1	4	5	6	4	N	3.0	3	0.5
Site 5	8/24/2021	8:48 AM	23.87	23.87	23.77	25.96	26.07	26.17	7.59	7.59	7.58	4.97	4.89	4.69	67.9	67.4	64.6	1.3	8.63	23.8		29	9							1	4	4	6	1	W	7.0	1	0.0
Site 5	8/31/2021	9:47AM	24.48	24.50	23.97	26.40	26.43	26.63	pH sensor broken			7.24	7.38	6.62	101.4	103.4	90.0	1.2	5.52	23.8		<1	<1							1	2	5	6	3	NW	5.0	3	0.0
Site 5	9/7/2021	8:59 AM	22.74	22.74	22.99	25.29	25.31	25.47	pH sensor broken			6.03	5.81	5.63	80.1	78.0	76.0	1.8	8.11	18.8		1	1							0	4	4	6	0	W	7.0	1	0.0
Site 5	9/13/2021	10:29 AM	23.11	23.10	23.04	25.43	25.46	25.44	pH sensor broken			7.62	7.68	7.69	102.8	103.4	103.4	1.5	11.5	26.1		2	<1							0	2	5	6	0	NW	11.0	1	0.5
Site 5	9/21/2021	9:35 AM	22.94	22.84	22.68	26.04	26.07	26.29	pH sensor broken			7.30	7.32	6.87	97.3	97.3	90.5	1.4	2.43	17.7		2	<1							0	4	5	6	4	E	6.0	3	0.0
Site 5	9/27/2021	10:30 AM	22.33	22.32	22.33	25.74	25.75	25.94	pH sensor broken			7.44	7.51	7.42	99.1	100.3	98.6	1.4	6.87	21.0		<1	<1							0	1	1	6	2	SW	11.0	2	1.0
Site 5	10/4/2021	10:37 AM	21.1	21.10	21.1	25.91	25.93	25.93	pH sensor broken			7.55	7.51	7.51	98.4	98.0	98.0	2.5	3.47	18.8										>1	1	5	6	4	ENE	11.0	3	2.5
Site 5	10/11/2021	10:04 AM	20.01	20.01	shallow	26.05	26.05	shallow	pH sensor broken			7.10	7.04	shallow	90.3	89.5	shallow	0.8	1.4	17.7										1	3	5	6	4	NE	16.0	3	1.0
Site 5	10/18/2021	9:08 AM	19.20	19.22	18.95	26.25	26.23	26.20	pH sensor broken			7.38	7.28	7.19	93.3	92.1	90.6	2.05	9.05	11.1		<1	<1							1	4	5	6	1	W	11	2	0.5
Site 5	10/25/2021	9:36 AM	17.30	17.30	17.29	25.96	25.95	25.94	pH sensor broken			7.99	8.01	8.00	97.1	97.2	97.2	2.1	2.80	18.8		<1	<1							1	4	5	6	4	S	9.0	3	0.5

[1] Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2] Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 - **Site 6, Seawanhaka Yacht Club PSTP Outfall**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 6	4/19/2021	10:05 AM	11.62	10.83	10.33	26.24	26.26	26.44	8.19	8.20	8.21	10.53	10.60	10.79	114.6	114.3	114.3	1.9	5.18	15.3		<1	<1							0	3	5	6	1	N	1.7	1	0.0
Site 6	4/26/2021	9:37 AM	9.99	9.99	9.46	25.72	25.74	25.79	8.13	8.13	8.16	9.48	9.46	9.60	98.9	98.6	99.2	2.3	7.61	12.6		<1	<1							1	4	5	6	1	NW	2.5	1	1.0
Site 6	5/3/2021	10:04 AM	11.75	11.74	11.62	25.93	25.98	26.00	8.04	8.04	8.03	9.08	9.17	9.22	99.2	100.0	100.3	2.2	5.1	16.2		<1	<1							0	2	5	6	4	SE	2.0	3	0.0
Site 6	5/10/2021	9:08 AM	11.92	11.66	11.36	26.03	26.1	26.22	7.94	7.95	7.95	8.60	8.74	8.80	94.5	95.4	95.6	2.1	6.44	13.0		<1	9							2	4	5	6	4	N	1.0	3	0.0
Site 6	5/17/2021	9:30 AM	14.84	14.78	14.39	26.33	26.36	26.41	7.91	7.91	7.90	8.55	8.63	8.66	98.6	99.4	98.8	2.5	4.87	22.6		<1	<1							0	2	5	6	0	W	1.2	1	0.0
Site 6	5/24/2021	8:59 AM	17.27	17.27	17.24	26.25	26.25	26.23	8.01	8.00	8.00	8.81	8.85	8.91	106.7	107.0	107.6	1.5	6.88	17.4		<1	7							0	4	5	6	4	SE	3.9	3	0.5
Site 6	6/1/2021	9:58 AM	14.9	14.88	14.6	25.87	25.92	26.01	7.84	7.84	7.83	8.27	8.29	8.28	95.1	95.1	94.5	1.8	5.17	24.2		<1	<1							0	2	5	6	3	SW	1.1	2	0.0
Site 6	6/7/2021	10:18 AM	19.11	18.58	17.48	26.21	26.31	26.31	8.04	8.05	7.88	9.14	9.53	9.19	115.9	119.1	111.9	1.9	6.35	32.2		<1	<1							0	4	5	6	1	SW	0.9	1	0.0
Site 6	6/15/2021	9:39 AM	18.63	18.18	17.84	26.62	26.58	26.71	8.05	8.06	8.01	8.35	8.69	8.79	105.0	107.9	108.3	1.1	5.06	24.6		1	<1							1	3	5	6	3	W	0.5	3	0.0
Site 6	6/21/2021	10:25 AM	21.43	21.43	20.83	26.30	26.30	26.46	8.18	8.19	8.07	8.20	8.69	8.70	110.9	115.9	112.3	1.3	6.90	23.8		5	<1							0	2	5	6	4	S	4.2	3	0.5
Site 6	6/28/2021	9:35 AM	20.78	20.70	20.56	26.62	26.58	26.59	7.72	7.72	7.72	6.62	6.61	6.61	85.7	85.5	85.3	1.1	4.35	27.7		2	<1							0	3	5	6	0	SW	1.3	1	0.0
Site 6	7/6/2021	10:33 AM	20.69	20.54	19.16	26.76	26.77	27.07	pH sensor broken			6.70	6.85	6.09	87.8	89.3	76.9	1.4	7.12	28.0		1	<1							0	1	5	6	1	SW	2.5	1	0.0
Site 6	7/12/2021	8:45 AM	22.67	22.64	21.82	25.40	25.42	25.83	7.64	7.63	7.53	6.47	6.45	5.99	86.7	86.0	78.8	1.1	4.94	25.0		1	3							1	4	5	6	4	SW	1.0	3	0.0
Site 6	7/19/2021	10:20 AM	24.45	24.38	24.17	26.05	26.06	26.11	7.91	7.89	7.79	6.68	6.98	6.77	93.0	97.3	92.9	1.0	6.21	23.0		4	<1							0	2	5	6	4	NW	1.0	3	0.0
Site 6	7/26/2021	8:32 AM	23.90	23.82	23.72	25.83	25.88	25.93	7.78	7.77	7.76	6.36	6.36	6.27	87.8	87.6	86.1	1.6	4.50	23.0		5	6							2	3	5	6	3	W	0.5	3	0.0
Site 6	8/2/2021	10:32 AM	23.17	23.13	22.59	25.99	26.00	26.19	pH sensor broken			5.85	6.01	5.53	80.2	82.1	74.5	1.8	6.19	22.2		1	<1							0	2	5	6	1	NW	2.6	1	0.5
Site 6	8/9/2021	8:43 AM	22.91	22.90	22.77	26.26	26.36	26.49	7.68	7.68	7.67	6.12	5.89	5.67	82.4	79.3	76.2	1.6	5.16	22.0		4	3							1	4	5	6	4	NE	1.5	3	0.0
Site 6	8/24/2021	8:40 AM	24.09	24.03	23.77	25.79	25.89	26.18	7.59	7.57	7.54	5.21	5.02	4.61	71.5	69.3	63.2	1.6	5.05	23.8		7	<1							1	4	4	6	0	W	7.0	1	0.0
Site 6	8/31/2021	9:38AM	24.56	24.54	23.69	26.34	26.38	26.78	pH sensor broken			6.02	6.82	6.29	85.8	96.4	85.1	1.0	6.20	23.8		<1	<1							1	2	5	6	4	NW	5.0	3	0.0
Site 6	9/7/2021	8:46 AM	23.13	23.13	23.15	25.50	25.49	25.54	pH sensor broken			6.26	6.19	6.06	84.6	83.9	82.2	1.3	6.09	17.7		2	1							0	4	4	6	0	W	7.0	1	0.0
Site 6	9/13/2021	10:16 AM	23.2	23.18	22.98	25.49	25.47	25.53	pH sensor broken			7.40	7.73	7.73	100.0	104.4	102.1	1.5	5.08	26.1		2	<1							0	2	5	6	2	NW	11.0	1	0.5
Site 6	9/21/2021	9:25 AM	22.92	22.93	22.93	26.05	26.03	26.04	pH sensor broken			7.17	7.08	7.01	95.0	94.0	93.1	1.6	6.43	17.7		2	<1							0	4	5	6	2	E	6.0	2	0.0
Site 6	9/27/2021	10:20 AM	22.37	22.36	22.30	25.73	25.72	25.78	pH sensor broken			7.75	7.83	7.87	103.4	104.4	104.5	1.4	5.30	20.0		<1	<1							0	1	1	6	2	SW	11.0	2	1.0
Site 6	10/4/2021	10:27 AM	21.06	21.07	21.01	25.92	25.93	25.89	pH sensor broken			7.48	7.47	7.46	97.5	97.5	97.0	2.1	7.51	18.8										1	1	5	6	4	ENE	11.0	4	1.5
Site 6	10/11/2021	9:56 AM	19.96	19.96	20.02	25.92	25.95	26.12	pH sensor broken			6.84	6.73	6.59	86.5	85.3	83.6	2.0	5.27	17.7										1	3	5	6	4	NE	17.0	3	0.5
Site 6	10/18/2021	8:59 AM	19.43	19.44	19.39	21.16	26.15	26.15	pH sensor broken			7.91	7.65	7.49	100.0	97.0	95.1	1.7	7.14	11.1		2	<1							1	4	5	6	1	W	11.0	2	0.5
Site 6	10/25/2021	9:27 AM	17.39	17.39	17.39	26.01	25.99	26.02	pH sensor broken			7.82	7.82	7.82	95.2	95.2	95.2	2.5	4.25	18.8		5	1							1	4	5	6	4	S	9.0	3	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 Water Quality Data - **Site 7, Oyster Bay Cove**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 7	4/19/21	9:53 AM	11.07	10.93	10.50	26.29	26.30	26.30	8.18	8.18	8.17	9.85	10.04	10.21	105.9	107.7	108.4	1.8	2.01	19.9		<1	<1							0	3	5	6	0	NW	1	1	0.0
Site 7	4/26/21	11:31 AM	10.52	10.51	10.52	25.32	25.30	25.42	8.10	8.09	8.10	9.22	9.18	9.15	97.0	96.6	96.5	1.4	3.76	11.5		1	1							1	1	5	6	0	NW	4	1	1.5
Site 7	5/3/21	9:52 AM	12.51	12.38	11.99	25.73	25.82	25.85	7.93	7.92	7.98	8.59	8.56	8.55	95.2	94.3	93.7	2.1	2.33	15.8		2	<1							0	2	5	6	4	NW	2.3	3	0.0
Site 7	5/10/21	8:54 AM	12.28	12.28	12.25	25.96	25.98	25.96	7.94	7.94	7.93	9.00	8.95	8.88	99.5	98.9	98.0	2.1	3.09	12.6		2	5							2	4	5	6	4	NW	1.9	3	0.5
Site 7	5/17/21	Too shallow, low tide																																				
Site 7	5/24/21	8:47 AM	18.50	18.36	18.01	25.91	26.23	26.20	7.85	7.89	7.91	8.15	8.06	8.23	100.7	99.0	101.0	1.3	3.89	18.5		18	6							0	4	5	6	4	E	3.4	3	0.5
Site 7	6/1/21	Too shallow, low tide																																				
Site 7	6/7/21	10:02 AM	19.01	18.64	18.23	26.06	26.09	26.05	7.96	7.98	7.94	8.69	8.98	9.18	109.9	111.9	113.6	1.3	3.46	31.7		10	1							0	4	5	6	1	SE	1.3	1	0.0
Site 7	6/15/21	9:25 AM	18.17	18.14	shallow	26.36	26.42	shallow	7.84	7.85	shallow	7.27	7.25	shallow	90.0	89.7	shallow	1.1	1.78	24.7		54	11							1	2	5	6	4	N	0.5	3	0.0
Site 7	6/21/21	10:12 AM	21.62	21.49	21.19	26.30	26.21	26.27	8.06	8.07	8.03	7.71	7.78	7.81	102.5	103.8	103.0	1.0	3.79	24.2		11	<1							0	2	5	6	4	S	3.7	3	0.5
Site 7	6/28/21	Too shallow, low tide																																				
Site 7	7/6/21	10:14 AM	21.66	21.50	20.63	26.54	26.51	26.58	pH sensor broken			6.64	7.05	7.07	88.6	93.6	91.0	1.4	3.25	28.0		<1	<1							0	1	5	6	1	SW	1.0	1	0.0
Site 7	7/12/21	10:02 AM	23.71	23.58	23.13	25.16	25.17	25.30	7.79	7.79	7.72	7.12	7.42	7.42	97.3	101.1	99.9	1.2	2.13	25.0		3	<1							1	4	5	6	4	SW	1.0	3	0.0
Site 7	7/19/21	10:10 AM	24.82	24.76	24.51	24.99	25.78	25.97	7.69	7.76	7.64	5.79	5.99	5.90	81.0	84.0	80.9	0.9	3.13	23.0		5	1							0	2	5	6	4	NW	1.0	3	0.0
Site 7	7/26/21	Too shallow, low tide																																				
Site 7	8/2/21	10:17 AM	23.28	23.28	23.27	25.72	25.73	25.75	pH sensor broken			5.55	5.23	5.07	74.9	71.1	69.1	1.3	2.42	22.2		5	<1							0	2	5	6	1	NW	3.9	1	0.5
Site 7	8/9/21	10:14 AM	23.08	23.03	23.01	26.13	26.16	26.16	7.72	7.73	7.71	5.94	5.96	5.99	80.1	80.6	80.8	1.6	3.20	22.0		5	7							1	4	5	6	3	NE	3.2	2	0.0
Site 7	8/24/21	9:59 AM	24.37	24.37	24.39	25.65	25.62	25.62	7.58	7.58	7.59	5.76	5.54	5.41	79.5	76.6	75.2	1.4	2.22	25.5		25	3							1	4	4	6	0	w	8.0	1	0.0
Site 7	8/31/21	9:23AM	24.55	24.54	24.25	26.18	26.22	26.44	pH sensor broken			6.07	6.09	5.52	85.1	84.9	76.3	1.1	2.99	23.8		7	<1							1	2	5	6	4	NW	5.0	3	0.0
Site 7	9/7/21	8:34 AM	22.79	22.79	22.88	25.05	25.05	25.17	pH sensor broken			6.46	6.06	5.94	86.6	81.3	79.9	0.8	2.15	17.7		18	5							0	4	4	6	0	WNW	6.0	1	0.0
Site 7	9/13/21	10:04 AM	23.33	23.27	23.25	24.46	24.58	24.69	pH sensor broken			7.86	7.97	8.25	106.2	107.2	111.1	0.9	1.76	26.1		20	4							0	2	4	6	2	NW	10.0	3	0.5
Site 7	9/21/21	9:11 AM	22.15	22.14	22.07	25.66	25.64	25.62	pH sensor broken			7.81	7.81	7.79	102.1	102.2	101.8	1.2	2.69	17.7		5	<1							0	4	5	6	4	E	6.0	3	0.0
Site 7	9/27/21	10:06 AM	21.87	22.08	21.98	25.14	25.32	25.21	pH sensor broken			8.14	8.38	8.65	107.6	111.4	114.5	1.0	1.98	20.0		10	1							0	1	1	6	1	SW	10.0	2	0.5
Site 7	10/4/21	10:16 AM	20.80	20.80	20.81	25.69	25.68	25.71	pH sensor broken			7.21	7.11	7.04	93.1	92.1	91.1	1.7	3.81	18.8										>1	4	5	6	4	ENE	10	3	1.5
Site 7	10/11/21	9:36 AM	19.52	19.69	19.78	25.43	25.67	25.71	pH sensor broken			5.76	5.74	5.80	72.5	72.5	73.5	1.4	2.13	17.2										1	3	5	6	4	NE	16.0	3	0.5
Site 7	10/18/21	8:47 AM	17.79	17.78	17.74	25.69	25.73	25.79	pH sensor broken			8.24	8.03	7.89	101.9	98.4	96.9	1.3	3.08	11.1		7	3							1	4	5	6	0	W	10.0	1	0.5
Site 7	10/25/21	9:13 AM	16.95	16.99	17.08	25.47	25.60	25.78	pH sensor broken			7.96	7.88	7.82	95.6	94.9	94.6		2.01	18.8		6	1							1	4	5	6	4	S	9.0	3	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 8, Oyster Bay STP at White's Creek**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 8	4/19/2021	9:36 AM	10.49	10.10	10.00	26.48	25.35	26.49	8.16	8.16	8.18	10.20	10.30	10.30	108.2	108.3	108.2	2.1	2.15	15.8		2	1							0	2	5	6	0	NW	1.7	1	0.0
Site 8	4/26/2021	High winds, anchor wouldn't set																																				
Site 8	5/3/2021	9:42 AM	12.01	12.00	11.90	25.77	25.82	25.90	7.97	7.97	7.97	8.71	8.71	8.70	95.4	95.4	95.1	2	2.18	16.1		1	<1							0	2	5	6	4	S	0.9	3	0.5
Site 8	5/10/2021	8:41 AM	12.18	12.23	12.18	25.66	25.80	25.93	7.90	7.91	7.92	8.81	8.77	8.77	97.0	96.9	96.8	2.2	3.14	11.8		16	15							2	4	5	6	4	N	4.0	3	0.5
Site 8	5/17/2021	9:16 AM	15.02	14.92	14.76	26.15	26.14	26.32	7.83	7.83	7.85	8.21	8.25	8.21	94.9	95.0	94.3		1.94	20.9		5	1							0	2	5	6	0	E	0.4	1	0.0
Site 8	5/24/2021	8:35 AM	18.30	18.29	18.06	25.88	26.00	26.18	7.89	7.89	7.88	8.30	8.28	8.28	102.0	101.8	101.5	1.2	3.76	18.6		9	8							0	4	5	6	4	SE	2.4	3	0.0
Site 8	6/1/2021	9:42 AM	15.19	15.02	14.76	25.73	25.73	25.81	7.83	7.79	7.76	8.27	8.31	8.09	95.6	94.4	92.7	1.8	2.0	23.1		1	<1							0	2	5	6	3	E	0.4	2	0.0
Site 8	6/7/2021	9:50 AM	18.52	18.47	17.94	26.15	26.18	26.15	7.94	7.95	7.86	8.78	8.96	8.88	109.5	111.5	109.0	1.3	4.02	30.5		5	<1							0	4	5	6	1	SW	2.0	1	0.0
Site 8	6/15/2021	9:11 AM	18.46	18.25	18.21	26.44	26.49	26.46	8.04	8.06	8.04	8.39	8.69	8.83	104.4	108.0	109.6	1.0	2.12	23.8		13	3							1	2	5	6	4	N	0.5	3	0.0
Site 8	6/21/2021	9:52 AM	21.47	21.28	20.83	26.16	26.28	26.32	8.07	8.06	8.07	7.66	7.88	7.86	102.7	104.4	103.2	1.0	3.89	24.3		8	7							0	2	5	6	4	S	4.3	3	0.5
Site 8	6/28/2021	Too shallow, low tide																																				
Site 8	7/6/2021	10:01 AM	20.71	20.68	19.62	26.56	26.62	26.83	pH sensor broken			5.79	5.77	5.51	75.5	75.2	70.3	1.3	4.13	27.0		13	2							0	1	5	6	1	SW	3.2	1	0.0
Site 8	7/12/2021	8:28 AM	22.66	22.57	shallow	25.10	25.38	shallow	7.63	7.59	shallow	6.82	6.56	shallow	91.4	87.6	shallow	0.9	1.74	23.3		44	13							1	4	5	6	4	SW	1.0	3	0.0
Site 8	7/19/2021	9:54 AM	24.64	24.57	24.40	25.74	25.78	26.08	7.68	7.67	7.62	5.59	5.62	5.28	78.1	78.1	73.1	1.2	3.41	23.0		14	4							0	2	5	6	4	NW	0.0	3	0.0
Site 8	7/26/2021	8:17 AM	23.91	23.75	shallow	25.75	25.92	shallow	7.73	7.68	shallow	6.30	6.20	shallow	86.7	85.1	shallow		1.70	23.0		9	9							2	3	5	6	3	0	0.0	3	0.0
Site 8	8/2/2021	10:05 AM	23.20	23.19	23.10	25.70	25.71	25.76	pH sensor broken			5.73	5.53	5.33	77.2	75.0	72.2	1.5	3.13	21.1		7	4							0	2	5	6	1	NW	4.4	1	0.5
Site 8	8/9/2021	10:33 AM	23.06	23.09	22.98	26.07	26.09	26.23	7.74	7.75	7.70	6.35	6.34	6.13	85.6	85.7	82.5	1.4	3.32	22.0		12	8							1	4	5	6	3	NE	2.8	2	0.0
Site 8	8/24/2021	8:25 AM	24.09	24.06	23.98	25.62	25.61	25.68	7.63	7.61	7.58	5.98	5.81	5.44	82.5	79.4	74.8	1.7	2.04	23.8		17	4							1	4	4	6	1	w	6.0	1	0.0
Site 8	8/31/2021	9:11AM	24.57	24.55	24.32	26.24	26.29	26.41	pH sensor broken			6.08	6.11	4.95	84.9	85.4	68.2	1.2	3.30	22.7		6	1							1	2	5	6	4	nw	5.0	3	0.0
Site 8	9/7/2021	8:17 AM	22.96	22.96	22.96	25.38	25.39	28.38	pH sensor broken			6.61	6.36	6.11	89.1	85.6	82.5	1.1	2.49	17.7		12	3							0	4	4	6	0	w	6.0	1	0.0
Site 8	9/13/2021	9:47 AM	23.13	23.11	23.07	25.24	25.28	25.33	pH sensor broken			7.83	7.82	7.75	105.4	105.2	104.0	1.4	2.02	26.1		1	<1							0	2	4	6	3	w	10.0	2	0.5
Site 8	9/21/2021	8:58 AM	22.60	22.63	22.63	25.78	25.77	25.81	pH sensor broken			7.67	7.55	7.46	101.2	99.6	98.5	1.3	2.63	17.7		4	<1							0	4	5	6	4	E	6.0	3	0.0
Site 8	9/27/2021	9:54 AM	22.10	22.11	22.17	25.37	25.38	25.38	pH sensor broken			7.66	7.83	7.88	102.0	103.9	104.4	1.3	2.14	19.0		9	<1							0	1	1	6	2	SW	9.0	2	0.5
Site 8	10/4/2021	10:04 AM	20.75	20.75	20.75	25.63	25.62	25.65	pH sensor broken			7.27	7.19	7.05	94.1	92.8	91.2	1.7	4.25	18.8										<1	4	5	6	4	ENE	7.0	3	1.5
Site 8	10/11/2021	9:24 AM	19.51	19.53	19.54	25.53	25.60	25.57	pH sensor broken			7.13	6.93	6.78	89.0	86.7	85.3	1.8	2.06	17.2										1	3	5	6	4	NE	16.0	3	1.5
Site 8	10/18/2021	8:35 AM	18.83	18.79	18.87	25.87	25.85	25.89	pH sensor broken			7.92	7.73	7.59	99.2	96.5	95.3	2.2	3.62	11.2		9	2							1	4	5	6	0	W	9.0	1	0.5
Site 8	10/25/2021	9:01 AM	17.25	17.25	17.27	25.77	25.83	25.87	pH sensor broken			7.96	7.86	7.85	96.4	95.3	95.2	2.1	2.32	18.8		5	<1							1	4	5	6	4	SW	9.0	2	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 Water Quality Data - **Site 9, Roosevelt Beach**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 9	4/19/2021	9:20 AM	10.09	10.10	10.10	26.42	26.34	26.35	8.17	8.17	8.17	10.1	10.2	10.28	106.6	107.5	108.3	1.9	2.14	19.9		1	<1							0	2	5	6	0	0	0.0	1	0.0
Site 9	4/26/2021	9:15 AM	10.58	10.60	10.49	25.54	25.54	25.52	8.09	8.08	8.08	9.11	9.03	9.01	96.1	95.3	95.0	2.4	3.56	7.4		<1	<1							1	4	5	6	1	NW	6.3	1	1.0
Site 9	5/3/2021	9:31 AM	11.93	11.89	11.87	25.90	25.85	25.85	7.98	7.98	7.98	8.69	8.67	8.65	95.1	94.9	94.6	2.1	2.37	14.9		<1	<1							0	2	5	6	4	E	2.7	3	0.5
Site 9	5/10/2021	8:24 AM	12.27	12.28	12.27	25.95	25.92	25.92	7.92	7.92	7.92	8.81	8.76	8.73	97.3	96.8	96.5	2.6	2.79	11.2		<1	1							2	4	5	6	4	NW	3.0	3	1.0
Site 9	5/17/2021	9:03 AM	14.95	14.88	shallow	26.27	26.25	shallow	7.86	7.86	shallow	8.4	8.41	shallow	96.8	96.9	shallow		1.83	21.9		2	<1							0	2	5	6	0	NW	1.0	1	0.0
Site 9	5/24/2021	8:23 AM	18.15	18.11	18.01	26.08	26.16	26.16	7.91	7.91	7.92	8.39	8.46	8.56	103.1	103.8	105.0	1.4	3.54	17.8		7	2							0	4	5	6	4	E	2.5	3	0.0
Site 9	6/1/2021	9:31 AM	14.81	14.79	14.79	25.89	25.92	25.9	7.78	7.78	7.78	7.71	7.67	7.62	88.4	87.9	87.3	1.8	2.12	21.8		3	1							0	2	5	6	4	0	0.0	3	0.0
Site 9	6/7/2021	9:29 AM	18.53	18.22	17.91	26.15	26.17	26.07	7.92	7.92	7.88	8.63	8.79	8.79	107.5	108.6	107.9	1.4	3.58	31.6		6	2							0	4	5	6	1	SW	1.3	1	0.0
Site 9	6/15/2021	8:56 AM	19.02	18.73	18.70	26.42	26.49	26.48	8.09	8.06	8.05	8.53	8.90	8.90	108.0	111.1	111.3	1.0	1.88	23.8		2	<1							1	2	5	6	4	NW	1.4	3	0.0
Site 9	6/21/2021	9:39 AM	21.76	21.72	20.81	26.15	26.16	26.31	8.05	8.05	8.06	7.70	7.77	7.78	103.0	103.7	102.1	1.0	3.91	24.5		13	3							0	2	5	6	4	S	2.7	3	0.5
Site 9	6/28/2021	9:11 AM	21.80	21.77	shallow	26.50	26.46	shallow	7.70	7.70	shallow	6.56	6.56	shallow	86.5	86.4	shallow	1.1	1.43	28.0		1	1							0	3	5	6	1	SW	1.7	1	0.0
Site 9	7/6/2021	9:48 AM	21.20	20.72	19.55	26.39	26.54	26.86	pH sensor broken			6.15	6.45	5.84	81.5	84.3	74.2	1.4	4.63	27.0		4	2							0	1	5	6	1	SW	2.6	1	0.0
Site 9	7/12/2021	8:16 AM	23.61	23.01	shallow	24.56	24.90	shallow	7.77	7.61	shallow	7.34	7.39	shallow	99.9	95.7	shallow	1.1	1.57	23.9		6	<1							1	4	5	6	4	SW	1.0	3	0.0
Site 9	7/19/2021	9:45 AM	24.89	24.71	24.51	25.80	25.81	25.86	7.70	7.66	7.57	5.80	5.81	4.97	81.1	80.9	68.8	1.2	3.38	23.0		16	<1							0	2	5	6	4	NW	0.5	3	0.0
Site 9	7/26/2021	8:04 AM	23.73	shallow	23.71	25.79	shallow	25.87	7.67	shallow	7.66	6.06	shallow	5.69	82.6	shallow	77.9		1.41	22.0		32	43							2	3	5	6	3	0	0.0	3	0.0
Site 9	8/2/2021	9:53 AM	23.48	23.39	23.29	25.68	25.79	25.73	pH sensor broken			5.90	5.63	5.39	80.2	76.6	73.1	1.7	3.08	21.1		2	<1							0	2	5	6	1	NW	3.7	1	0.5
Site 9	8/9/2021	8:24 AM	22.96	23.05	23.05	25.98	25.98	26.03	7.65	7.64	7.64	6.22	5.72	5.56	83.4	77.0	74.9	1.6	1.96	22.0		52	61							1	4	5	6	4	NE	2.3	3	0.0
Site 9	8/24/2021	8:14 AM	24.10	24.09	shallow	25.34	25.50	shallow	7.57	7.54	shallow	5.75	5.23	shallow	78.5	71.5	shallow	bottom	1.65	22.7		31	10							1	4	4	6	1	W	6.0	1	0.0
Site 9	8/31/2021	9:02AM	25.19	25.20	24.84	25.86	25.90	26.08	pH sensor broken			7.05	7.26	7.22	99.6	102.9	100.6	1.1	3.20	22.7		1	1							1	2	5	6	4	NW	5.0	3	0.0
Site 9	9/7/2021	7:54 AM	23.10	23.10	23.11	25.32	25.31	25.33	pH sensor broken			6.09	5.89	5.74	81.9	79.3	77.7	1.7	1.98	16.1		3	1							0	4	4	6	0	W	3.0	1	0.0
Site 9	9/13/2021	9:32 AM	23.09	23.09	23.1	25.16	25.14	25.17	pH sensor broken			7.74	7.75	7.74	104	104	104.0	1.6	2.06	26.1		3	4							0	2	5	6	2	W	10.0	2	1.0
Site 9	9/21/2021	8:45 AM	22.90	22.90	22.86	25.75	25.74	25.74	pH sensor broken			7.37	7.24	7.12	97.2	95.8	94.3	1.7	2.24	16.1		<1	1							0	4	5	6	3	N	7.0	2	0.0
Site 9	9/27/2021	9:43 AM	22.21	22.21	22.24	25.46	25.47	25.46	pH sensor broken			7.63	7.53	7.44	101.10	99.60	98.8	1.50	2.05	19.0		10	1							0	1	1	6	2	SW	9.0	2	0.5
Site 9	10/4/2021	9:54 AM	20.75	20.75	20.8	25.70	25.69	25.74	pH sensor broken			7.42	7.35	7.28	96.00	95.10	94.5	1.8	4.34	18.8										1	4	5	6	4	ENE	8.0	3	1.5
Site 9	10/11/2021	9:11 AM	19.22	19.22	19.22	25.30	25.34	25.30	pH sensor broken			6.80	6.78	6.77	85.00	84.60	84.5	1.9	1.89	17.2										1	3	5	6	4	NE	16.0	3	1.5
Site 9	10/18/2021	8:23 AM	19.30	19.31	19.32	25.95	25.97	25.97	pH sensor broken			7.58	7.44	7.36	95.50	94.20	93.4	1.9	3.49	11.1		3	<1							1	4	5	6	0	W	9.0	1	1.0
Site 9	10/25/2021	8:49 AM	17.15	17.15	17.15	25.78	25.76	25.79	pH sensor broken			7.72	7.68	7.65	93.30	92.90	92.6	bottom	1.88	17.7		14	<1							1	3	5	6	4	S	7.0	3	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 10, Beekman Beach**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 10	4/19/2021	9:04 AM	10.48	10.34	10.07	26.21	26.36	26.38	8.17	8.18	8.16	10.16	10.24	10.32	107.9	108.4	108.5	1.8	4.36	18.2		<1	<1							0	2	5	6	0	0	0.0	1	0.0
Site 10	4/26/2021	8:50 AM	10.64	10.63	10.62	25.35	25.42	25.37	8.04	8.05	8.05	8.82	8.79	8.75	93.2	92.7	92.4	1.7	4.97	8.9		3	1							1	4	5	6	0	NW	3.0	1	1.0
Site 10	5/3/2021	9:21 AM	12.26	11.97	11.82	25.64	25.81	25.86	7.96	7.97	7.97	8.59	8.58	8.57	94.2	93.9	93.5	1.7	4.20	16.9		10	4							0	2	5	6	4	E	2.0	3	0.0
Site 10	5/10/2021	8:07 AM	12.21	12.4	12.38	25.00	25.3	25.78	7.90	7.91	7.89	8.81	8.71	8.69	96.5	96.0	96.2	0.3	4.74	10.9		34	20							2	4	5	6	4	NW	3.5	3	0.5
Site 10	5/17/2021	8:51 AM	15.05	14.91	14.64	25.93	26.25	26.24	7.83	7.84	7.85	8.17	8.19	8.2	94.3	94.2	93.9	2.4	3.80	23.6		21	1							0	2	5	6	0	0	0.0	1	0.0
Site 10	5/24/2021	8:07 AM	18.28	18.36	18.15	25.79	26.03	26.15	7.86	7.87	7.86	8.18	8.15	8.23	100.5	100.5	101.1	1.1	5.27	18.0		79	52							0	4	5	6	4	NE	1.9	3	0.0
Site 10	6/1/2021	9:18 AM	15.07	14.98	14.72	25.41	25.67	25.83	7.77	7.77	7.77	7.84	7.83	7.74	90.1	89.9	88.5	1.6	4.20	21.2		7	1							0	2	5	6	4	SW	0.6	3	0.0
Site 10	6/7/2021	9:18 AM	19.09	18.67	17.80	25.66	25.90	26.09	7.92	7.92	7.81	8.39	8.72	8.46	105.6	108.9	103.2	1.5	5.87	30.2		1	6							0	4	5	6	1	S	2.4	1	0.0
Site 10	6/15/2021	8:43 AM	19.76	18.72	18.37	26.29	26.42	26.54	8.19	8.07	8.00	8.97	9.37	9.01	114.5	117.2	111.6	0.9	3.86	23.3		1	<1							1	2	5	6	4	NW	1.2	3	0.0
Site 10	6/21/2021	9:28 AM	21.70	21.45	21.06	25.32	26.17	26.31	8.03	8.03	8.04	7.61	7.63	7.60	101.2	101.3	100.0	1.0	6.49	24.5		31	29							0	1	5	6	4	S	2.3	4	0.5
Site 10	6/28/2021	8:46 AM	21.79	21.66	21.14	26.41	26.50	26.46	7.73	7.73	7.71	7.00	7.00	6.94	92.5	92.1	90.0	0.9	3.55	27.0		12	3							0	2	5	6	1	S	4.0	1	0.0
Site 10	7/6/2021	9:36 AM	21.17	21.04	20.30	26.39	26.44	26.69	pH sensor broken			5.80	5.87	5.44	76.4	77.1	70.4	1.3	1.30	26.0		3	<1							0	1	5	6	1	SW	2.8	1	0.0
Site 10	7/12/2021	8:05 AM	23.80	23.71	23.43	24.16	24.59	24.61	7.83	7.82	7.76	7.71	7.83	7.84	104.8	106.4	105.7	1.0	3.96	23.9		20	9							1	3	5	6	2	SW	1.0	1	0.0
Site 10	7/19/2021	9:27 AM	24.90	24.76	24.41	25.58	25.82	25.98	7.65	7.64	7.62	5.23	5.27	5.05	73.3	73.5	70.0	1.1	5.64	22.0		25	11							0	2	5	6	4	NW	1.2	3	0.0
Site 10	7/26/2021	7:52 AM	24.52	24.52	23.98	25.49	25.52	25.62	7.74	7.74	7.71	6.46	6.45	6.36	89.9	89.8	87.6	1.3	3.83	22.0		8	8							2	3	5	6	3	0	0.0	3	0.0
Site 10	8/2/2021	9:39 AM	23.50	23.56	23.20	25.34	25.50	25.85	pH sensor broken			5.33	5.46	5.38	72.9	75.2	72.6	1.3	5.65	21.1		7	3							0	2	5	6	1	NW	3.9	1	0.5
Site 10	8/9/2021	8:07 AM	22.79	23.01	23.29	22.80	25.22	26.10	7.67	7.66	7.67	6.46	6.24	6.01	84.7	83.8	81.2	1.2	3.73	22.0		150	120							1	4	5	6	4	NE	4.2	3	0.5
Site 10	8/24/2021	8:03 AM	24.18	24.25	24.19	24.76	24.98	25.26	7.60	7.60	7.54	5.67	5.61	5.34	78.2	77.5	73.5	1.5	3.78	22.8		33	6							1	4	4	6	1	W	5.0	1	0.0
Site 10	8/31/2021	8:48AM	25.13	25.08	24.14	25.87	25.89	26.45	pH sensor broken			6.08	6.37	6.26	85.9	90.0	84.1	1.1	5.58	22.3		3	<1							1	2	5	6	4	NW	3.0	3	0.0
Site 10	9/7/2021	7:42 AM	22.76	22.77	23.11	24.92	24.92	25.16	pH sensor broken			6.58	6.55	6.48	88.3	88.0	87.4	1.6	4.07	17.2		11	1							0	4	4	6	0	W	3.0	1	0.0
Site 10	9/13/2021	4:19 AM	23.14	23.11	22.98	25.03	25.13	25.28	pH sensor broken			7.53	7.65	7.61	101.5	102.7	101.6	1.4	4.20	23.8		15	11							0	2	4	6	2	W	10.0	2	0.5
Site 10	9/21/2021	8:23 AM	22.60	22.77	23.04	25.33	25.44	25.67	pH sensor broken			7.48	7.53	7.27	98.7	99.6	96.4	1.1	4.23	16.1		9	1							0	4	5	6	2	N	6.0	1	0.0
Site 10	9/27/2021	9:26 AM	22.20	22.21	22.41	25.12	25.45	25.55	pH sensor broken			7.45	7.38	7.32	98.2	97.9	97.2	1.5	4.12	19.0		11	2							0	2	1	6	2	SW	9.0	1	0.5
Site 10	10/4/2021	9:42 AM	20.51	20.51	20.69	25.28	25.31	25.63	pH sensor broken			7.28	7.31	7.22	93.6	94.2	93.0	1.6	6.12	18.8										1	4	5	6	4	ENE	8.0	3	1.5
Site 10	10/11/2021	8:59 AM	19.12	19.19	19.26	24.57	24.92	25.37	pH sensor broken			6.96	6.79	6.72	86.1	84.5	84.1	1.3	4.17	17.2										1	2	5	6	4	NE	16.0	3	1.0
Site 10	10/18/2021	8:08 AM	19.24	19.28	19.27	25.76	25.77	25.76	pH sensor broken			8.02	7.68	7.53	100.1	97.0	95.1	1.9	5.48	10.0		6	4							1	4	5	6	0	W	9.0	1	0.5
Site 10	10/25/2021	8:35 AM	17.12	17.14	17.17	25.73	25.78	25.85	pH sensor broken			7.93	7.86	7.82	95.6	94.9	94.7	2.4	4.19	17.7		9	<1							1	2	5	6	4	S	7.0	3	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 11, West Harbor**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 11	4/19/2021	8:33 AM	10.68	10.74	10.26	26.04	26.07	26.18	8.16	8.15	8.16	10.08	10.19	10.37	107.4	108.5	109.4	1.6	3.13	18.2		<1	<1							0	2	5	6	1	0	0.0	1	0.0
Site 11	4/26/2021	8:26 AM	10.92	10.89	10.86	25.23	25.28	25.31	8.04	8.04	8.03	8.85	8.83	8.83	94	93.7	93.7	2	3.38	6.9		2	<1							1	4	5	6	0	NW	6.0	1	1.0
Site 11	5/3/2021	8:55 AM	12.92	12.84	11.79	25.72	25.75	25.88	7.95	7.95	7.96	8.66	8.69	8.66	96.9	97.1	94.5	1.8	3.30	15.1		<1	<1							0	2	5	6	4	SE	2.4	3	0.5
Site 11	5/10/2021	7:37 AM	12.80	12.80	12.8	25.82	25.80	25.74	8.29	8.30	8.30	8.59	8.50	8.47	95.7	95	94.5	1.8	3.00	9.7		<1	<1							2	4	5	6	4	E	1.3	3	0.5
Site 11	5/17/2021	8:23 AM	16.16	16.02	15.68	26.10	26.11	26.22	7.86	7.86	7.84	8.44	8.47	8.59	99.6	99.9	100.2	2.2	2.60	16.6		1	<1							0	2	5	6	0	0	0.0	1	0.0
Site 11	5/24/2021	7:45 AM	18.23	18.23	18.23	26.20	26.16	26.18	7.84	7.83	7.83	8.30	8.29	8.29	102.1	101.9	101.9	1.3	3.78	17.8		2	<1							0	4	5	6	4	SE	2.7	3	0.5
Site 11	6/1/2021	8:42 AM	15.44	15.34	14.9	25.46	25.56	25.72	7.88	7.86	7.76	8.58	8.76	8.42	99.7	101.5	96.4	1.3	3.07	18.2		5	<1							0	2	5	6	4	NE	1.0	3	0.0
Site 11	6/7/2021	8:46 AM	19.30	18.66	18.44	25.96	25.01	26.10	7.95	7.90	7.87	8.74	9.06	8.72	111.1	112.2	108.0	0.9	4.07	25.3		1	1							0	4	5	6	1	0	0.0	1	0.0
Site 11	6/15/2021	8:17 AM	19.81	19.69	19.51	26.02	26.05	26.15	8.08	8.08	8.09	8.68	8.86	8.97	110.9	112.8	114.1	0.8	2.72	22.9		7	<1							1	2	5	6	3	NW	1.5	3	0.0
Site 11	6/21/2021	9:06 AM	21.52	21.49	21.29	26.17	26.24	26.21	8.03	8.03	8.02	7.53	7.65	7.64	100.3	101.8	101.0	1.1	4.46	25.9		17	9							0	1	5	6	4	S	2.4	2	0.5
Site 11	6/28/2021	8:12 AM	23.46	23.45	23.34	26.17	26.22	26.23	7.75	7.75	7.74	6.75	6.90	6.97	91.9	93.2	94.4	0.9	2.15	26.3		<1	<1							0	2	5	6	1	SW	3.0	1	0.0
Site 11	7/6/2021	9:12 AM	21.28	21.26	21.22	26.40	26.39	26.47	pH sensor broken			6.91	6.93	6.93	91.0	91.2	91.1	1.4	4.20	25.0		<1	<1							0	4	5	6	1	SW	3.4	1	0.5
Site 11	7/12/2021	7:51 AM	23.82	23.74	23.40	24.03	24.21	24.68	7.66	7.67	7.62	7.14	7.16	7.17	96.9	97.1	96.7	0.9	2.27	22.8		28	5							1	3	5	6	2	SW	1.0	1	0.0
Site 11	7/19/2021	9:06 AM	25.11	25.08	24.44	25.78	25.86	26.00	7.76	7.74	7.65	6.07	6.15	5.83	85.5	86.5	80.9	1.0	4.28	22.0		1	<1							0	2	5	6	4	NW	2.0	3	0.0
Site 11	7/26/2021	7:25 AM	24.72	24.72	24.67	25.57	25.55	25.65	7.69	7.68	7.67	6.37	6.32	6.26	89.9	88.3	87.2	1.1	2.28	22.0		5	<1							2	3	5	6	3	W	0.5	3	0.0
Site 11	8/2/2021	9:12 AM	23.62	23.61	23.56	25.70	25.73	25.71	pH sensor broken			6.09	5.96	5.81	83.2	81.5	79.3	1.4	4.04	20.0		1	1							0	2	5	6	0	NW	3.4	1	0.5
Site 11	8/9/2021	7:44 AM	23.40	23.40	23.41	26.02	26.07	26.10	7.59	7.59	7.59	5.94	5.61	5.40	80.4	75.9	73.4	1.3	2.43	22.0		<1	<1							1	3	5	6	4	N	3.5	4	0.5
Site 11	8/24/2021	7:33 AM	24.30	24.30	24.31	24.58	24.64	25.21	7.63	7.60	7.56	5.32	5.00	4.79	72.4	68.6	66.1	1.4	2.21	22.2		42	17							1	4	4	6	1	W	5.0	1	0.0
Site 11	8/31/2021	8:22AM	25.51	25.50	24.12	25.64	25.72	26.51	pH sensor broken			6.58	7.01	6.24	93.5	99.6	84.8	1.0	4.08	22.7		1	<1							1	2	5	6	4	NW	3.0	3	0.0
Site 11	9/7/2021	7:30 AM	23.00	22.98	23.17	24.81	24.78	25.05	pH sensor broken			5.60	5.52	5.44	75.4	74.3	73.5	1.2	2.40	16.1		20	3							0	4	4	3	0	W	4.0	1	0.0
Site 11	9/13/2021	8:48 AM	23.19	23.18	23.17	24.92	24.91	24.85	pH sensor broken			7.80	8.06	8.26	105.7	108.9	110.9	0.7	3.06	23.8		1	<1							0	2	4	6	3	W	10.0	2	0.5
Site 11	9/21/2021	7:58 AM	22.86	22.83	22.88	25.25	25.24	25.27	pH sensor broken			7.41	7.38	7.38	97.6	97.6	97.6	1.3	2.58	13.9		7	<1							0	4	5	6	0	N	5.0	1	0.0
Site 11	9/27/2021	9:03 AM	21.87	21.87	21.87	25.21	25.22	25.20	pH sensor broken			7.64	7.64	7.64	100.5	100.6	100.6	1.1	2.70	18.0		2	<1							0	2	1	6	1	SW	11.0	2	1.0
Site 11	10/4/2021	9:16 AM	20.66	20.66	20.71	25.60	25.59	25.63	pH sensor broken			7.25	7.16	7.08	93.2	92.3	91.5	1.9	4.89	18.8										1	4	5	6	4	NE	8.0	3	0.5
Site 11	10/11/2021	8:28 AM	19.36	19.36	19.36	25.51	25.57	25.55	pH sensor broken			6.97	6.82	6.68	86.8	85.2	83.8	1.6	2.94	17.7										1	2	5	6	4	NE	16.0	3	1.0
Site 11	10/18/2021	7:44 AM	18.53	18.56	18.60	25.60	25.59	25.61	pH sensor broken			8.12	7.79	7.69	99.9	97.0	95.9	1.3	3.53	11.1		7	1							1	4	5	6	0	W	10.0	1	0.5
Site 11	10/25/2021	8:13 AM	16.43	16.43	16.29	25.58	25.58	25.63	pH sensor broken			8.10	8.15	8.18	96.3	97.0	97.0	1.9	2.64	17.7		5	<1							1	2	5	6	4	S	7.0	3	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 12, Turtle Cove**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 12	4/19/2021	8:41 AM	12.30	11.80	11.69	26.14	26.06	26.25	7.98	8.06	7.96	9.11	9.11	9.15	99.7	99.5	99.1	1.6	2.29	16.3		3	1							0	2	5	6	0	0	0.0	1	0.0
Site 12	4/26/2021	12:30 PM	11.29	11.27	11.27	25.54	25.5	25.56	8.08	8.07	8.07	8.95	8.95	8.94	95.9	95.9	95.8	1.1	3.52	9.8		<1	<1							1	1	5	6	0	NW	5.2	1	1.0
Site 12	5/3/2021	9:06 AM	13.31	13.25	13.1	25.73	25.78	25.76	7.9	7.91	7.91	8.47	8.5	8.50	95.5	95.6	95.5	0.9	2.40	16.9		16	<1							0	2	5	6	4	E	1.0	3	0.0
Site 12	5/10/2021	7:49 AM	13.40	13.43	13.4	25.73	25.75	25.72	7.68	7.67	7.67	7.28	7.08	7.00	81.8	80	79.1	0.8	2.31	10.3		1	<1							2	4	5	6	4	NE	4.2	3	0.5
Site 12	5/17/2021	8:32 AM	17.68	17.45	shallow	26.15	26.14	shallow	7.69	7.74	shallow	7.52	7.39	shallow	91.3	89.4	shallow	1.2	1.80	19.7		1	1							0	2	5	6	0	N	0.4	1	0.0
Site 12	5/24/2021	7:54 AM	18.16	18.24	18.03	26.13	26.09	26.08	7.75	7.76	7.69	7.49	7.44	7.30	91.8	91.4	89.3	1.3	3.05	18.4		<1	1							0	4	5	6	4	E	2.2	3	0.0
Site 12	6/1/2021	9:04 AM	15.27	15.28	15.33	25.46	25.48	25.65	7.88	7.85	7.78	8.58	8.67	8.45	99.2	100.2	97.7	1.4	2.04	17.7		5	1							0	2	5	6	4	N	1.3	3	0.0
Site 12	6/7/2021	8:59 AM	22.65	22.55	21.66	25.60	25.74	25.88	7.86	7.89	7.86	7.44	7.53	8.08	99.7	100.8	106.6	1.0	3.37	30.3		2	4							0	4	5	6	1	SE	1.3	1	0.0
Site 12	6/15/2021	8:30 AM	20.59	20.38	19.94	26.02	26.14	26.26	7.87	8.08	8.00	7.31	7.36	7.70	94.4	97.2	98.5	1.0	1.90	23.3		7	5							1	2	5	6	3	SW	1.3	3	0.0
Site 12	6/21/2021	9:15 AM	23.75	23.75	23.70	26.13	26.13	26.13	7.79	7.79	7.71	6.08	5.95	5.75	83.5	82.2	79.2	1.0	3.67	24.8		7	9							0	1	5	6	4	S	3.2	3	0.5
Site 12	6/28/2021	8:22 AM	24.79	shallow	24.69	26.09	shallow	26.13	7.46	shallow	7.46	5.01	shallow	5.02	69.5	shallow	69.6	0.7	1.33	28.4		20	20							0	2	5	6	1	SW	1.2	1	0.0
Site 12	7/6/2021	9:22 AM	22.64	22.64	22.62	25.99	26.05	26.11	pH sensor broken			5.81	5.81	5.80	78.3	78.2	78.1	0.9	3.20	26.0		14	6							0	4	5	6	1	SW	2.4	1	0.0
Site 12	7/12/2021	10:22 AM	24.14	23.83	23.44	24.48	24.76	24.93	7.68	7.59	7.45	5.92	5.98	5.62	81.2	81.1	75.3	0.7	2.34	25.0		5	1							1	4	5	6	4	SW	1.0	3	0.0
Site 12	7/19/2021	9:16 AM	26.13	26.12	25.91	25.60	25.59	25.61	7.69	7.68	7.54	5.31	5.34	4.96	76.0	76.4	70.7	0.7	3.43	22.0		18	5							0	2	5	6	4	NW	2.2	3	0.0
Site 12	7/26/2021	7:39 AM	25.00	25.00	shallow	25.41	25.55	shallow	7.45	7.46	shallow	5.45	5.26	shallow	76.2	73.5	shallow	0.6	1.43	22.0		21	46							2	3	5	6	3	0	0.0	3	0.0
Site 12	8/2/2021	9:21 AM	23.84	23.80	23.67	25.66	25.65	25.60	pH sensor broken			6.14	5.82	5.59	83.7	79.7	76.2	0.8	3.20	21.1		4	1							0	2	5	6	1	NW	2.8	1	0.5
Site 12	8/9/2021	7:53 AM	23.24	23.23	shallow	26.04	26.11	shallow	7.46	7.46	shallow	5.44	4.85	shallow	73.1	65.1	shallow	1.4	1.63	22.0		1	3							1	4	5	6	4	N	1.5	4	0.0
Site 12	8/24/2021	7:49 AM	23.84	24.17	NA	24.13	24.86	NA	7.42	7.35	NA	4.84	4.55	NA	65.9	61.7	NA	1.3	2.40	22.7		39	16							1	4	4	6	1	W	5.0	1	0.0
Site 12	8/31/2021	8:31AM	26.17	26.17	25.69	25.54	25.59	25.67	pH sensor broken			6.29	6.37	5.87	90.2	91.3	83.1	1.0	2.98	22.7		6	11							1	2	5	6	4	NW	3.0	3	0.0
Site 12	9/7/2021	10:25 AM	22.77	22.76	22.73	24.78	24.78	24.80	pH sensor broken			7.05	6.82	6.73	93.3	91.5	90.3	1.0	3.68	21.1		10	<1							0	4	4	6	0	W	7.0	1	0.0
Site 12	9/13/2021	8:59 AM	23.31	23.31	23.26	24.88	24.9	24.90	pH sensor broken			7.70	7.77	7.75	103.9	104.8	104	0.8	2.14	23.8		3	<1							0	2	4	6	3	W	10.0	2	0.5
Site 12	9/21/2021	8:09 AM	22.46	22.49	22.45	25.28	25.28	25.27	pH sensor broken			7.02	6.86	6.79	92	90.1	88.3	0.6	1.93	16.1		3	<1							0	4	5	6	1	N	6.0	1	0.0
Site 12	9/27/2021	9:12 AM	20.77	20.78	20.73	25.01	25.02	25.00	pH sensor broken			7.12	7.00	6.79	91.6	89.9	87.3	1.0	1.89	19.0		4	<1							0	2	1	6	1	SW	10.0	1	1.0
Site 12	10/4/2021	9:26 AM	20.58	20.58	20.44	25.25	25.26	25.29	pH sensor broken			7.5	7.59	7.36	96.7	97.9	94.3	1.4	4.11	18.8										1	4	5	6	4	NE	8.0	3	0.5
Site 12	10/11/2021	8:42 AM	19.24	19.24	19.24	25.47	25.49	25.49	pH sensor broken			6.63	6.48	6.30	82.4	80.6	78.5	1.5	2.10	17.7										1	2	5	6	4	NE	17.0	3	1.0
Site 12	10/18/2021	7:53 AM	18.05	18.06	18.00	25.54	25.56	25.56	pH sensor broken			8.16	7.91	7.73	100.5	97.4	95.2	1.3	2.86	11.2		2	<1							1	4	5	6	0	W	10.0	1	0.5
Site 12	10/25/2021	8:21 AM	15.92	15.92		25.64	25.61		pH sensor broken			7.94	7.95		93.7	93.8		1.8	2.32	17.7		3	3							1	2	5	6	4	S	8.0	3	0.5

[1] Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2] Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 Water Quality Data - **Site 13, Mill Neck Creek East**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 13	4/19/2021	8:07 AM	11.48	11.26	11.12	25.34	25.9	26.04	8.09	8.09	8.09	9.75	9.83	9.84	105.2	105.8	105.7	1.6	3.02	13.7		1	2							0	2	5	6	1	NE	0.4	1	0.0
Site 13	4/26/2021	Strong wind and waves																																				
Site 13	5/3/2021	8:33 AM	13.6	13.41	12.87	24.57	25.05	25.65	7.83	7.84	7.88	8.09	8.01	8.07	90.9	89.9	90.1	1.6	3.25	14.8		2	5							0	2	5	6	4	E	2.1	3	0.0
Site 13	5/10/2021	11:40 AM	13.05	13.11	13.02	25.58	25.61	25.57	7.9	7.9	7.91	8.53	8.54	8.53	95.8	95.7	95.6	2.3	4.21	21.1		1	2							2	1	5	6	3	E	0.5	2	0.0
Site 13	5/17/2021	8:07 AM	16.49	16.43	16.35	25.34	25.5	25.84	7.69	7.7	7.74	7.67	7.49	7.44	90.3	88.4	88.3	1.6	2.39	18.0		4	2							0	2	5	6	0	W	0.5	1	0.0
Site 13	5/24/2021	11:42 AM	18.57	18.57	18.44	26.07	26.18	26.08	7.89	7.89	7.86	7.82	7.94	7.99	97.1	98.4	98.7	1.2	4.15	23.4		13	2							0	1	5	6	4	W	1.2	3	0.0
Site 13	6/1/2021	8:12 AM	15.03	15.1	15.10	23.51	25.14	25.13	7.7	7.71	7.72	8.00	7.76	7.63	90.4	89	87.6	1.0	3.09	16.3		24	5							0	2	5	6	4	W	0.5	3	0.0
Site 13	6/7/2021	8:02 AM	19.93	19.83	19.76	25.62	25.68	25.74	7.85	7.86	7.86	8.43	8.47	8.47	107.5	107.6	107.5	1.1	3.31	22.3		12	3							0	4	5	6	2	S	2.4	1	0.0
Site 13	6/15/2021	7:49 AM	20.28	20.26	20.11	25.35	25.59	25.90	7.88	7.91	7.99	7.61	7.51	7.76	97.3	96.3	99.5	0.9	2.55	20.7		45	32							1	2	5	6	4	W	1.4	3	0.0
Site 13	6/21/2021	7:52 AM	22.54	22.45	22.37	25.95	25.98	25.58	7.96	7.97	7.98	7.28	7.28	7.32	98.5	98.3	98.8	0.8	4.19	25.6		32	17							0	4	5	6	2	S	2.3	2	0.5
Site 13	6/28/2021	7:46 AM	23.66	23.53	23.49	25.56	25.67	25.76	7.35	7.41	7.44	5.16	4.82	4.98	68.8	65.5	67.5	0.8	2.05	25.4		63	36							0	2	5	6	1	SW	2.0	1	0.0
Site 13	7/6/2021	8:04 AM	22.56	22.55	22.49	25.70	25.72	25.72	pH sensor broken			7.27	7.24	7.20	97.5	97.2	96.5	1.0	3.55	24.0		4	<1							0	4	5	6	4	SW	3.8	3	0.5
Site 13	7/12/2021	10:47 AM	24.14	23.97	23.87	23.80	23.99	24.09	7.76	7.72	7.69	7.25	7.36	7.16	99.0	99.8	96.8	0.8	3.02	26.1		37	5							1	4	5	6	4	SW	1.0	3	0.0
Site 13	7/19/2021	7:51 AM	25.25	25.27	25.29	25.51	25.52	25.55	7.62	7.61	7.60	5.76	5.61	5.36	80.6	78.7	75.5	1.2	4.18	21.0		10	6							0	1	5	6	4	NW	1.5	3	0.0
Site 13	7/26/2021	10:28 AM	25.11	24.99	24.91	25.07	25.12	25.17	7.68	7.67	7.66	6.30	6.21	5.94	88.0	86.7	82.9	1.2	2.69	26.0		44	36							2	4	5	6	1	W	2.0	1	0.0
Site 13	8/2/2021	8:43 AM	23.76	23.76	23.72	25.39	25.44	25.45	pH sensor broken			6.31	6.15	5.99	86.3	84.3	81.9	1.2	3.84	18.9		2	<1							0	2	5	6	0	NW	2.4	1	0.5
Site 13	8/9/2021	11:21 AM	23.45	23.45	23.44	25.85	25.86	25.88	7.69	7.68	7.67	6.31	6.08	5.84	85.3	82.3	79.3	1.6	4.23	23.0		9	5							1	4	5	6	4	NE	4.5	3	0.0
Site 13	8/24/2021	10:50 AM	Sonde malfunctioning, out of order															0.9	NA	26.6		36	2							1	4	4	6	0	w	8.0	1	0.0
Site 13	8/31/2021	7:54AM	25.37	25.36	25.40	25.42	25.41	25.55	pH sensor broken			6.51	6.35	6.39	91.8	89.4	90.3	1.0	3.94	22.2		10	1							1	2	5	6	4	NW	2.0	3	0.0
Site 13	9/7/2021	11:05 AM	23.24	23.24	23.25	24.93	24.94	24.98	pH sensor broken			6.55	6.47	6.37	88.6	87.5	86.4	1.3	4.50	22.2		14	<1							0	4	4	6	0	w	6.0	1	0.0
Site 13	9/13/2021	8:20 AM	23.06	23.06	23.11	23.94	24.12	24.55	pH sensor broken			6.85	6.74	6.57	90.9	89.6	87.9	0.7	2.96	23.8		24	9							0	2	4	6	3	w	9.0	3	0.5
Site 13	9/21/2021	11:27 AM	23.05	23.06	23.01	25.23	25.22	25.27	pH sensor broken			7.60	7.8	7.91	101.3	104	104.8	1.1	4.57	21.1		7	<1							0	4	5	6	1	E	8.0	1	0.0
Site 13	9/27/2021	8:30 AM	21.18	21.44	22.02	23.58	24.04	24.71	pH sensor broken			6.66	6.29	6.04	84.2	81.1	79.5	0.7	2.60	18.0		45	12							0	2	1	6	3	SW	10.0	2	0.5
Site 13	10/4/2021	7:51 AM	20.57	20.57	20.57	25.11	25.13	25.19	pH sensor broken			7.12	7.03	6.96	91.4	90.2	89.7	1.2	3.73	20.0										>1	4	5	6	4	E	6.0	3	0.5
Site 13	10/11/2021	7:59 AM	18.54	18.67	18.79	24.37	24.47	24.67	pH sensor broken			6.38	6.13	6.01	77.5	75.0	74.2	1.0	2.87	17.2										1	2	5	6	4	NE	15.0	3	1.0
Site 13	10/18/2021	11:54 AM	18.68	18.65	18.82	25.74	25.73	25.73	pH sensor broken			8.00	7.83	7.74	99.9	97.7	97.2	1.5	4.24	12.7		10	<1							1	2	5	4	4	WNW	16.0	3	0.5
Site 13	10/25/2021	7:50 AM	16.21	16.25	16.45	24.64	24.75	25.14	pH sensor broken			7.03	6.73	6.56	82.5	79.0	78.0	0.9	2.35	17.7		18	134							1	2	5	6	4	SW	7.0	3	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 14, Mill Neck Creek West**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 14	4/19/2021	8:15 AM	11.76	11.82	11.76	24.97	25.54	25.54	8.02	8.06	8.07	9.57	9.43	9.64	103	102.7	104.7	1.9	1.87	17.9		11	2							0	2	5	6	0	0	0.0	1	0.0
Site 14	4/26/2021	Strong wind and waves																																				
Site 14	5/3/2021	8:15 AM	13.61	13.58	12.91	24.70	25.11	25.61	7.82	7.83	7.87	8.15	8.02	8.10	91.8	90.4	90.5	1.5	2.6	15.0		5	6							0	2	5	6	4	E	2.0	3	0.0
Site 14	5/10/2021	11:32 AM	13.42	13.23	13.04	25.23	25.44	25.48	7.88	7.89	7.90	8.56	8.53	8.52	96.4	95.9	95.6	2.1	3.69	22.3		5	2							2	1	5	6	3	E	3.5	2	0.0
Site 14	5/17/2021	7:57 AM	16.12	16.13	shallow	25.09	25.09	shallow	7.65	7.65	shallow	7.34	7.04	shallow	85.7	82.6	shallow	shallow	1.44	18.6		16	4							0	2	5	6	0	0	0.0	1	0.0
Site 14	5/24/2021	11:34 AM	18.97	18.96	18.44	25.55	25.57	26.10	7.88	7.87	7.87	8.00	8.01	8.04	99.5	99.6	99.2	1.1	3.07	21.9		42	7							0	1	5	6	4	SE	1.4	3	0.0
Site 14	6/1/2021	8:00 AM	15.10	15.18	15.17	23.64	23.81	24.93	7.69	7.70	7.68	7.88	7.78	7.68	89.5	88.8	88.1	1.5	2.57	17.3		13	5							0	2	5	6	4	W	0.5	3	0.0
Site 14	6/7/2021	8:12 AM	20.10	19.97	19.84	25.64	25.70	25.77	7.84	7.86	7.86	8.20	8.33	8.36	104.9	106.4	106.3	1.1	2.78	22.7		10	3							0	4	5	6	2	W	1.0	1	0.0
Site 14	6/15/2021	7:35 AM	20.34	20.42	20.41	24.66	25.35	25.34	7.82	7.81	7.81	6.83	6.71	6.66	87.0	86.0	85.4	0.9	1.91	21.7		76	48							1	2	5	6	4	W	1.2	3	0.0
Site 14	6/21/2021	8:01 AM	22.58	22.56	22.47	25.94	26.03	25.96	7.98	7.97	7.94	7.24	7.27	7.27	98.1	98.5	98.1	0.7	2.79	23.2		20	7							0	4	5	6	4	S	4.5	3	0.5
Site 14	6/28/2021	7:36 AM	23.82	shallow	shallow	24.87	shallow	shallow	7.06	shallow	shallow	4.29	shallow	shallow	52.7	shallow	shallow	0.6	0.71	25.3		110	65							0	2	5	6	1	SW	1.4	1	0.0
Site 14	7/6/2021	8:14 AM	23.07	23.02	22.86	25.36	25.40	25.52	pH sensor broken			6.66	6.68	6.70	90.1	90.4	90.2	0.8	2.15	24.0		6	3							0	4	5	6	4	SW	3.2	3	0.0
Site 14	7/12/2021	10:55 AM	24.11	24.11	24.09	23.55	23.50	23.52	7.70	7.70	7.69	7.13	7.15	7.11	97.0	97.3	96.4	0.8	2.18	26.1		58	17							1	4	5	6	4	SW	1.0	3	0.0
Site 14	7/19/2021	7:59 AM	25.39	25.41	25.28	25.37	25.42	25.58	7.60	7.58	7.61	5.50	5.42	5.31	77.2	76.3	74.7	1.2	3.42	21.0		15	8							0	1	5	4	4	NW	1.0	3	0.0
Site 14	7/26/2021	10:19 AM	25.13	25.06	shallow	24.41	24.62	shallow	7.59	7.56	shallow	6.03	5.97	shallow	84.3	82.3	shallow	1.2	1.79	26.0		510	76							2	4	5	6	1	0	0	1	0.0
Site 14	8/2/2021	8:28 AM	23.72	23.73	23.78	25.17	25.24	25.28	pH sensor broken			5.71	5.49	5.40	77.7	75.0	74.1	0.9	3.43	17.8		6	7							0	1	5	6	0	NW	3.5	1	0.5
Site 14	8/9/2021	11:30 AM	23.46	23.44	23.44	25.92	25.91	25.90	7.69	7.69	7.68	6.38	6.08	5.96	86.7	82.4	80.9	1.4	3.53	23.0		8	7							1	4	5	6	4	NE	2.0	3	0.0
Site 14	8/24/2021	Sonde malfunctioning, out of order																																				
Site 14	8/31/2021	7:47 AM	25.41	25.42	25.43	24.80	24.87	25.51	pH sensor broken			5.56	5.14	5.04	77.3	72.0	71.5	0.8	2.97	22.2		15	5							1	2	5	6	4	NW	2.0	3	0.0
Site 14	9/7/2021	11:17 AM	23.34	23.33	23.25	25.03	25.03	25.02	pH sensor broken			6.87	6.83	6.73	93.2	92.7	90.9	1.3	4.05	22.2		9	<1							0	4	4	6	0	W	6.0	1	0.0
Site 14	9/13/2021	8:04 AM	23.05	23.06	23.09	24.15	24.03	24.23	pH sensor broken			6.60	6.41	6.21	87.5	84.9	82.7	0.6	2.65	22.7		23	9							0	2	4	6	3	W	11.0	3	0.0
Site 14	9/21/2021	11:37 AM	23.08	23.06	23.03	25.35	25.33	25.35	pH sensor broken			7.68	7.92	7.92	102.4	105.3	105.1	1.0	3.67	21.1		6	<1							0	4	5	6	1	E	8.0	1	0.0
Site 14	9/27/2021	8:40 AM	20.64	20.71	20.90	23.48	23.57	23.65	pH sensor broken			6.19	5.80	5.54	78.0	73.0	71.0	0.7	2.06	18.0		38	7							0	2	1	6	2	SW	16.0	2	0.5
Site 14	10/4/2021	7:59 AM	20.57	20.57	20.57	25.20	25.20	25.23	pH sensor broken			7.09	7.01	6.59	91.1	89.9	89.4	1.2	3.20	20.0										<1	4	5	6	3	E	6.0	3	0.5
Site 14	10/11/2021	7:49 AM	18.42	18.49	18.52	24.26	24.54	24.56	pH sensor broken			6.25	5.92	6.06	75.2	72.5	74.6	1.1	2.17	17.0										1	2	5	6	4	NE	16.0	3	1.0
Site 14	10/18/2021	11:45 AM	18.54	18.56	18.58	25.66	25.66	25.67	pH sensor broken			7.82	7.67	7.57	97.0	95.5	94.6	1.0	3.81	12.7		18	1							1	2	5	6	4	WNW	15.0	2	0.5
Site 14	10/25/2021	7:41 AM	15.85	shallow	shallow	23.95	shallow	shallow	pH sensor broken			6.70	shallow	shallow	77.4	shallow	shallow	0.9	1.14	17.8		43	167							1	2	5	6	4	SW	7.0	3	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 15, Mill Neck Creek South**

Site	Date	Time	H_2O Temp Top 0.5m (°C)	H_2O Temp 1.0m (°C)	H_2O Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 15	4/19/2021	Tide falling, too shallow																																				
Site 15	4/26/2021	Strong wind and waves																																				
Site 15	5/3/2021	8:04 AM	14.04	13.41	Shallow	24.75	25.42	Shallow	7.80	7.84	Shallow	7.92	7.90	Shallow	89.8	88.9	Shallow	1.1	1.4	15.1		13	10							0	2	5	6	4	E	1.6	3	0.0
Site 15	5/10/2021	11:03 AM	13.48	13.48	13.46	24.37	24.36	24.39	7.89	7.89	7.89	8.64	8.62	8.63	97	96.9	96.9	1.6	2.16	17.6		22	2							2	4	5	6	4	E	1.0	3	0.0
Site 15	5/17/2021	Too shallow, low tide																																				
Site 15	5/24/2021	11:24 AM	19.04	18.49	18.43	24.89	26.20	26.20	7.84	7.89	7.89	7.64	7.71	7.99	95.2	95.5	98.9	1.0	2.09	21.3		112	31							0	1	5	6	4	SE	2.0	3	0.0
Site 15	6/1/2021	7:36 AM	15.35	15.47	Shallow	23.58	24.27	Shallow	7.83	7.81	Shallow	7.84	8.73	Shallow	89.50	89.00	Shallow		1.32	16.8		22	4							0	2	5	6	4	0	0.0	3	0.0
Site 15	6/7/2021	Too shallow, low tide																																				
Site 15	6/15/2021	Too shallow, low tide																																				
Site 15	6/21/2/1	8:33 AM	23.22	23.14	22.88	25.18	25.77	25.86	7.85	7.89	7.89	6.74	6.68	6.68	91.7	91.3	90.7	0.6	2.22	23.6		390	210							0	4	5	6	4	S	3.3	3	0.5
Site 15	6/28/2021	Too shallow, low tide																																				
Site 15	7/6/2021	8:48 AM	23.65	23.57	23.53	24.60	24.72	24.71	pH sensor broken			6.32	6.19	6.00	85.8	83.7	81.3	0.7	1.83	25.0		22	16							0	4	5	6	1	SW	1.2	1	0.0
Site 15	7/12/2021	Too shallow, low tide																																				
Site 15	7/19/2021	8:36 AM	25.81	25.80	25.63	25.10	25.20	25.32	7.50	7.50	7.52	5.32	5.07	4.82	75.0	71.4	67.9	0.8	1.95	21.0		300	71							0	2	5	6	4	NW	0.0	3	0.0
Site 15	7/26/2021	Too shallow, low tide																																				
Site 15	8/2/2021	8:17 AM	23.64	23.64	Shallow	24.51	24.72	Shallow	pH sensor broken			4.60	4.24	Shallow	62.0	57.4	Shallow	0.6	1.84	17.8		33	14							0	1	5	6	0	NW	2.8	1	0.5
Site 15	8/9/2021	11:41 AM	23.55	23.49	23.46	24.29	24.48	24.85	7.64	7.56	7.52	6.39	6.34	5.87	86.2	85.2	78.8	1.9	2.26	23.0		380	170							1	4	5	4	4	NE	3.2	3	0.0
Site 15	8/24/2021	Sonde malfunctioning, out of order																																				
Site 15	8/31/2021	7:37 AM	25.51	25.65	25.67	23.98	24.76	24.83	pH sensor broken			4.70	4.07	3.60	65.3	56.5	50.3	0.8	1.96	22.2		43	14							1	2	5	6	4	NW	2.0	3	0.0
Site 15	9/7/2021	11:28 AM	23.43	23.44	23.33	24.35	24.37	24.46	pH sensor broken			6.26	6.04	5.77	84.5	81.5	77.6	1.0	2.52	22.2		40	11							0	4	4	6	0	w	6.0	1	0.0
Site 15	9/13/2021	7:54 AM	23.18	23.32	Shallow	23.28	23.99	Shallow	pH sensor broken			6.34	5.87	Shallow	84.0	77.8	Shallow	0.7	Shallow	22.7		48	21							0	2	4	6	4	w	11.0	13	0.5
Site 15	9/21/2021	11:50 AM	22.89	22.91	23.06	24.54	24.70	24.91	pH sensor broken			7.44	7.42	7.42	98.0	98.0	98.6	0.9	2.38	21.1		46	<1							0	4	5	6	2	E	8.0	2	0.0
Site 15	9/27/2021	Too shallow, low tide																																				
Site 15	10/4/2021	8:10 AM	20.73	20.73	20.71	24.55	24.57	24.66	pH sensor broken			6.43	6.13	5.73	81.9	77.5	73.4	0.6	1.93	20.0										<1	4	5	6	3	E	6.0	3	0.5
Site 15	10/11/2021	Too shallow, low tide																																				
Site 15	10/18/2021	11:13 AM	17.20	17.55	17.92	24.50	24.70	25.13	pH sensor broken			7.34	7.23	7.00	88.4	87.7	85.6	1.0	2.37	12.7		74	10							1	1	5	6	4	W	15.0	3	0.5
Site 15	10/25/2021	Too shallow, low tide																													1							

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2021 Water Quality Data - **Site 16, Mill Neck Creek North**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 16	4/19/2021	Tide falling, too shallow																																			
Site 16	4/26/2021	Strong wind and waves																																			
Site 16	5/3/2021	7:55 AM	13.32	13.20	Shallow	25.42	25.52	Shallow	7.84	7.85	Shallow	8.25	8.21	Shallow	92.6	92.0	Shallow	1.7	1.7	15.1		1	<1							0	2	5	6	4	E	2.0	3	0.0
Site 16	5/10/2021	11:13 AM	13.37	13.29	13.13	25.07	25.09	25.48	7.90	7.90	7.90	8.70	8.65	8.61	97.8	97.3	96.6	2.0	2.35	20.4		10	11							2	4	5	6	4	N	2.5	3	0.0
Site 16	5/17/2021	Too shallow, low tide																																			
Site 16	5/24/2021	11:12 AM	18.92	18.88	18.72	25.70	25.73	26.00	7.87	7.87	7.88	8.06	7.98	7.96	100.0	99.1	98.6	1.2	2.31	19.1		46	5							0	1	5	6	4	S	1.3	3	0.0
Site 16	6/1/2021	7:50 AM	15.17	15.21	Shallow	24.06	24.46	Shallow	7.67	7.66	Shallow	8.11	7.88	Shallow	92.5	90.1	Shallow		1.4	16.0		34	8							0	2	5	6	4	0	0.0	3	0.0
Site 16	6/7/2021	8:25 AM	20.66	20.61	Shallow	25.58	25.57	Shallow	7.82	7.82	Shallow	7.87	7.95	Shallow	101.7	102.6	Shallow	1.0	1.69	22.6		18	7							0	4	5	6	2	S	0.5	1	0.0
Site 16	6/15/2021	Too shallow, low tide																																			
Site 16	6/21/2021	8:21 AM	22.56	22.62	22.52	25.92	25.97	25.96	7.97	7.96	7.98	7.29	7.32	7.32	98.9	99.0	99.1	0.8	2.35	24.2		33	18							0	4	5	6	4	S	2.2	3	0.5
Site 16	6/28/2021	Too shallow, low tide																																			
Site 16	7/6/2021	8:21 AM	23.34	23.32	23.31	25.05	25.15	25.09	pH sensor broken			6.80	6.69	6.43	92.0	90.4	86.8	0.7	1.84	24.0		11	5							0	4	5	6	3	SW	1.5	3	0.0
Site 16	7/12/2021	Too shallow, low tide																																			
Site 16	7/19/2021	8:24 AM	25.39	25.38	25.37	25.46	25.45	25.51	7.57	7.57	7.58	5.39	5.28	5.21	75.7	74.4	73.2	0.8	2.25	21.0		47	19							0	2	5	6	4	NW	1.3	3	0.0
Site 16	7/26/2021	Too shallow, low tide																																			
Site 16	8/2/2021	8:05 AM	23.77	23.77	23.76	25.06	25.07	25.10	pH sensor broken			5.63	5.39	5.20	76.7	73.2	71.2	0.9	2.09	17.8		5	4							0	1	5	6	0	NW	3.7	1	0.5
Site 16	8/9/2021	11:53 AM	23.68	23.54	23.46	24.98	25.60	25.90	7.62	7.67	7.68	6.34	6.17	6.00	86.1	83.6	81.5	1.2	2.49	23.0		90	47							1	4	5	6	4	NE	1.8	3	0.0
Site 16	8/24/2021	Sonde malfunctioning, out of order																																			
Site 16	8/31/2021	7:28 AM	25.37	25.50	25.5	24.76	24.94	25.34	pH sensor broken			5.81	5.49	5.35	81.4	77.1	75.6	0.7	2.14	22.2		13	4							1	2	6	0	4	NW	2.0	3	0.0
Site 16	9/7/2021	11:38 AM	23.41	23.30	23.23	24.91	24.94	24.98	pH sensor broken			6.85	6.81	6.63	93.0	92.1	89.4	1.1	2.75	23.8		13	<1							0	4	4	6	0	W	6.0	1	0.0
Site 16	9/13/2021	7:41 AM	23.16	23.16	Shallow	24.73	24.93	Shallow	pH sensor broken			5.91	5.81	Shallow	79.0	77.9	Shallow	0.7	1.49	22.7		15	8							0	2	4	6	4	W	10.0	3	0.5
Site 16	9/21/2021	12:02 PM	23.21	23.17	23.15	25.11	25.25	25.24	pH sensor broken			7.79	7.92	8.14	104.0	106.0	108.4	0.9	2.61	22.2		10	<1							0	4	5	6	2	E	8.0	2	0.0
Site 16	9/27/2021	Too shallow, low tide																																			
Site 16	10/4/2021	8:21 AM	20.61	20.62	20.62	24.83	24.91	24.99	pH sensor broken			6.90	6.72	6.59	88.5	86.1	84.8	1.0	2.22	20.0										<1	4	5	6	4	ENE	5.0	3	0.5
Site 16	10/11/2021	Too shallow, low tide																																			
Site 16	10/18/2021	11:24 AM	18.74	18.76	18.77	25.81	25.81	25.81	pH sensor broken			8.06	7.90	7.74	100.9	98.8	97.0	1.4	2.51	12.7		20	6							1	2	5	6	4	W	15.0	3	1.0
Site 16	10/25/2021	Too shallow, low tide																																			

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 17, The Birches STP**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 17	4/19/2021	Tide low, too shallow																																			
Site 17	4/26/2021	Strong wind and waves																																			
Site 17	5/3/2021	Too shallow, low tide																																			
Site 17	5/10/2021	11:23 AM	13.47	13.45	13.29	24.39	24.57	25.18	7.87	7.88	7.89	8.72	8.7	8.66	97.9	97.7	97.4	1.8	1.98	28.3		13	1							2	4	5	6	4	E	3.0	3	0.0
Site 17	5/17/2021	Too shallow, low tide																																			
Site 17	5/24/2021	11:04 AM	19.41	19.43	Shallow	25.55	25.67	Shallow	7.76	7.75	Shallow	7.28	7.18	Shallow	91.1	90.1	Shallow	1.3	1.58	20.8		78	17							0	1	5	6	4	E	2.4	3	0.0
Site 17	6/1/2021	Too shallow, low tide																																			
Site 17	6/7/2021	Too shallow, low tide																																			
Site 17	6/15/2021	Too shallow, low tide																																			
Site 17	6/21/2021	8:12 AM	23.21	23.18	Shallow	25.60	25.70	Shallow	7.74	7.75	Shallow	5.86	5.77	Shallow	79.7	78.6	Shallow	0.7	1.63	23.3		260	280							0	4	5	6	1	S	1.6	3	0.5
Site 17	6/28/2021	Too shallow, low tide																																			
Site 17	7/6/2021	8:31 AM	23.67	23.62	Shallow	24.54	24.66	Shallow	pH sensor broken			5.84	5.77	Shallow	79.3	78.3	Shallow	0.4	1.57	24.0		12	7							0	4	5	6	2	SW	1.5	2	0.0
Site 17	7/12/2021	Too shallow, low tide																																			
Site 17	7/19/2021	8:09 AM	25.40	25.44	25.60	24.95	24.99	25.14	7.44	7.44	7.46	4.77	4.58	4.44	66.7	64.3	62.7	0.7	2.15	21.0		49	64							0	1	5	6	4	NW	1.8	3	0.0
Site 17	7/26/2021	Too shallow, low tide																																			
Site 17	8/2/2021	7:46 AM	23.49	23.52	Shallow	24.69	24.81	Shallow	pH sensor broken			4.76	4.35	Shallow	64.1	58.9	Shallow	0.6	1.83	17.8		9	5							0	1	5	6	0	NW	2.5	1	0.5
Site 17	8/9/2021	12:02 PM	23.64	23.58	23.56	24.69	25.05	25.06	7.60	7.59	7.59	6.14	6.05	5.85	83.1	81.7	79.0	0.8	2.16	23.0		190	58							1	4	5	6	4	NE	2.4	3	0.0
Site 17	8/24/2021	Sonde malfunctioning, out of order																																			
Site 17	8/31/2021	7:17 AM	25.52	25.59	no data -to	24.54	24.63	too shall	pH sensor broken			4.02	3.67	Shallow	56.1	51.1	Shallow	0.7	1.18	22.2		16	7							1	2	5	6,5,2	4	NW	2.0	2	0.0
Site 17	9/7/2021	11:48 AM	23.47	23.41	23.24	24.54	24.61	24.93	pH sensor broken			6.49	6.24	6.06	87.5	83.9	82.2	1.0	2.44	22.7		54	2							0	4	4	6	0	w	6.0	1	0.0
Site 17	9/13/2021	Too shallow, low tide																																			
Site 17	9/21/2021	12:12 PM	23.08	23.05	22.97	24.8	24.77	24.93	pH sensor broken			7.60	7.69	7.69	100.8	101.8	101.6	0.8	2.29	22.2		24	<1							0	4	5	6	2	E	7.0	2	0.0
Site 17	9/27/2021	Too shallow, low tide																																			
Site 17	10/4/2021	8:38 AM	20.61	20.62	20.61	24.67	24.7	24.71	pH sensor broken			6.81	6.67	6.65	87.3	85.3	85.4	0.7	2.24	20.0										<1	4	5	6	4	ENE	5.0	4	0.5
Site 17	10/11/2021	Too shallow, low tide																																			
Site 17	10/18/2021	11:35 AM	17.82	17.79	17.81	25.19	25.25	25.23	pH sensor broken			7.99	7.57	7.38	97.8	92.4	90.6	1.1	1.91	12.7		38	4							1	2	5	6	4	WNW	15.0	3	0.5
Site 17	10/25/2021	Too shallow, low tide																													1						

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 18, Mill Neck Cove**

Site	Date	Time	H_20 Temp Top 0.5m (°C)	H_20 Temp 1.0m (°C)	H_20 Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 18	4/19/2021	7:53 AM	10.97	11.00	10.96	26.00	26.12	26.00	8.12	8.13	8.13	9.83	9.98	10.06	105.8	107	107.7	0.9	2.03	12.3		<1	<1							0	2	5	6	1	NE	1.3	1	0.0
Site 18	4/26/2021	Strong wind and waves																																			
Site 18	5/3/2021	7:42 AM	12.76	12.76	12.76	25.68	25.64	25.65	7.86	7.88	7.89	8.24	8.22	8.21	91.6	91.4	91.4	1.7	2.72	15.1		<1	1							0	1	5	6	4	W	0.9	3	0.0
Site 18	5/10/2021	11:50 AM	13.58	13.37	13.05	25.48	25.44	25.57	7.9	7.91	7.92	8.58	8.56	8.62	96.9	96.6	96.6	2.4	3.16	25.1		1	1							2	1	5	6	3	W	2.1	2	0.0
Site 18	5/17/2021	7:43 AM	15.71	15.73	Shallow	26	26.1	Shallow	7.76	7.77	Shallow	8.07	7.94	Shallow	94.3	92.9	Shallow	Shallow	1.54	17.5		3	2							0	2	5	6	0	NW	1.4	1	0.0
Site 18	5/24/2021	11:52 AM	18.54	18.53	18.54	26.05	26.03	26.13	7.84	7.84	7.86	8.03	8.00	7.87	99.3	98.8	97.3	1.3	2.77	21.7		2	<1							0	1	5	6	4	S	1.2	3	0.0
Site 18	6/1/2021	8:24 AM	15.12	15.10	15.08	25.18	25.36	25.3	7.73	7.74	7.75	7.87	7.76	7.76	90.4	89.2	89.2	1.5	1.90	18.3		9	4							0	2	5	6	4	SW	0.4	3	0.0
Site 18	6/7/2021	7:50 AM	20.75	20.10	20.03	25.44	25.76	25.83	7.77	7.80	7.80	7.87	7.94	7.99	101.7	101.5	102.1	1.0	2.19	23.6		13	5							0	4	5	6	1	E	1.1	1	0.0
Site 18	6/15/2021	8:02 AM	19.78	Shallow	19.76	25.90	Shallow	25.94	7.91	Shallow	7.95	7.70	Shallow	7.69	97.9	Shallow	97.9	0.6	1.43	21.7		49	38							1	2	5	6	4	W	1.0	3	0.0
Site 18	6/21/2021	7:41 AM	22.50	22.49	22.48	26.00	26.03	25.99	7.96	7.96	7.96	7.29	7.32	7.32	98.7	98.9	99.0	0.7	3.11	23.6		30	31							0	4	5	6	2	S	2.3	2	0.5
Site 18	6/28/2021	Too shallow, low tide																																			
Site 18	7/6/2021	7:51 AM	22.74	22.63	22.54	25.33	25.57	25.69	pH sensor broken			6.97	6.92	7.04	93.3	93.0	94.6	0.9	2.49	24.0		8	6							0	4	5	6	4	SW	3.0	3	0.0
Site 18	7/12/2021	10:38 AM	24.42	23.93	Shallow	23.06	24.06	Shallow	7.78	7.75	Shallow	7.58	7.64	Shallow	103.6	103.5	Shallow	0.7	1.80	26.1		54	5							1	4	5	6	4	SW	1.0	3	0.0
Site 18	7/19/2021	7:42 AM	25.17	25.20	25.18	25.39	25.47	25.62	7.59	7.59	7.62	5.71	5.45	5.39	79.3	76.3	75.7	0.9	3.20	21.0		15	16							0	1	5	6	4	NW	0.5	3	0.0
Site 18	7/26/2021	10:42 AM	25.44	25.17	Shallow	24.96	25.19	Shallow	7.73	7.74	Shallow	6.79	6.81	Shallow	95.7	95.7	Shallow	1.1	1.79	26.0		82	24							2	4	5	6	1	NW	1.5	1	0.0
Site 18	8/2/2021	8:53 AM	23.7	23.72	23.73	25.39	25.41	25.44	pH sensor broken			6.24	6.05	5.95	85.2	82.7	81.6	1.3	2.81	20.0		1	1							0	2	5	6	0	NW	1.2	1	0.5
Site 18	8/9/2021	11:06 AM	23.49	23.49	23.43	25.81	25.81	25.83	7.69	7.69	7.67	6.39	6.24	6.05	86.5	84.6	82.0	1.2	2.96	23.0		17	9							1	4	5	6	4	NE	1.5	3	0.0
Site 18	8/24/2021	10:34 AM	24.84	24.57	NA	23.39	24.41	NA	7.39	7.45	NA	5.02	4.80	NA	69.9	66.1	NA	0.9	2.02	26.1		43	9							1	4	4	6	0	w	8.0	1	0.0
Site 18	8/31/2021	8:10 AM	25.33	25.32	25.35	25.52	25.53	25.59	pH sensor broken			6.41	6.44	6.44	90.4	90.9	90.9	1.1	2.83	22.2		12	1							1	2	5	6	4	NW	2.0	3	0.0
Site 18	9/7/2021	10:50 AM	23.26	23.20	23.21	24.92	24.96	24.94	pH sensor broken			6.70	6.51	6.37	90.6	89.1	86.0	1.1	3.30	21.1		18	<1							0	4	4	6	0	w	6.0	1	0.0
Site 18	9/13/2021	8:34 AM	23.07	23.06	23.05	24.76	24.75	24.75	pH sensor broken			7.36	7.39	7.40	98.5	98.9	99.0	0.8	1.84	23.8		7	1							0	2	4	6	4	w	10.0	3	0.5
Site 18	9/21/2021	12:31 PM	23.17	23.16	23.12	25.39	25.4	25.46	pH sensor broken			8.01	8.18	8.27	107.4	109.5	109.8	1.1	3.55	22.2		4	<1							0	4	5	6	3	E	8.0	2	0.0
Site 18	9/27/2021	8:18 AM	21.78	21.79	Shallow	25.20	25.16	Shallow	pH sensor broken			7.48	7.33	Shallow	98.0	96.0	Shallow	1.3	1.68	16.0		12	11							0	2	1	6	3	SW	10.0	2	0.5
Site 18	10/4/2021	12:14 PM	20.51	20.57	20.57	24.66	25.19	25.21	pH sensor broken			7.22	7.08	7.02	92.3	91.0	90.3	1.2	2.61	20.0										<1	4	5	6	4	E	6.0	3	0.5
Site 18	10/11/2021	8:15 AM	19.01	19.03	Shallow	25.21	25.25	Shallow	pH sensor broken			6.91	6.82	Shallow	85.5	84.7	Shallow	1.7	1.70	16.1										1	2	5	6	3	NE	16.0	2	1.0
Site 18	10/18/2021	12:05 PM	18.75	18.75	18.80	25.72	25.75	25.77	pH sensor broken			8.17	8.00	7.90	102.0	100.0	99.0	1.6	3.17	12.7		13	2							1	2	5	6	4	WNW	16.0	2	0.5
Site 18	10/25/2021	8:02 AM	16.18	Shallow	Shallow	25.03	Shallow	Shallow	pH sensor broken			7.38	Shallow	Shallow	86.5	Shallow	Shallow	bottom	1.31	17.7		22	>600							1	2	5	6	4	SW	7.0	3	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.

Friends of the Bay 2020 Water Quality Data - **Site 19, Flowers Oyster Hatchery**

Site	Date	Time	H_2O Temp Top 0.5m (°C)	H_2O Temp 1.0m (°C)	H_2O Temp 0.5m from BTM (°C)	Salinity Top (ppt)	Salinity 1.0m (ppt)	Salinity BTM (ppt)	pH Top	pH 1.0m	pH 0.5m from BTM	Top DO (mg/L)	DO 1.0m (mg/L)	BTM DO (mg/L)	%Sat Top	%Sat 1.0m	%Sat BTM	Secchi	Floor Depth (m)	Air Temp (°C)	H_2O Temp BTM monthly Average (°C)	Fecal Coliform Bacteria (CFU/100 mL)[1]	Enterococci (CFU/100 mL)	Amonia (NH_3)	Nitrate NO_3	Nitrite (NO_2)	Total Kjeldahl Nitrogen (TKN)	Organic Nitrogen (N)	Total Nitrogen	Rainfall in 24 hours[2]	Tidal Stage[2]	Water Color[2]	Surface Condition[2]	Cloud Cover[2]	Wind Direction	Wind Speed (m/s)	Weather[2]	Wave Height (ft)
Site 19	4/19/2021	7:45 AM	10.9	10.91	10.91	26.04	26.12	26.07	8.11	8.12	8.11	10.17	10.17	10.17	108.7	108.8	108.8	1.6	4.96	11.6		<1	<1							0	2	5	6	1	NE	2.2	1	0.0
Site 19	4/26/2021	Strong wind and waves																																			
Site 19	5/3/2021	7:30 AM	12.82	12.79	12.72	25.62	25.66	25.74	8.09	8.09	8.08	8.24	8.24	8.26	91.8	91.7	91.8	1.5	4.99	14.8		<1	<1							0	1	5	6	4	SE	1.0	3	0.0
Site 19	5/10/2021	12:00 PM	13.18	13.35	12.84	25.53	25.52	25.86	7.90	7.91	7.92	8.57	8.60	8.67	96.6	96.9	96.9	2.2	5.23	22.3		<1	2							2	1	5	6	3	W	2.5	2	0.0
Site 19	5/17/2021	7:30 AM	15.8	15.77	15.69	25.90	25.98	25.96	7.82	7.81	7.77	7.98	7.97	7.92	93.4	93.2	92.6	1.6	4.27	15.2		2	1							0	2	5	6	0	W	1.2	1	0.0
Site 19	5/24/2021	7:30 AM	18.97	18.88	18.44	25.64	25.80	25.84	7.70	7.71	7.72	7.58	7.51	7.48	94.1	93.3	92.2	1.2	4.71	17.4		15	7							0	4	5	6	4	NE	2.4	3	0.0
Site 19	6/1/2021	11:40 AM	16.17	15.9	15.29	24.18	24.46	24.94	7.78	7.80	7.77	8.02	8.26	8.15	94.0	95.9	93.8	1.4	3.27	28.2		14	3							0	3	5	6	3	NE	0.5	2	0.0
Site 19	6/7/2021	7:30 AM	20.97	20.80	19.94	25.42	25.47	25.67	7.80	7.79	7.78	7.76	7.99	8.04	101.0	103.4	102.5	1.1	4.70	21.4		33	3							0	4	5	6	1	W	2.2	1	0.0
Site 19	6/15/2021	11:24 AM	20.43	20.24	19.80	25.74	25.98	26.23	8.01	8.02	8.04	8.90	9.02	9.18	115.2	115.3	116.9	0.9	4.20	24.4		29	2							1	3	5	6	3	S	1.2	2	0.0
Site 19	6/21/2021	7:30 AM	22.83	22.67	22.46	25.76	25.92	26.02	7.82	7.87	7.91	6.76	6.70	6.84	91.7	90.5	92.7	0.7	5.40	24.7		150	64							0	4	5	6	2	S	1.9	2	0.5
Site 19	6/28/2021	12:00 PM	25.95	25.24	23.64	25.72	26.07	26.21	7.73	7.74	7.69	7.31	7.49	7.19	103.9	104.7	97.6	0.8	3.53	31.0		4	1							0	4	5	6	1	W	2.0	1	0.0
Site 19	7/6/2021	7:33 AM	22.99	22.99	22.76	24.72	24.76	25.48	pH sensor broken			6.35	6.32	6.46	85.3	85.0	86.9	0.8	5.36	23.0		36	15							0	4	5	6	4	SW	3.2	3	0.5
Site 19	7/12/2021	7:35 AM	24.12	24.11	23.69	22.56	22.72	24.31	7.49	7.50	7.54	6.72	6.70	6.65	90.8	90.6	89.9	0.8	3.72	23.3		90	26							1	3	5	6	2	SW	1.0	1	0.0
Site 19	7/19/2021	7:24 AM	25.28	25.27	25.26	25.48	25.48	25.51	7.68	7.67	7.64	5.45	5.38	5.35	76.6	75.6	75.3	0.9	5.71	21.0		24	10							0	1	5	6	4	NW	1.5	3	0.0
Site 19	7/26/2021	10:52 AM	25.40	25.42	24.78	24.77	24.95	25.37	7.76	7.75	7.68	6.65	6.97	6.86	94.2	98.7	95.2	1.2	4.65	26.0		120	25							2	4	5	6	1	0	0.0	1	0.0
Site 19	8/2/2021	12:28 PM	24.50	24.25	24.14	25.55	25.48	25.48	pH sensor broken			6.81	6.85	6.82	94.9	95.1	94.1	1.2	4.05	23.9		<1	<1							0	2	5	6	2	NW	4.1	2	0.5
Site 19	8/9/2021	7:29 AM	23.42	23.48	23.50	25.18	25.29	25.61	7.62	7.60	7.60	5.69	5.23	5.07	76.2	70.6	68.8	1.2	3.59	21.0		65	52							1	3	5	6	4	N	2.5	4	0.0
Site 19	8/24/2021	Sonde malfunctioning, out of order																																			
Site 19	8/31/2021	11:13 AM	26.05	26.01	25.46	24.88	24.94	25.64	pH sensor broken			7.03	7.11	7.10	100.0	100.7	100.3	1.1	3.99	26.1		16	<1							1	2	5	6	4	NW	4.0	1	0.0
Site 19	9/7/2021	12:10 PM	23.33	23.36	23.29	24.71	24.80	24.93	pH sensor broken			6.78	6.56	6.50	91.5	88.8	88.1	1.2	6.89	23.8		17	<1							0	4	4	6	0	WNW	8.0	1	0.0
Site 19	9/13/2021	12:25 PM	23.87	23.85	23.21	24.50	24.59	24.80	pH sensor broken			7.69	8.32	8.19	106.7	113.4	107.4	0.7	4.60	27.1		6	1							0	4	5	6	0	NW	10.0	1	0.5
Site 19	9/21/2021	7:41 AM	22.77	22.91	22.96	24.73	24.97	25.13	pH sensor broken			6.83	6.78	6.74	89.9	89.5	89.2	1.3	4.07	13.9		20	3							0	4	5	6	0	E	5.0	1	0.0
Site 19	9/27/2021	12:12 PM	22.06	22.04	22.14	24.65	24.55	25.20	pH sensor broken			7.94	8.24	8.40	105.5	108.7	111.2	0.6	5.37	20.0		50	1							0	4	1	6	1	SW	11.0	1	1.0
Site 19	10/4/2021	7:29 AM	20.64	20.65	20.60	24.76	24.84	25.09	pH sensor broken			6.98	6.83	6.76	89.2	87.7	87.0	1.3	5.23	18.8										<1	4	5	6	4	E	5.0	3	0.5
Site 19	10/11/2021	11:36 AM	19.17	19.18	19.21	25.24	25.24	25.32	pH sensor broken			7.23	7.17	7.17	90.0	89.6	89.5	1.5	4.59	18.8										1	4	5	6	4	NE	16.0	3	0.5
Site 19	10/18/2021	7:27 AM	17.36	17.45	17.88	24.72	24.76	25.23	pH sensor broken			7.84	7.18	6.88	92.6	87.1	84.3	1.2	5.15	11.1		47	26							1	4	5	6	1	W	10.0	1	0.5
Site 19	10/25/2021	11:21 AM	16.79	16.64	16.56	24.59	24.70	25.46	pH sensor broken			7.62	7.59	7.57	90.7	90.3	90.3	1.7	4.65	21.1										1	4	5	6	4	SW	9.0	2	0.5

[1]Anayzed with Method S 9222D-2006. Units CFU/100mL are considered equivalent to MPN/100mL for the purposes of this data.

[2]Refer to Volunteer Water Quality Monitoring Data Sheet (Appendix C) for explanation of coding for each parameter.

Data not collected due to equipment malfunction, boat problems, weather conditions, or other events

Parameters not analyzed due to lack of available funding.