Coalition to Save Hempstead Harbor

WATER-MONITORING PROGRAM
HEMPSTEAD HARBOR
Long Island, New York

2004 – 2005 Water Monitoring Report

Prepared by ***CSHH*** *and*

FUSS & O'NEILL
Disciplines to Deliver

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MISSION AND PROFILE

The Coalition to Save Hempstead Harbor (CSHH) is a volunteer, nonprofit organization, founded in 1986. CSHH is dedicated to identifying and eliminating environmental threats to Hempstead Harbor and surrounding communities. Its objective is to advance the public interest in protecting and restoring our local environment to its full ecological and economic potential.

The fundamental force behind CSHH's efforts is the belief that concerned and informed citizens can make a difference in events that shape the future. CSHH's education and outreach programs foster an increased awareness of environmental issues generally and greater appreciation of the local environment in particular. Most important, the public is encouraged to participate in local conservation efforts.

Execution Lighthouse, 2005 (Photo: Carol DiPaolo)

When CSHH was formed 20 years ago, Hempstead Harbor was suffering from air, water, and land-based problems that resulted from past industrial activities that occurred within the harbor and along its shores. CSHH's early priorities included preventing increased air pollution from proposed and existing incinerators and ensuring the cleanup of toxic waste sites that were degrading the harbor's water quality.

CSHH and other community members successfully prevented a new incinerator from being built on the harbor's western shore and shut down a failing incinerator that was operating on its eastern shore. CSHH sponsored the development of a townwide recycling plan as an alternative solution to solid-waste management and became a critical watchdog for the harbor as remediation plans were formulated to clean up contaminated sites.

In the early 1990s, while water quality concerns within Long Island Sound gained increased attention, CSHH was already focused on the water-quality issues of Hempstead Harbor. CSHH recognized that the priorities that were established under the Long Island Sound Study's Comprehensive Conservation and Management Plan were consistent with the needs of Hempstead Harbor. CSHH provides water-quality monitoring, public education, and advocacy with these priorities in mind.

ACTIVITIES

CSHH's **Citizens Water-Monitoring Program** was established in 1992 to encourage all who live, work, and recreate around Hempstead Harbor to renew their interest in conditions aroundthe harbor as well as Long Island Sound and to participate in restoration efforts. An important component of the program is to involve citizens in observing changing conditions around the harbor and notifying CSHH as well as appropriate municipal and environmental agencies of any unusual events affecting the harbor. Over the years, the scope of the program has expanded, as has the network of partners that have supported it. The program has achieved soundwide recognition.

In 1996, CSHH initiated the creation of the **Water-Monitoring Work Group**, a soundwide network of environmental agencies and nonprofits, to provide a forum for analyzing current testing parameters, methodologies, and equipment used by members and for examining testing results in a broader context. The soundwide network remains an important resource to check the location and extent of various water conditions around the sound. In addition, the **Long Island Sound Mapping Project** was completed in July 1998 through a grant awarded to CSHH by EPA/Long Island Sound Study. The project was undertaken on behalf of the Water-Monitoring Work Group and achieved the group's goals of mapping sites that are being monitored around Long Island Sound and identifying the agencies and other organizations that are responsible for testing at those sites.

In 1998, CSHH published ***Hempstead Harbor: Its History, Ecology, and Environmental Challenges***. The book supports the goals of the water-monitoring program in encouraging community members to learn about Hempstead Harbor as an important habitat for marine life and other species. It also describes the critical relationship between the ecology of the harbor and sound and the quality of life (as well as economy) of surrounding communities.

In 2000, CSHH became a partner in **EPA's Environmental Monitoring for Public Awareness and Community Tracking (EMPACT)** program. CSHH worked with the Marine Sciences Department of the University of Connecticut to maintain a telemetry link at the EMPACT Web site at www.MYSound.uconn.edu, so that water-quality data from Hempstead Harbor could be viewed on the Web. The Town of Oyster Bay became an important partner in this project, having contributed the stationary probe and use of a boat and staff to assist with probe maintenance. In 2005, logistical problems and lack of funding to purchase and maintain necessary new equipment prevented the continuation of this program.

In 2001, CSHH received the prestigious **Clearwater Award**, announced by The Waterfront Center, a Washington, DC-based educational organization with worldwide membership. CSHH was commended for the scope of its activities in working to improve conditions in and around Hempstead Harbor. Particularly noted were CSHH's book (mentioned above) and the expansion of its water-monitoring program.

In 2002, CSHH was asked by the EPA Long Island Sound Study Office to plan and coordinate a **Storm-Water Workshop** to help prepare Long Island communities to meet the requirements of the EPA Phase II Storm Water Regulations. CSHH received a grant to host the workshop, which was cosponsored by the EPA Long Island Sound Office, Long Island Sound Study, and the New York Sea Grant Program.

CSHH continues to work with other environmental groups and agencies around Hempstead Harbor and Long Island Sound. In 1995, the nine municipalities that have jurisdiction over Hempstead Harbor formed the Hempstead Harbor Protection Committee (HHPC), and CSHH became the first environmental organization to sit on the committee as a technical advisor. CSHH has worked with the committee in planning and implementing HHPC's Water Quality Improvement Plan (1998) and Harbor Management Plan (2004). CSHH has also participated on every advisory committee that has been created around the harbor to develop various revitalization plans, such as the Glen Cove Creek Reclamation Committee, Glenwood Landing Steering Committee, the Roslyn Waterfront Committee, and the Glen Cove Waterfront Citizens' Planning Committee. CSHH is a long-standing member of the Long Island Sound Study's Citizens Advisory Committee and served for three years as chair of its Communications Subcommittee.

From 1992 through 2005, CSHH coordinated local activities as part of the International Coastal Cleanup. Special fund-raising events, member contributions, and grants that CSHH has been awarded throughout the years from the NY Department of State, EPA's Long Island Sound Office, the Rauch Foundation, Long Island Community Foundation, and local businesses have supported CSHH's programs and activities.

If you would like more information about CSHH's activities, or to request another copy of this report, contact:

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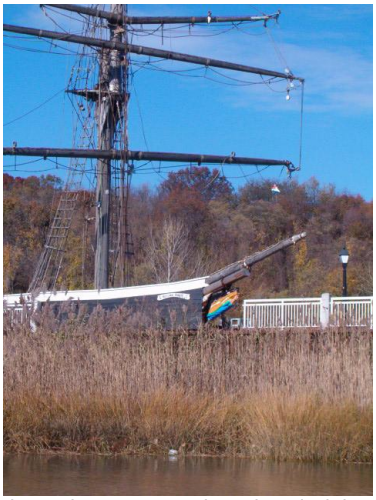


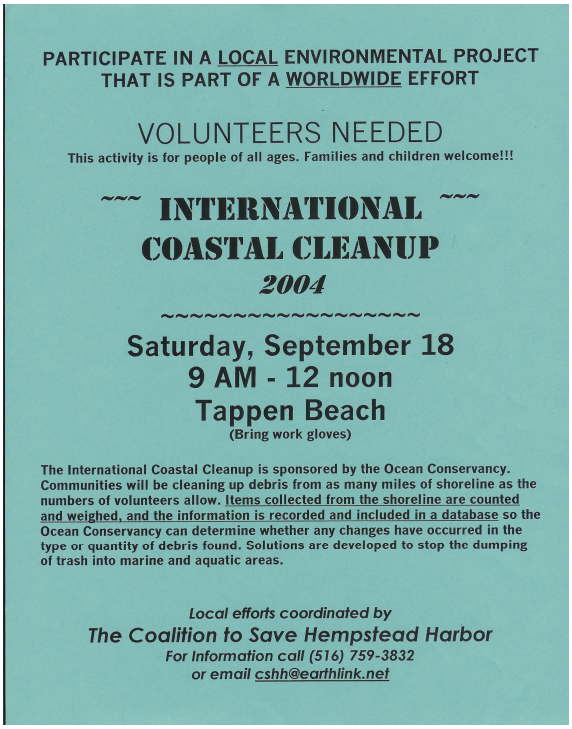
The Regina Maris along Glen Cove Creek esplanade (Photo by Carol DiPaolo)

ACKNOWLEDGMENTS

Environmental restoration and conservation require dedication, passion, patience, broad-based community support, and collaboration, as well as large infusions of technical expertise and funding. We therefore gratefully acknowledge the financial support and participation of all CSHH members, as well as that of all the community groups, businesses, and municipalities that have partnered with us to protect our local environment.

We also acknowledge the special efforts of individuals who have helped us maintain our water-monitoring program, including water-monitoring volunteer Mark Ring, CSHH fish-survey leader, Dr. John Waldman; Town of Oyster Bay's Department of Environmental Resources, especially Superintendent of Environmental Control Eric Swenson, Town of Oyster Bay's Department of Parks staff at Tappen Beach Marina; Nassau County Department of Health Bureau of Environmental Sanitation director, John Jacobs; Interstate Environmental Commission engineer, Peter Sattler; and Dick Harris and Peter Fraboni, Harbor Watch/River Watch, for their assistance in our initial efforts to write a Quality Assurance Project Plan.

CSHH gratefully acknowledges the special financial support that was provided in 2005 by the Town of North Hempstead and the Town of Oyster Bay to continue the water-monitoring program for Hempstead Harbor and make possible the completion of this report.



Poster for the 2004 International Coastal Cleanup)

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THE ENCLOSED CD ROM INCLUDES ACCOMPANYING TABLES AND GRAPHS FOR THIS REPORT.

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APPENDIX CONTENTS

STATE OF THE HARBOR REPORT 2004-2005

HARBOR OVERVIEW

Hempstead Harbor is a deep, V-shaped harbor that lies along the north shore of Long Island, bordering the western portion of Long Island Sound, between Manhasset Bay to the west and Oyster Bay to the east. The harbor is about 5 miles long from mouth to head, and its shoreline extends 14 miles from Sands Point on the west at its mouth to Mattinecock Point on the east. For the most part, the harbor presents a beautiful water body that is quiet and uncrowded, though it has widely mixed uses.

Industrial or commercial enterprises were historically concentrated in four areas along the harbor's shoreline. They remain currently, to a much lesser degree, in three areas of the harbor. The former industrial sites degraded the harbor's shorelines, wetlands, and water quality with the effects of oil spills, sewage spills, toxic contamination, storm-water runoff, air pollution, and industrial discharges. The worst of these effects were noted in the mid-1980s.

Efforts to restore the harbor resulted in the closure of a landfill, two incinerators, and a sewage treatment plant. The remediation of some hazardous waste sites has been completed, and remediation of others is still underway. One sewage treatment plant remains and in 2003 was upgraded, using a biological process to remove nitrogen from its discharge. This is an important step in improving the harbor's water quality. Revitalization plans are being implemented for sections of the waterfront that suffered the most abuse, such as along Glen Cove Creek and the shore in Glenwood Landing.

Despite the harbor's impaired condition during the 1980s, in 1987 New York State designated Hempstead Harbor a "significant coastal fish and wildlife habitat," including the area extending from Mott Point and Prospect Point at the northern portion of the harbor south to the Roslyn viaduct. Over the last 15 years, however, the harbor's ecosystem has vastly improved, containing a diversity of marine life and water birds. Wetland grasses have re-covered a large portion of the lower harbor south of the Bar Beach sandspit, once again providing a nursery and healthy habitat for marine species and bird populations. Reflecting Hempstead Harbor's dramatic turnaround, its designation as a **significant coastal fish and wildlife habitat** was updated and extended in October 2005 to include the portion of the harbor south of the Roslyn viaduct.

Today, Hempstead Harbor continues to support many diverse uses and activities. Fuel is transported to a Glenwood Landing oil terminal that is adjacent to a power plant that has operated since the early 1900s. Further north, tug boats tow barges to and from a sand and gravel transfer station on the west shore of the harbor and into Glen Cove Creek on the east side. In contrast to these commercial uses, the recreational uses continue to flourish and expand as the harbor's water quality improves. Marinas, yacht clubs, and fishing clubs, which are concentrated in the northern portion of the harbor, are thriving. Town, village, and small private beaches are also located along the harbor's shore, and approximately 80% of the shoreline is made up of open space and parkland. As the harbor environment has continued to

improve, there has been increased pressure to develop properties along the shoreline, which in time could exacerbate the problems that are currently being mitigated.

A challenge that must be met in planning for the future of Hempstead Harbor is to balance these diverse and often competing interests. The Harbor Management Plan for Hempstead Harbor (Hempstead Harbor Protection Committee, 2004) offers a comprehensive strategy so that the municipalities that share Hempstead Harbor can "work cooperatively to address issues related to the wise use and protection of the harbor's surface waters, natural resources, underwater lands, and shorefront."

Specific environmental challenges and priorities that remain for Hempstead Harbor include storm-water runoff abatement; prevention of inappropriate land use and development, particularly along the shore; continued improvements in water quality; and continued remediation of contamination from former industrial activities.

PROGRAM PARTNERS

The program's success can be measured in terms of community support as well as the financial, staff, and service support of local municipalities and state and local agencies. Since 1998, the **Town of Oyster Bay** has contributed the use of its Environmental Control boat and staff to assist with weekly monitoring.

Town of Oyster Bay Environmental Control Boat (Photo by Carol DiPaolo)

CSHH has consulted with the **Nassau County Department of Health** (NCDH) since the inception of the water-monitoring program. The NCDH previously conducted midharbor sample collection for coliform analysis, but this was discontinued in 1991 due to county budget cuts. Since 1998, CSHH has worked with NCDH to reinstate some of the midharbor coliform sampling by collecting samples at 12 CSHH stations, following NCDH protocols. The NCDH lab performs the analysis on these samples as well as on those collected by NCDH staff at local beaches and by the Interstate Environmental Commission (IEC).

As part of its broad Long Island Sound Study survey, the **Interstate Environmental Commission** monitors two stations within Hempstead Harbor. CSHH has worked with IEC and other environmental agencies and organizations around Long Island Sound and in particular consults with IEC to provide a broader picture of water conditions in Hempstead Harbor.

The **Nassau County Police Department's Underwater Search and Rescue Team**, which maintains police boats at Tappen Marina in Hempstead Harbor, provided divers to assist with the stationary probe installation, retrieval and redeployment, and relocation. The team has enthusiastically supported CSHH monitoring efforts and has even helped with weekly sampling when we had no other means of reaching our stations.

CSHH is also grateful to **long-time volunteers,** and continues to rely on them as well as on **members of local fishing clubs, local beach and marina managers, boaters and sailors, and other members of the community** to report on harbor conditions. Working collaboratively with community members has helped CSHH develop and sustain a long-standing, credible water-monitoring program. Program credibility will be further enhanced by the completion of an EPA approved Quality Assurance Project Plan (QAPP), which CSHH began researching in 2005.

WATER-MONITORING CHALLENGES

Since its inception, CSHH's water-monitoring program has grown, and water-quality improvements in the harbor have become increasingly evident. More than ever before, there is widespread acknowledgment of the importance of conducting water-monitoring programs in tandem with implementing pollution-abatement strategies so that benchmarks can be established and improvements can be measured.

In 2003, the Citizens Advisory Committee for the Long Island Sound Study determined that water monitoring should be a fundable priority. Also in 2003, in formulating priorities under its Harbor Management Plan, the HHPC members gave continued water-quality monitoring in Hempstead Harbor a number-one priority ranking. Despite this unprecedented support, water-quality monitoring programs are expensive and can be difficult to maintain, particularly for nonprofit organizations, because of current insufficient funding and technical and research resources.

Data Analysis

It is difficult to draw direct relationships among all the variables that affect water quality, and this is the challenge presented every year in attempting to analyze the past season's water-quality data. The graphs presented in the electronic portion of this report compare parameters (such rainfall and bacteria levels) that show expected correlations but also noticeable variability. The data collected over the years is a critical resource as we look for trends that point to the health of the harbor.

The story of Hempstead Harbor and Long Island Sound is a complicated one. There are many variables. Some things we can control—such as nitrogen discharges and other pollution from both point and nonpoint sources; other things we can't control—such as rainfall and temperature. However, all of these factors have critical relationships that have an impact on ecological health and survival and human use of the waters, including swimming, fishing, and other recreational pursuits.

The data collected through CSHH's water-monitoring program help us learn about the interrelationships that occur in Hempstead Harbor. This information enables us to work with others on a harborwide and soundwide basis to discover causal effects of human activities, so that we can plan and implement best management practices that will assure a healthy environment for the future.

LOCATION OF TESTING STATIONS

CSHH's water-monitoring program includes 12 stations in Hempstead Harbor. At the end of the 2004 monitoring season, we added 4 stations near CSHH #8 (the Glen Cove sewage treatment plant outfall). The new stations were added to track the frequency and source of unusual dry- and wet-weather flows that were noticed at discharge points west of the STP outfall and that, on testing, indicated high levels of bacteria. Stations #9, 10, 11, and 12 became regular testing sites for the 2005 season, and the NCDH continues to perform the analyses for samples collected at these sites.

The principal stations that are sampled weekly during the monitoring season are located in the northern portion of the harbor, between Bar Beach spit and Long Island Sound, as well as stations in Glen Cove Creek. The CSHH monitoring stations include:

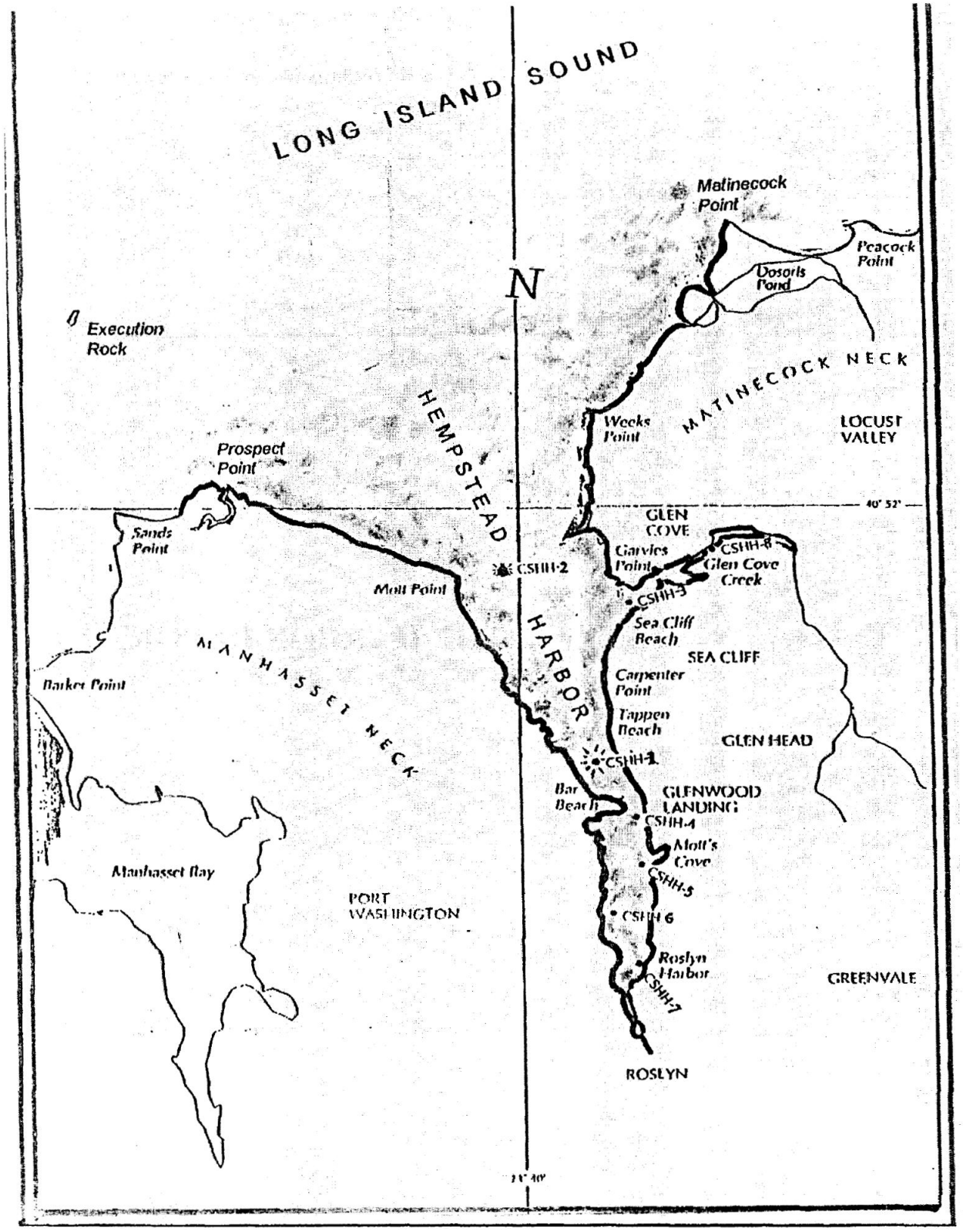
- CSHH #1 at Beacon 11 (between Tappen Beach Marina on the east shore and Bar Beach on the west shore);
- CSHH #2 at Bell Buoy 6 (a stationary marker at the harbor mouth, east of Mott Point);
- CSHH #3 at the red channel marker near the mouth of Glen Cove Creek, between the Hempstead Harbor Club (which is adjacent to Garvies Point) and Sea Cliff Beach; and
- CSHH #8, at the Glen Cove Sewage Treatment Plant (STP) outfall pipe.
- CSHH #9, about 10 feet west of CSHH #8;
- CSHH #10, about 20 feet west of CSHH # 8, at the end of the seawall;
- CSHH#11, about 50 feet east of CSHH #8, at the end of the floating dock;
- CSHH #12, about 100 feet east of CSHH #8, in the middle of the creek, north of the bend in the south seawall.

Views of CSHH #8, #9, #10, #11, and #12 at the Glen Cove STP outfall (Photo by Carol DiPaolo)

The four stations located in the lower harbor are often inaccessible during low tides and are monitored less frequently. These stations include:

- CSHH #4 at the Bar Beach sand spit;
- CSHH #5 at Mott's Cove;
- CSHH #6 at a point east of the site of the former Town of North Hempstead incinerator;
- CSHH #7, the station farthest south in the harbor, on the east shore just before the new seawall for the new Bryant Landing development (just north of the Roslyn viaduct). (The former marker for this station was a portion of an old oil dock, which was removed during the construction of the Bryant Landing condominiums.)

Construction of Bryant Landing development near CSHH #7 (Photo by Carol DiPaolo)



Coalition to Save Hempstead Harbor Monitoring Locations Map

FREQUENCY OF TESTING AND TESTING PARAMETERS

Testing is conducted weekly, from May to November, at each station, generally on the same day of the week and at the same time (beginning at approximately 8 am and typically continuing for 4 hours). CSHH relies on town staff to assist with sampling and to provide boat transportation to sampling sites.

Water samples are collected by CSHH weekly (weather and tidal cycles permitting) from all 12 testing stations for bacterial analysis by the Nassau County Department of Health. In addition, tests for dissolved oxygen (DO), salinity, water temperature, pH, nitrite, nitrate, and ammonia are conducted weekly at CSHH #1, 2, 3, and 8 and monthly at CSHH #4, 5, 6, and 7. Chlorine testing is conducted at CSHH #8, near the outfall of the Glen Cove sewage treatment plant. A summary of the samples collected and analysis performed is presented in **Table 1**.

Physical observations are recorded regarding weather conditions, wind direction and velocity, water surface, air temperature, floatables, and wildlife and human activities. Whenever possible, floatable debris is retrieved and brought back to shore for disposal.

Dissolved oxygen, salinity, and water temperature are recorded with an electronic meter (YSI Model 600 sonde with 650 MDS display unit) at 1-meter depth increments at every station. A DO reading for bottom water is also measured using the Winkler titration method at the first testing station as a quality assurance check of the electronic meter. A pH probe was added to the YSI sonde in 2005, but pH is also measured using a LaMotte test kit– wide-range indicator that uses a color comparator.

LaMotte test kits are also used to measure ammonia and chlorine levels. Technicians at the Town of Oyster Bay Laboratory use an electronic kit (Hach) for measurement of nitrite and nitrate levels. Periodically, samples are also collected for plankton analysis by the Department of Health. The water samples for these test parameters are collected within a half meter of the water surface.

Table 1. CSHH Monitoring-Program Parameters

Parameter	Location	Analyzer or Method	Location of Analysis
Dissolved Oxygen	Vertical profiles at 1 m intervals at all locations	YSI 600	Field
Dissolved Oxygen	One location for electronic meter validation	LaMotte 7414	Field
Salinity	Vertical profiles at 1 m intervals at all locations	YSI 600	Field
Salinity	Meter calibration with known standard	YSI 600	Field
Temperature	Vertical profiles at 1 m intervals at all locations	YSI 600	Field
Temperature	One location for meter validation	Calibrated Thermometer	Field
pH	Vertical profile at 1 m intervals at all locations	YSI 600	Field
pH	One location for meter validation	LaMotte 2218 reagent	Field

Parameter	Location	Analyzer or Method	Location of Analysis
Ammonia	Grab sample half meter of surface at all locations	LaMotte 3304	Field
Chlorine	Surface grab sample at CSHH #8	LaMotte 3308	Field
Nitrate	Surface grab samples at all locations	Hach 8192	Oyster Bay Town Lab
Nitrite	Surface grab samples at all locations	Hach 8507	Oyster Bay Town Lab
Total* and Fecal Coliform Bacteria	Grab sample half-meter below surface at all locations	Most Probable Number	Nassau County Department of Health
Enterococci	Grab sample half meter below surface at all locations	Membrane Filter	Nassau County Department of Health
Secchi Disk	All locations	LaMotte Secchi Disk	Field

*After the 2004 monitoring season, NCDH discontinued analysis for total coliform, so, beginning in 2005, grab samples were for fecal coliform and enterococci only.

MONITORING RESULTS

This section summarizes results of the CSHH sampling program. Where possible, data is compared with historical data and includes data from 1995 through 2005. **Appendices A** and **B** contain graphs containing the data collected during this period.

Temperature

Water temperature is monitored to record seasonal and annual changes of temperature within the harbor, and to determine whether temperature could be affecting marine life, especially organisms that are in the southernmost limit of their habitat in the harbor. Water temperature is also used to determine the percent saturation of DO within the harbor, as described later in this report. Percent saturation is a measure of the amount of oxygen currently dissolved in water compared with the amount that can be dissolved in the water. Percent saturation is strongly influenced by temperature. For example, at 32ºF, the saturation concentration of DO in water is 14.6 ppm, whereas at 86ºF, the DO saturation concentration is 7.6 mg/L. Temperature monitoring determines whether the water column is stratified or well mixed.

Air temperature affects aquatic temperature, which affects both dissolved oxygen concentrations and biological activity within an aquatic system. However, since CSHH only records temperature data during monitoring events, temperature more strongly indicates the time of day that CSHH monitored a certain location. As a whole, however, monitoring events began at similar times each season, and have similar durations. As such, changes in temperature averaged between sites during a season could be indicative of annual variability in weather conditions.

Figure 1 presents average monitoring season air temperature recorded at CSHH #1 though CSHH #3 for each year since 1995. Average air temperatures recorded during the monitoring events vary by approximately 4 degrees during the period of record. On average, 2004 was the coolest monitoring season on record, with an average temperature of 19.5 ºC recorded at

the three stations, whereas average air temperatures for 1995 through 2003 and 2005 were 2 ºC warmer. In contrast, average air temperature in 2005 was more consistent with average temperature recorded from 1995-2003 (**Figure 1**). Somewhat similar characteristics are apparent in the water temperature data collected by CSHH during the monitoring season. **Figure 2** presents average annual water temperature for each monitoring location for the period of record. As with air temperature, many factors affect water temperature, but water temperature is more representative of conditions that occurred over several days and is not as heavily influenced by daily variation.

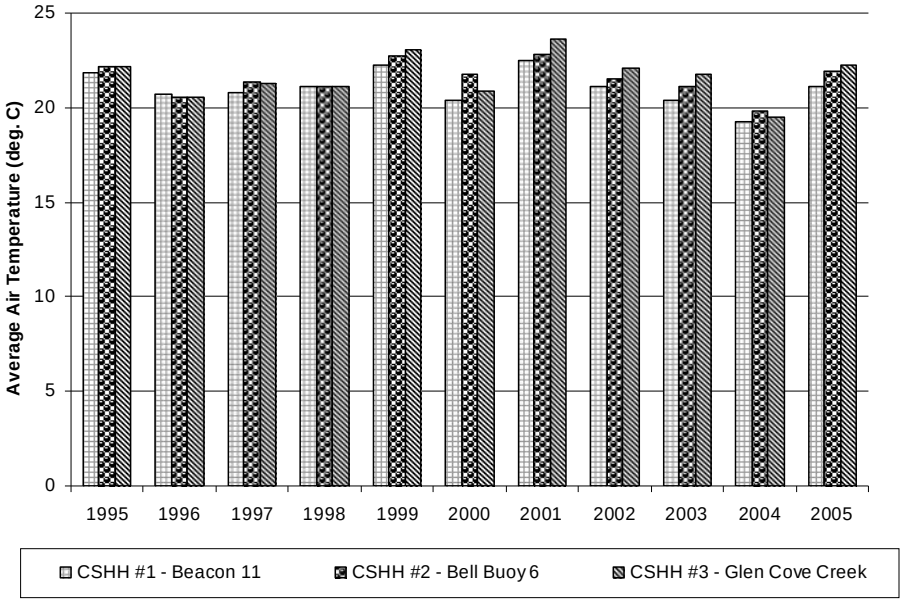


Figure 1. Average air temperature recorded during seasonal monitoring events

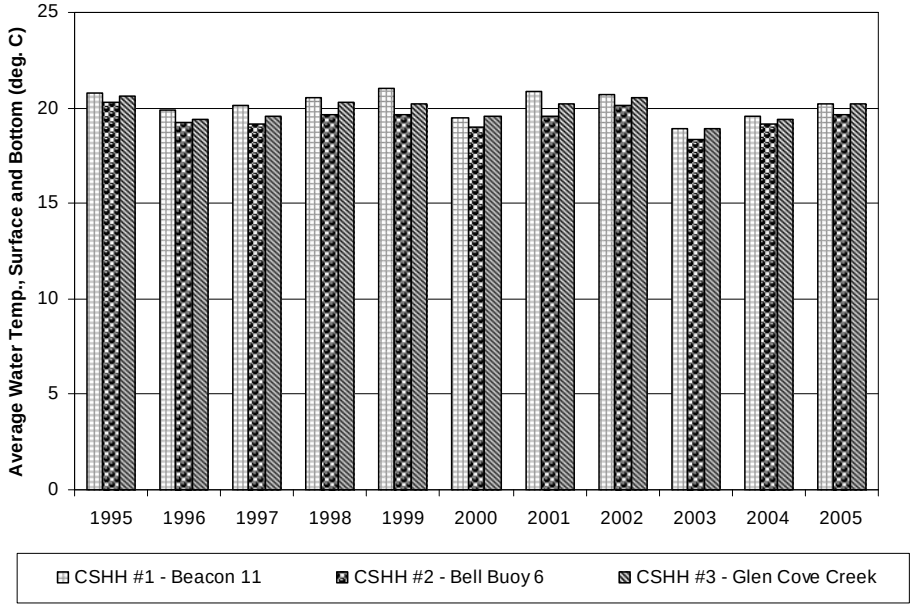


Figure 2. Average water temperature recorded during seasonal monitoring events

Measured water temperatures at CSHH #2 were lower than at the other monitoring locations during each year, although the temperature difference is generally less than 1 ºC. CSHH #2 is located at the mouth of the harbor and is more significantly influenced by the Long Island Sound's deeper, and thus cooler, water. In 2004 water temperature was slightly cooler than typical, as the second-coolest year on record, (although approximately 0.5 ºC warmer than in 2003). Water temperature recorded during the 2005 monitoring season was approximately equal to the average of the previous ten years (0.2 ºC warmer). See **Appendix A** for additional air and water temperature data results.

Salinity

Monitoring salinity assists in determining whether the harbor is being influenced by tidal water or by freshwater from the watershed (i.e., whether any water-quality problems result from storm water, wastewater, other discharges, or from tidal backwater). Like temperature, salinity is an indicator of the water's oxygen-holding capacity and whether the water column is stratified.

Salinity can also affect dissolved oxygen levels; the saturation level of dissolved oxygen at 25 ppt salinity is equal to approximately 85% of the saturation level of dissolved oxygen for freshwater. In Long Island Sound, salinity generally ranges between 21 ppt and 28 ppt (as compared with 32 ppt as we move from the sound to the ocean). Salinity levels within an estuary are generally affected by proximity to freshwater inflows, such as rivers or sewage treatment plant discharges, and through direct precipitation and runoff.

Figure 3 presents average annual salinity levels at CSHH #1, #2, and #3 for the period of record. Salinity levels in Hempstead Harbor generally vary less than in the sound. During the testing season, salinity readings in Hempstead Harbor usually range from 23 ppt to 28 ppt, with lower readings generally observed in the spring, and gradually increasing through the fall.

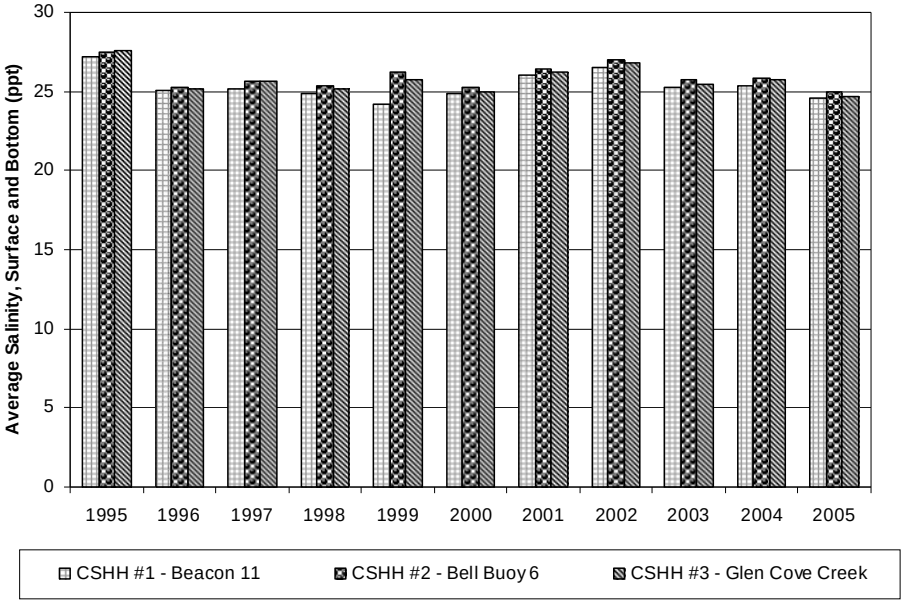


Figure 3. Measured average salinity in Hempstead Harbor during the monitoring season

Additionally, salinity levels measured at the bottom of the harbor are generally higher than those near the surface, since high salinity water is denser and tends to sink. Hempstead Harbor does not generally exhibit pronounced stratification characteristics in the summer months; since the harbor is relatively shallow and strongly influenced by tides, vertical mixing likely prevents formation of a thermocline (steep temperature change within a small layer of the water column). However, surface salinity levels are often approximately 1 ppt lower than those at the bottom.

In most years (1996 through 2000, and 2003 through 2005), average salinity levels within the harbor during the monitoring season were approximately 25 ppt (± 1 ppt), and the remaining years were characterized by slightly elevated levels, such as 1995 when average salinity during the monitoring season was above 27 ppt at each station. Salinity levels in 2004 were approximately equal to average levels from 1995 through 2003 (24.6 ppt). During 2005, average levels were approximately 0.9 ppt less than the average levels from the same period. See **Appendix A** for additional salinity data results.

It is notable that an unexpected salinity result occurred on September 8, 2004. On that date, a salinity value of 2.42 ppt was recorded at CSHH #8, 0.5 m below the water surface. This value is approximately one order of magnitude lower than values typically measured at that location (levels measured during other weeks at that location ranged from 21.4 to 25.3 ppt). On the same day, 153 mm of rainfall was measured in Sea Cliff. Following measurement of this result, salinity levels of 10.67 and 26.34 ppt were recorded at 1 m depth and the bottom (approximately 2 m), respectively. It is likely that the low levels resulted from direct precipitation and storm-water runoff diluting water at the surface of that area of Glen Cove Creek.

Precipitation

Precipitation affects Hempstead Harbor water quality through direct precipitation (precipitation that falls directly on the harbor surface) and through storm-water runoff. Although both of these inputs can reduce the harbor's salinity, direct precipitation will tend to dilute the quantity of pollutants (although direct precipitation can carry airbourne pollutants) in the harbor, while storm-water runoff will tend to increase pollutant loads by washing bacteria, chemicals, and nutrients that have accumulated on the ground surface in the watershed into the harbor.

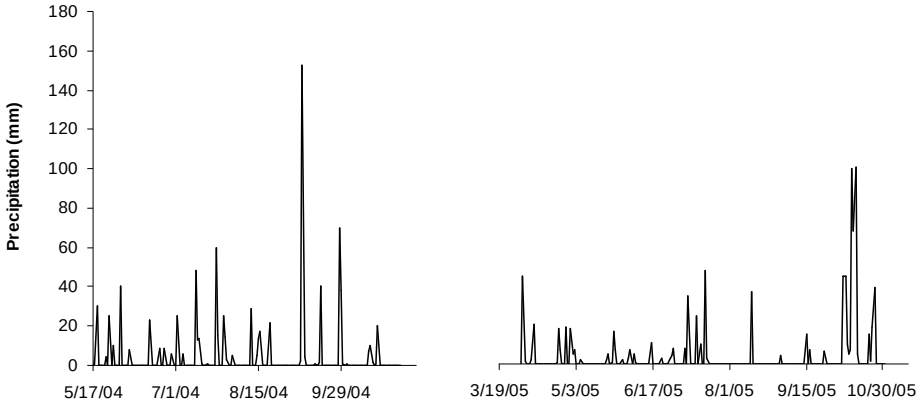


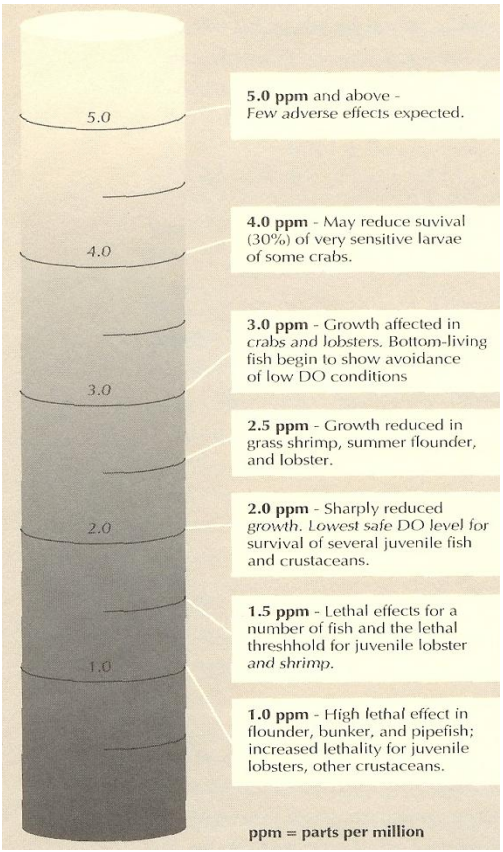
Figure 4. Time series of CSHH precipitation data for the 2004 and 2005 monitoring seasons (end of May through October)

CSHH collects precipitation data using a rain gauge located in Sea Cliff (note that 25.4 mm is equivalent to approximately 1 inch). **Figure 4** presents a precipitation time series for the Hempstead Harbor monitoring season in 2004 and 2005. **Table 2** presents monthly total precipitation for June through October 1997 through 2005.

Table 2. Monthly Rainfall Totals for the 1997-2005 Monitoring Seasons, in mm

	June	July	August	September	October	Total
2005	45	81	41	28.5	460.5	656
2004	95	214	91	310.5	40	750.5
2003	291.5	87	88	194.5	134	795
2002	180.5	22.5	175.5	116.5 (9/15-30)	180	675+
2001	167	70.5	165	94	19.5	516
2000	146	159	158	125	6	594
1999	31	21	135	323	92	602
1998	191	59	145	90	97	582
1997	47	232	141	84	27 (10/1-15)	531+

Dissolved Oxygen



Effect of DO on marine life. (Source: Hempstead Harbor, Its History, Ecology, and Environmental Challenges, 1998)

Dissolved oxygen, the form of oxygen marine life needs to survive, is an important indicator of the health of our Long Island Sound estuary. Hypoxia (low oxygen) and anoxia (no oxygen) are common water-quality problems in Hempstead Harbor and in other areas in and around Long Island Sound, particularly the western sound. DO is indirectly affected by nutrient enrichment, particularly nitrogen, which can enter Hempstead Harbor through storm-water runoff, discharges from sewage treatment plants, or leaching from failing septic systems. Nitrogen accelerates the growth of phytoplankton or algae, causing frequent or prolonged "blooms." When the cells in the plankton blooms die off, the decomposition process depletes the available dissolved oxygen.

Although many algal species produce oxygen during their growth stage through photosynthesis, algal mortality and subsequent decay generally influence DO levels more strongly, especially later in the summer when more organic matter is decaying and rates of photosynthesis are declining. Therefore, productive aquatic ecosystems with larger nutrient loads are more prone to low DO levels. The impact of temperature and salinity on DO levels in these ecosystems is generally of secondary importance. Since the majority of organic-matter decay occurs at the estuary bottom, DO levels tend to be higher at the surface and lower at the

bottom of the water column. Density-dependent stratification, such as elevated salinity levels at the harbor bottom, inhibits mixing and exaggerates this affect.

Generally, levels above 5 ppm are considered healthy; levels below 5 ppm begin to cause various adverse impacts (related to growth, reproduction, and survival). The severity of impacts, and threshold DO levels where impacts occur, are strongly species dependent. The New York State Department of Environmental Conservation has established a water-quality standard of 5.0 ppm for class B estuarine waters, such as Hempstead Harbor (the class designation depends on typical uses of the water).

However, states often interpret effects of environmental conditions on marine life differently; for example, Connecticut has established a standard of 5.0 ppm, and defined maximum periods for which exposure to low DO is allowed. Critical levels of DO, below 3.0 ppm, can be lethal for certain marine species.

Percent saturation of dissolved oxygen is also monitored in Hempstead Harbor. Percent saturation is a measure of the amount of oxygen currently dissolved in water compared to the amount that can be dissolved in the water, and is influenced by variability in temperature and salinity. In a marine system with abundant nutrients and organisms, such as Hempstead Harbor, dissolved oxygen levels near the surface can be oversaturated during the day (greater than 100%) due to photosynthesis by algae, and undersaturated at night (50% or lower) due to decay of dead organic matter (respiration).

This report compares DO measurements collected at the bottom of Hempstead Harbor, which are considered critical because bottom-dwelling marine life have more difficulty than other marine species in trying to escape low DO (hypoxic, less than 3 ppm for purposes of this report) conditions. Hypoxic and anoxic (no DO, less than 1 ppm in this report) conditions have been implicated in fish kills in Hempstead Harbor, particularly of bunker but also of juvenile flounder and other species.

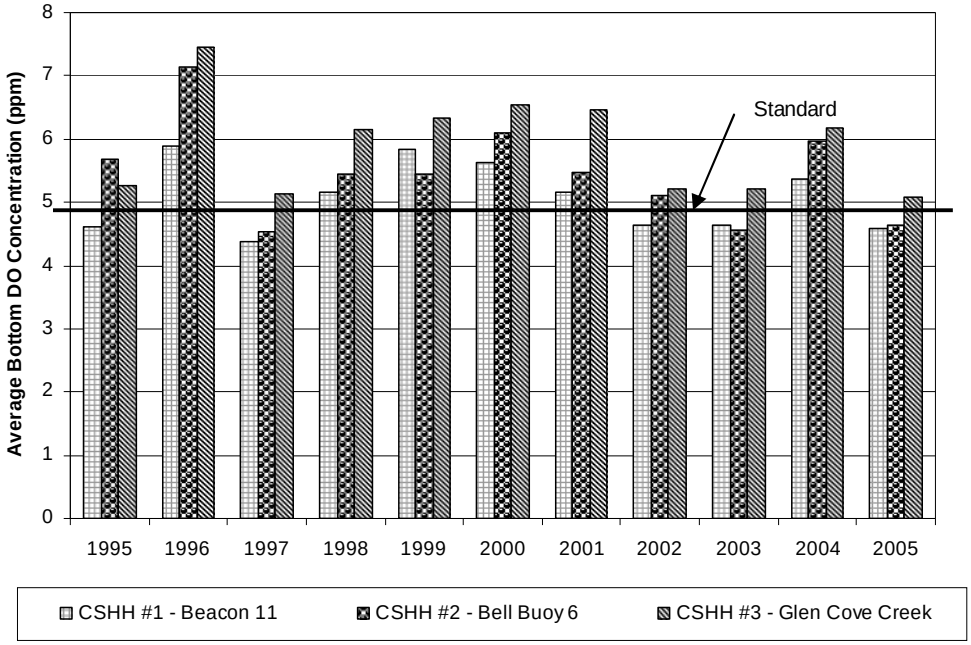


Figure 5. Measured average DO in Hempstead Harbor during the monitoring season

Fortunately, there were no fish kills during 2001 through 2004 despite extended periods of hypoxia. A clam kill did occur in 2005 south of Bar Beach, near CSHH #5, but this kill reportedly resulted from lunar/tidal effects and not hypoxia. **Figure 5** presents average annual dissolved oxygen levels at CSHH #1, CSHH #2, and CSHH #3 for the period of record. This data is also summarized in **Table 4**, along with results for CSHH #8.

Table 4. Average Monitoring Season Dissolved Oxygen Levels in Hempstead Harbor

Average Bottom DO(ppm)	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995
CSHH #1	4.59	5.36	4.63	4.64	5.16	5.64	5.85	5.17	4.39	5.90	4.6
CSHH #2	4.63	5.96	4.55	5.11	5.46	6.10	5.44	5.45	4.54	7.11	5.67
CSHH #3	5.09	6.17	5.21	5.2	6.47	6.54	6.32	6.48	5.15	7.45	5.26
CSHH #8	5.76	6.58	5.28	6.11	6.82	7.35	7.14	N/A	N/A	N/A	N/A

The 2001 through 2003 Water Quality Report stated that bottom DO averages for 2002-2003 were lower than in preceding years. Increased average DO levels were observed during 2004, ranging from 5.4 to 6.6 ppm between the sampling locations, while 2005 levels were similar to those recorded in 2003 and 2002 (average levels at the sampling locations ranged from 4.6 to 5.8 during that monitoring season). DO concentrations appear to be consistently lower at CSHH #1, increasing through CSHH #2 and #3, and consistently highest at CSHH #8. This pattern may be due to one or more factors, such as higher DO in the outfall from the STP, mixing of harbor and sound waters characterized by different DO, or time of sample collection.

Figure 6 presents a time series plot of the harbor bottom dissolved oxygen data collected during the 2004 monitoring season at CSHH #1, #2, #3, and #8. During 2004, minimum DO levels occurred at CSHH #2 in July and August, at CSHH #8 in August, and CSHH #1 in September. During several monitoring events in this period, bottom DO levels were below 2.0 ppm at these locations. **Figure 7** presents a time series plot of the bottom dissolved oxygen levels data collected during the 2005 monitoring season at CSHH #1, #2, #3, and #8. During this period, anoxic conditions developed at each of the monitoring locations except the location adjacent to the Glen Cove STP outfall (CSHH #8). **Table 5** presents a summary of dissolved oxygen data for 1996 through 2005, showing variations in the number of dissolved oxygen measurements in DO significant DO ranges from year to year.

Although bottom conditions became hypoxic at approximately the same time in the monitoring season in both years (mid-June), anoxia was measured at CSHH #1, #2, and #3 during much of August. DO levels at the Glen Cove STP outfall were higher, likely due to residual dissolved oxygen in the STP effluent resulting from treatment processes and from turbulence occurring at the discharge location, where surging water churns oxygen into the water column. The cause of low DO is difficult to discern. Anthropogenic factors that may be reducing DO levels at the bottom of Hempstead Harbor and Long Island Sound include nutrient enrichment from wastewater treatment plant discharges; overuse of fertilizers in agriculture, home gardening, and golf-course maintenance; and residual oxygen demand in bottom sediments from past industrial activities.

Natural factors that could affect DO levels are discussed in detail in the **Temperature** and **Salinity** sections of this report. It is also possible that differences in wind patterns could affect

vertical mixing within the water column, resulting in a well-mixed water column during some years, and a more stratified water column in others.

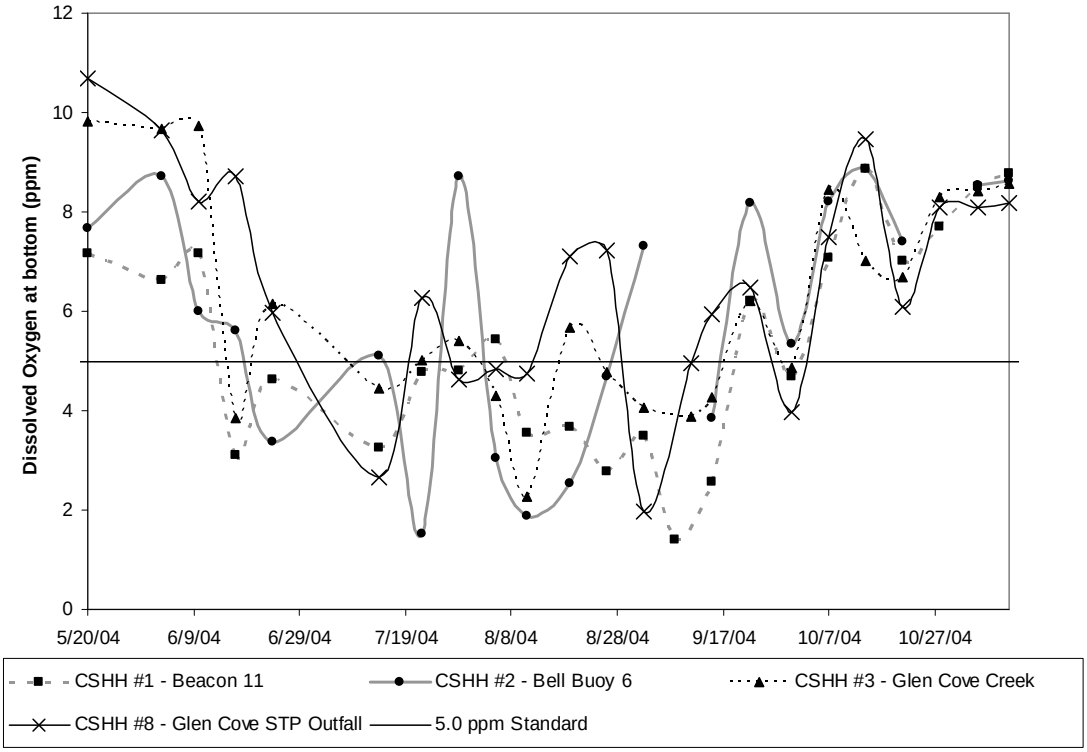


Figure 6. 2004 Dissolved oxygen time series for four Hempstead Harbor locations

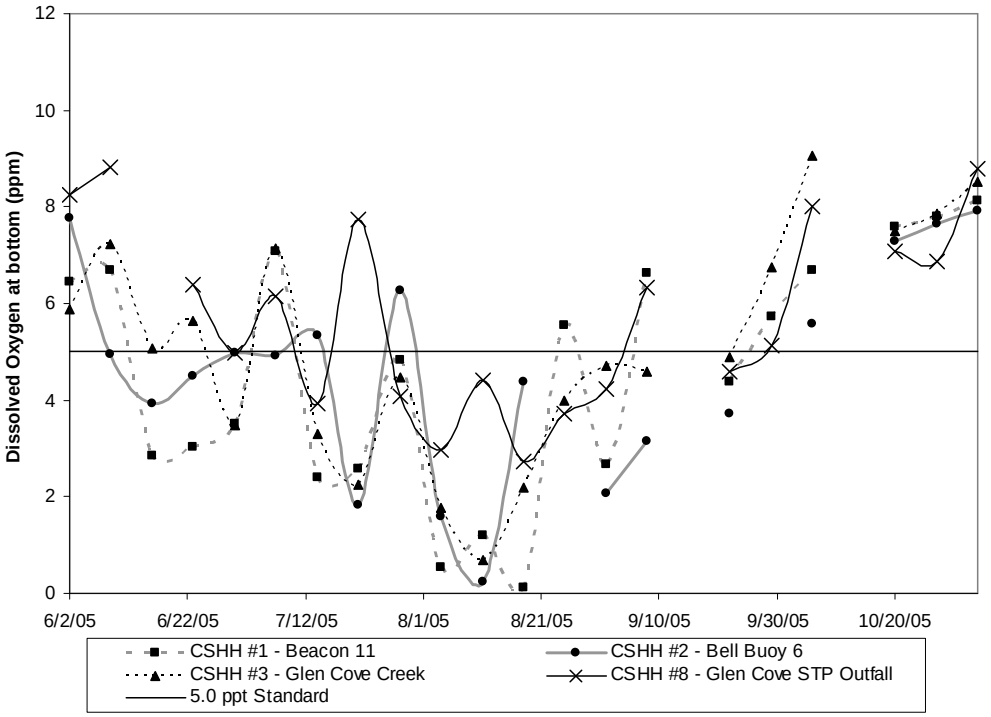


Figure 7. 2005 Dissolved oxygen time series for four Hempstead Harbor locations

Table 5. DO Readings 1996-2005—Number and Percentage of Testing Dates at Which DO Tested at Specific Levels

	>6 ppm		5 to 6 ppm		3 to 5 ppm		<3 ppm	
			Beacon 11					
1996	11	58%	—	—%	3	16%	5	26%
1997	4	27	3	20	4	27	4	27
1998	8	40	4	20	6	30	2	10
1999	11	50	3	14	5	23	3	14
2000	8	44	2	11	8	44	0	0
2001	7	37	3	16	6	31	3	16
2002	5	26	5	26	3	16	6	32
2003	5	25	5	25	5	25	5	25
2004	7	35	1	5	9	45	3	15
2005	8	35	2	9	4	17	9	39
			Bell Buoy 6					
1996	10	63%	2	13%	3	19%	1	6%
1997	2	13	2	13	5	33	6	40
1998	9	50	2	15	5	28	2	11
1999	8	42	1	5	6	32	4	21
2000	11	61	3	17	3	17	1	6
2001	8	42	5	26	2	10	4	21
2002	9	50	0	0	4	22	5	28
2003	6	32	4	21	4	21	5	26
2004	8	44	3	17	4	22	3	17
2005	5	22	2	9	8	35	8	35
			Glen Cove Creek					
1996	12	63%	2	11%	4	21%	1	5%
1997	6	38	2	13	4	25	4	25
1998	12	63	2	11	3	16	2	11
1999	13	59	3	14	3	14	3	14
2000	13	68	2	11	4	21	0	0
2001	11	58	2	10	4	21	2	10
2002	10	53	0	0	4	21	5	26
2003	8	42	3	16	5	26	3	16
2004	8	40	3	15	8	40	1	5
2005	7	30	3	13	7	30	6	26
			Glen Cove STP Outfall					
2001	12	63%	5	26%	1	5%	1	5%
2002	7	37	8	42	3	16	1	5
2003	7	35	6	30	5	25	2	10
2004	11	65	2	10	5	25	2	10
2005	10	43	1	4	7	30	5	22

Bacteria

The Nassau County Department of Health and the New York State Department of Environmental Conservation (DEC) use ***bacteria levels*** to open or close swimming beaches and shellfish beds. Coliform and enterococci bacteria are typically found in human and warm-blooded animals and are indicators of fecal contamination and the potential for the existence of other organisms that may have an adverse impact on human health.

Total coliform bacteria is widely present in the environment, while fecal coliform is most commonly found in the intestines of warm blooded animals and birds, and enterococci is most prevalent in the human digestive system. NCDH measures and records the most probable number (MPN) of bacterial cells present in a sample, and then calculates the logarithmic average of the results, which reduces the influence of large spikes on the average values. The resulting values are used to determine the likelihood that fecal contamination is present.

During the 1980s, there were chronic raw sewage spills into Hempstead Harbor, which caused elevated levels of pathogen contamination, affecting shellfish beds and recreational use of the harbor. Between 1986 and 1990, beaches around Hempstead Harbor were closed an average of eight days each beach season due to high coliform counts. Beach closures dropped off significantly during the early years of CSHH's monitoring program, and, for beach seasons 1994-1999, there were no beach closures due to high bacteria levels. However, even though water quality has improved remarkably, NCDH has closed beaches around Hemptead Harbor preemptively; that is, in 2000, in addition to beach closings based on bacteria sample results, NCDH instituted preemptive or administrative beach closings following rain events that exceed a threshold level and duration of precipitation. That threshold is established at the beginning of each season based on previous sample results (often 0.5 inch of rain or more). In 2004, beaches around Hempstead Harbor were closed preemptively for nine days, related to six rain events: July 13-15; July 28; August 12-13, August 15; August 22; and August 31. In 2005, beaches around the harbor were preemptively closed four days, related to three rain events: July 6; July 8-9; and August 15. Changes in government regulations, testing protocols, and methodologies for sample analysis made it difficult to compare water-quality conditions relating to bacteria levels.

CSHH collects bacteria data weekly (weather and tide permitting) at the 12 CSHH monitoring stations in Hempstead Harbor. Four of these sites were used as temporary sites in 2004 but became part of the regular sampling program in 2005; they are located near the Glen Cove STP and were added to test for the presence of bacteria from discharge pipes in the vicinity of the STP. Samples for bacteria testing are also collected twice a week by the Nassau County Department of Health at five beaches around the harbor. In 2004, these bacteria samples were analyzed at the NCDH laboratory for total coliform bacteria, fecal coliform bacteria, and enterococci bacteria. In 2005, NCDH ceased total coliform analysis and analyzed samples for fecal coliform and enterococci only, in conformance with beach closure standards that were implemented in 2004 (see the following section on **Beach Closure Standards**). Enterococci data is not included in this report for 2004, since EPA changed the methodology for performing the analysis at the beginning of 2005. The resulting method change means that the 2004 results are not comparable to results from later years. In 2005, regulatory agencies determined the appropriate method to be used, ensuring the comparability of data from that year with data collected in the future.

Beach Closure Standards

In October 2000, Congress enacted the Beaches Environmental Assessment and Coastal Act of 2000 (BEACH Act), which gave EPA the authority to set and impose water-quality standards for coastal beaches throughout the United States and compelled all states to adopt new criteria for determining beach closures by April 2004. Anticipating that the new standards would require using a different indicator organism in analyzing water samples, the NCDH began doing parallel testing in 2002, using the state's current indicator—coliform (both total and fecal)—along with the proposed indicator—enterococcus. Both coliform and enterococcus are naturally present in the human intestine and, therefore, could indicate the presence of other potentially harmful organisms. (Both coliform and enterococci are present also in the intestines of warm-blooded animals and birds.) EPA considers the enterococcal standard to be more closely correlated with gastrointestinal illnesses and, therefore, more protective of human health. However, there have been only limited studies as to the effectiveness of using the enterococcal standard. A primary advantage in switching to the new standard is that it takes only 24 hours to obtain results, whereas it takes 48 hours to obtain results using the coliform standard.

New York instituted new beach closure standards on June 23, 2004, presented in NYCRR Title 10, Section 6-2.15. The new standards for marine water include:

(1) Based on a single sample, the upper value for the density of bacteria shall be:

- 1,000 fecal coliform bacteria per 100 ml; or
- 104 enterococci per 100 ml for marine water.

(2) Based on the mean of the logarithms of the results of the total number of samples collected in a 30-day period, the upper value for the density of bacteria shall be:

- 2,400 total coliform bacteria per 100 ml; or
- 200 fecal coliform bacteria per 100 ml; or
- 35 enterococci per 100 ml for marine water.

Figures 8, 9, 10, 11, and **12** below compare logarithmic average monthly bacteria levels for samples collected by the NCDH at five beaches around Hempstead Harbor. Note that the averages in these figures are calculated for each calendar month and are not the rolling log averages as used by the NCDH (rolling log averages are calculated each week for the previous month). Note that total coliform samples were not collected in 2005. Additionally, although tests were conducted for Enterococci in 2004, data was not included because the EPA recommended a new analytical method for use in 2005 and later. The method used in 2004 and prior generally produces higher results, which are not comparable with results from the new method.

The graphs below show wide variations in monthly and seasonal averages as well as among the five beaches. Variability is also illustrated by the variability in bacteria concentrations from samples collected at an individual beach in a particular day (e.g., the 2004 Sands Point Golf Club data, presented in **Appendix B**. In 2004, peak monthly average bacteria levels occurred in early to mid summer (May, June, or July, although not at the beach at the Sands Point Golf Club), while in 2005 peak bacteria levels occurred in late summer. In addition, average sample results were generally lower in 2005 than in 2004. It is also difficult to see clear and consistent influences from rainfall when rainfall dates are plotted against coliform counts, as presented in **Appendix B**.

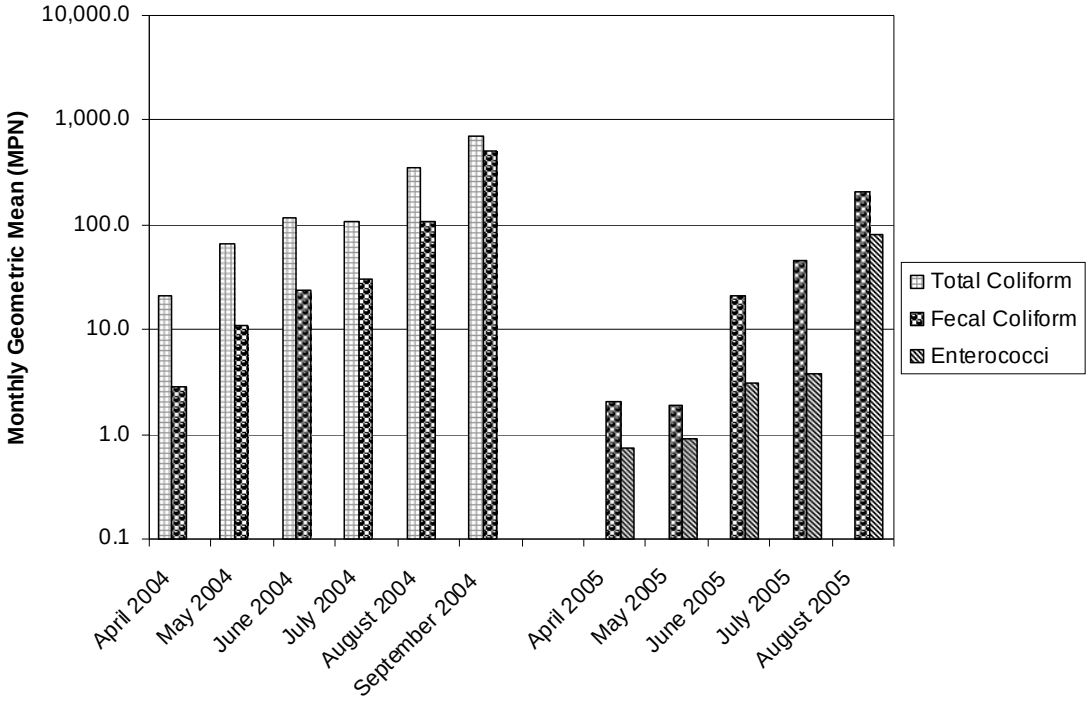


Figure 8. Monthly logarithmic average bacteria results for Sands Point Golf Club

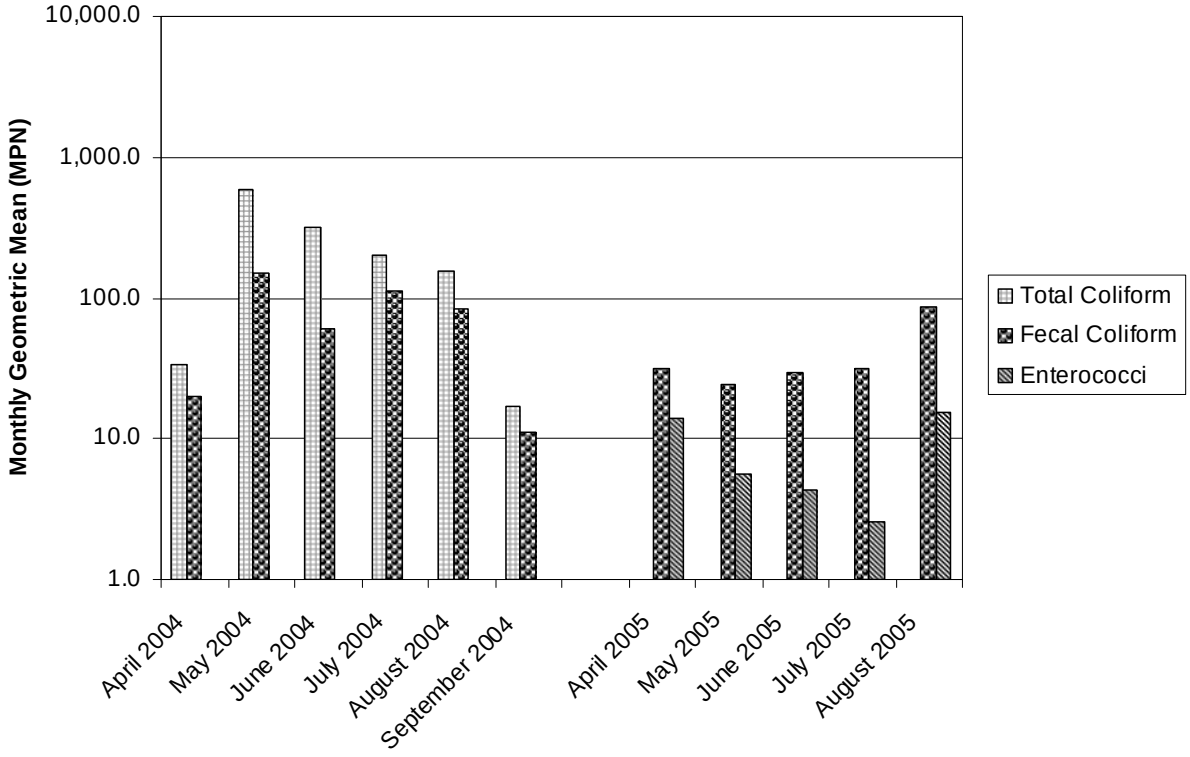


Figure 9. Monthly logarithmic average bacteria results for Bar Beach

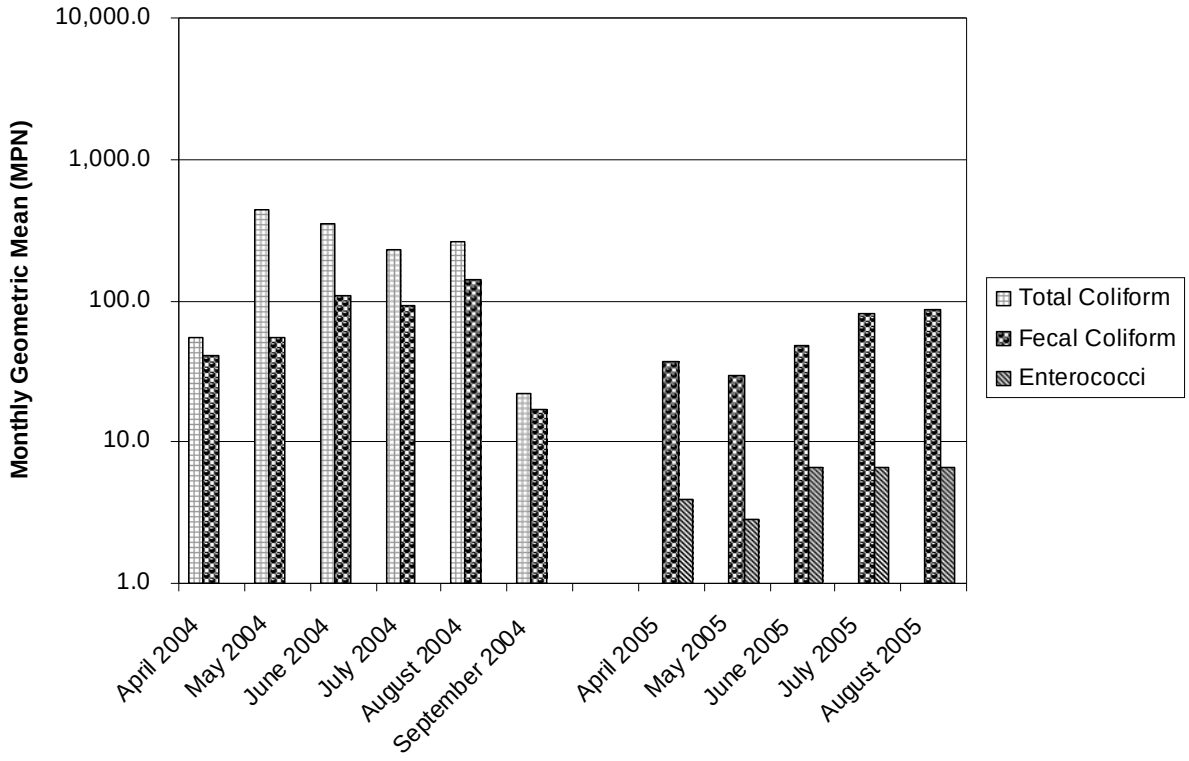


Figure 10. Monthly logarithmic average bacteria results for Hempstead Harbor Beach

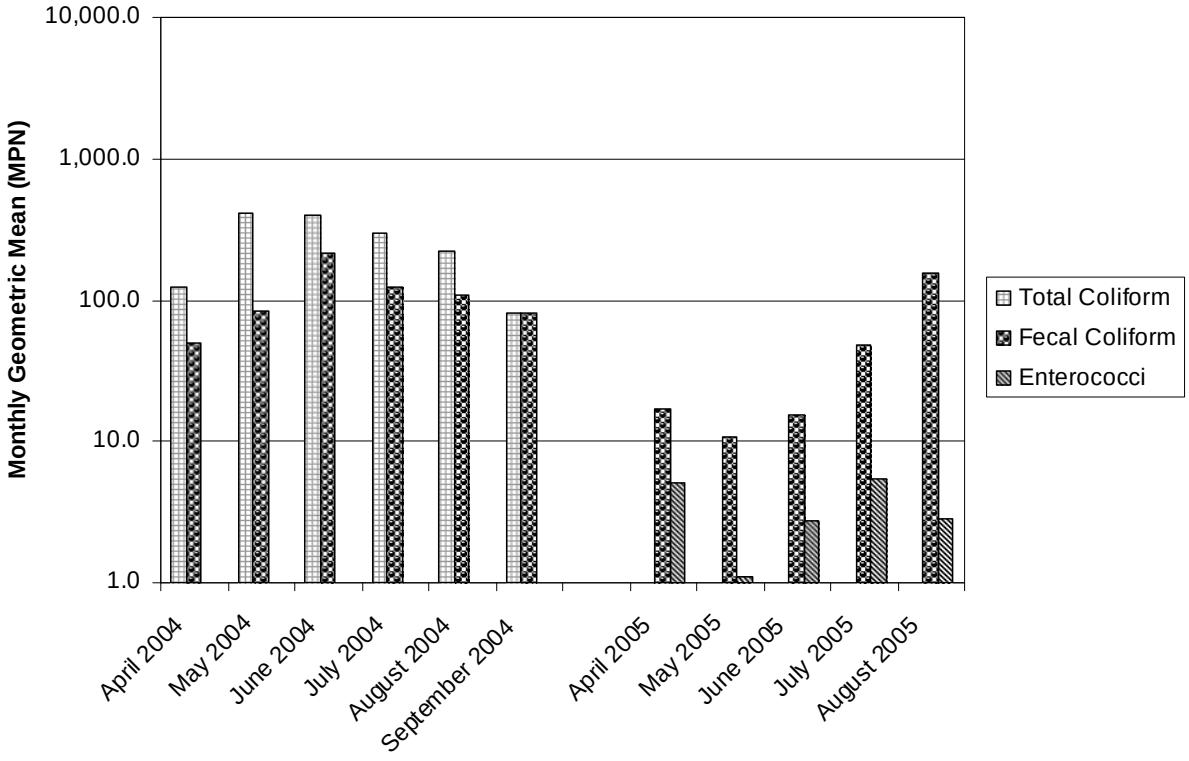


Figure 11. Monthly logarithmic average bacteria results for Tappen Beach

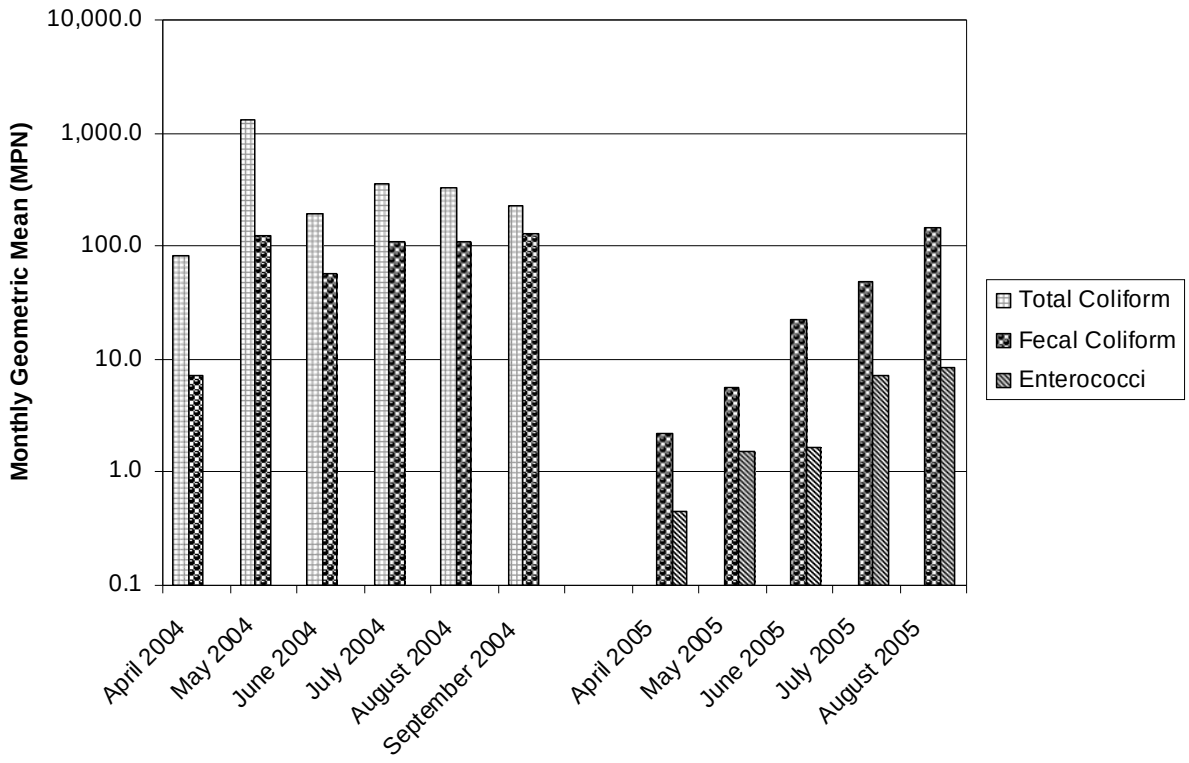


Figure 12. Monthly logarithmic average bacteria results for Sea Cliff Village Beach

Several notable characteristics of the bacteria data are present in **Figures 8** through **12**. In general, fecal and total coliform data vary consistently between months; changes in fecal coliform levels generally correspond to proportional changes in total coliform levels. For example, the 2004 Tappen Beach monitoring data shows fecal and total coliform levels increasing from 50 and 122 MPN/ mL, respectively, in April to 217 and 402 MPN/100 mL respectively in June, and then declining to below 100 MPN/100 mL in September.

In addition to the monthly average beach data, time series plots of bacteria monitoring results and precipitation are presented in **Appendix B**. As bacteria data is collected on a weekly basis, these plots show a "snapshot" of conditions at the time of sampling. Given the inherent variability in microbial water quality, this data is most useful to determine if particular monitoring locations have consistently higher or lower fecal coliform or enterococci concentrations or if a monitoring location is particularly influenced by rainfall, wind, and currents. The time series plots in **Appendix B** indicate that elevated bacteria concentrations at CSHH #1 and CSHH #8 typically correspond to precipitation events. CSHH #2 appears to have generally lower bacteria concentrations than other monitoring locations, possibly as a result of dilution associated with its location near the mouth of the harbor, as well as its greater distance from stormwater discharges and areas of bird activity.

Nitrogen

The presence of ***ammonia*** in the harbor can indicate nutrient enrichment. Ammonia should only be present in significant quantities due to malfunctioning wastewater treatment systems, including septic tanks, cesspools, and publicly owned treatment works (POTWs). Ammonia is

monitored weekly at CSHH #1, 2, 3, and 8. If ammonia is detectable at CSHH 1, a midpoint in the harbor, it is likely the result of an unusual event (a failing water-treatment system or even a large presence of fish), and ammonia levels are then measured at the other locations using a salicylate method for fine-tuning the results. If ammonia is not detectable at CSHH #1, it is unlikely that ammonia will be detectable at other locations except CSHH #8 (due to the discharge from the Glen Cove STP).

Nitrate and ***nitrite*** occur in later stages of the nitrogen cycle and are normally present in the estuary. However, high concentrations indicate enrichment problems and can also be used to anticipate algal blooms and hypoxia. The samples that are collected at each location for nitrate/nitrite and are subsequently analyzed at the Town of Oyster Bay laboratory.

Excess nitrogen can enter local waters through storm water runoff (rain washes animal wastes and fertilizers from lawns and gardens into roadways, down into storm drains, and eventually into the harbor) as well as through discharges from sewage treatment plants. Nitrogen is required by algal cells for growth and reproduction, and excess nitrogen results in excess algal growth if phosphorus and other trace nutrients are present in adequate quantities (these nutrients are typically present in relatively large quantities in marine environments). As the algal cells decompose, they use up available dissolved oxygen, which can have adverse impacts on marine life (see the previous section on Dissolved Oxygen).

Following years of studies and modeling around Long Island Sound, nitrogen discharge limitations were imposed on sewage treatment plants all around the sound to reduce nitrogen inputs, thereby reducing algal blooms and the frequency and duration of low oxygen levels throughout the sound. However, reducing storm water inputs is more complicated because the sources of nitrogen and other pollutants are so diffuse.

CSHH takes samples weekly at upper harbor stations (CSHH #1, 2, 3, and 8) and approximately monthly at lower harbor stations to test for all elements in the nitrogen cycle--nitrite (NO2), nitrate (NO3), and ammonia (NH3). Nitrite and nitrate samples are currently analyzed at the Town of Oyster Bay lab using an electronic Hach kit. Ammonia is measured on board at the different stations using a LaMotte testing kit.

The 2004 and 2005 nitrogen data was not yet available at the time of the writing of this report. The data will be included in the water quality monitoring report for 2006.

Other Monitoring Parameters

Water clarity is monitored through the use of a Secchi disk–a white plastic disk that is lowered into the water to determine the lowest depth at which ambient light can penetrate the water column. In most nutrient-rich waters, such as Hempstead Harbor and Long Island Sound, Secchi-disk depth is limited by the amount of plankton or algae in the water, and so Secchi readings are usually at 1 to 2 meters for Hempstead Harbor during the summer months. The large amount of plankton in the water is also responsible for giving the harbor its usual green to brown color.

CSHH's program includes monitoring of total and free ***chlorine*** adjacent to the STP outfall to monitor the amount of chlorine discharged into Glen Cove Creek. The Glen Cove STP chlorinates its effluent to kill off potential pathogens. The STP then removes the ***chlorine***

before discharging the treated water to Glen Cove Creek. Because by-products of chlorine can have an adverse impact on marine life, regulations require that total residual chlorine contained in the water discharged from the STP to the creek be limited to 1-**2 ppm.**

pH is monitored to follow trends in aquatic life and water chemistry. Carbon dioxide (CO_2) release by bacteria respiration and uptake via plant photosynthesis affect aquatic pH over short periods (hours to days), whereas the increase in atmospheric CO_2 may affect aquatic pH over decades.

OBSERVATIONS

Fish Survey

Although fish surveys do not fully reflect the quantity or diversity of the fish population in Hempstead Harbor, they often provide information that would not otherwise be available to us. Tidal cycle, water temperature, weather conditions, time of day, and location affect the catch during a survey. All the fish caught during a survey are quickly counted by the shoreline, with the largest and smallest of each species measured and recorded, and all are quickly released back into the water.

A fish survey was conducted in Hempstead Harbor on October 21, 2004, 4:30-6pm. A seine net was dragged at the three sites around the harbor that have been used in previous surveys: the shoreline east of the Sea Cliff Yacht Club, Tappen Beach, and the south side of the Bar Beach sandspit. Only the usual baitfish were caught during this survey: 122 spearing east of the Yacht Club (1-1/2" to 4-1/2"); 775 spearing (1-3/4" to 4-7/8") and 36 striped killifish (2-1/2" to 4-7/8") at Tappen Beach; and 183 spearing (1-3/4" to 5"), 6 mummichogs (1-1/2" to 2"), and 46 striped killifish (1-1/2" to 3") at the south side of Bar Beach. However, thousands of peanut bunker were observed jumping in the area of Bar Beach, and we tried to avoid them.

Power Station Entrainment Monitoring

An "entrainment and impingement monitoring program" was conducted at the Glenwood Landing power station from January 14, 2004, to January 5, 2005, for KeySpan LLC Generation. KeySpan is required by its State Pollution Discharge Elimination System Permit (SPDES) to conduct a one-year study to estimate the numbers of fish and invertebrates that are drawn into the plant's water intake from Hempstead Harbor; harbor water is used in a "once-through cooling water system" to cool steam-electric generating units. (See *Glenwood Power Station Entrainment and Impingement Monitoring, January 2004-January 2005*, ASA Analysis & Communication, Inc., September 2005).

Monitoring was conducted weekly from March through September and every other week during the rest of the monitoring period. Because of the frequency of monitoring samples taken, a much more accurate picture is provided of the diversity of marine life in Hempstead Harbo. Thirty-four types of fish and several other marine animals, including crabs, mantis shrimp, and squid, were also included in samples. Potential annual losses were estimated for seven species (Atlantic menhaden, Atlantic, silverside, bay anchovy, Gobiidae, mummichog, striped killifish, and winter flounder). Although the report states that "the losses of important commercial and recreational species entrained and impinged" at the Glenwood Landing plant "represent only a small fraction of the long-term average annual harvest of these species in

New York waters," the numbers of each species estimated to be taken into the plant annually and the estimated annual losses are startling.

Recreational Fishing Reports

Members of the Hempstead Harbor Anglers have reported their catches over the years, particularly through Peter Emmerich, a former president of the fishing club. In **2004**, Pete reported that large numbers of stripped bass were in the harbor in the spring. By early August low DO levels may have had an impact on empty bait traps that were set near Tappen Marina, but Pete saw little other evidence of the fish being affected:

"I haven't really seen anything to support low oxygen, but maybe because we are always fishing outside "the harbor." One thing I've notice is my traps at Tappen are barren. No eels, no crabs, no small baitfish. We have been fishing at Mott's point, and in the last couple of weeks a couple of my buddies have reported good Fluke catches at Rum Point and at the barges. Those spots are certainly in the harbor. Around Motts there is plenty of small bait, and we are always being attacked by small snapper blues. I did catch some baby snapper in Brewers Marina last Saturday all over all the spearing you want.

Fluke fishing at Mott's, and The Elephant Herd has been a steady pick. Did real well Saturday between the Herd and the Castle on the West shore."

By August 31, 2004, the fishing scene changed dramatically:

"The harbor has exploded with bluefish, and they are chasing just huge amounts of shiners and peanut bunker. The middle of August and the entire harbor looks like Montauk during the November migration. The fluke have picked up in areas of Maxwell's break water, some of the best quality fish we've seen all year, and we want to continue on the fluke as the season will close 9/6/04.

The Long Island Sound WICC largest bluefish contest…was held last weekend, and although the largest fish caught were smaller than years past the quantities are massive. The bluefish are making an amazing comeback, and I think it has to do with the amount of bait in the water."

On October 20, 2004, Pete and others seemed to have had their fill of bluefish:

"I stopped blue fishing early last week, never went past the barges two nights last week to take all the blues I could handle on live bunker. The same complaint persists from all the fishermen– the blues are so thick and angry that it is very difficult to reel in a snagged bunker before a blue either tears it up or is hooked on the snagger. Tough problem, huh? I love smoked bluefish so I have enough in the freezer to smoke while leaves are raked this fall.

The reports I hear this week are that the bunker schools are getting harder to find, but I was at Tappen Marina Thursday night 10/13, and once again I can't believe the amount of peanut bunker in the marina. This is going to keep fish around for a while.

My buddies have begun to blackfish since the season opened 10/1. One friend is catching 20 to 30 blacks a tide on fiddler crabs on the wreck off Maxwell's/Crescent Beach, but everything

is small, has not seen a keeper (17inch) yet."

There was a follow-up the next day:

"…and just as I'm talking about water temp and blackfish, all the boys weighed in blacks at 5 and 6 pounds over the last 2 days, so I guess the temp finally changed to allow the big boys to hit the reefs. I'm going to give it a try on Saturday if the wind ever lets off.

My buddy creamed the schoolie bass again last night taking all he wanted, 3 at almost 30 inches, the trick is you have to get almost touching distance from the barges and get your jig under those barges. "

In **2005**, Pete continued to provide reports of the catches he and his buddies were making around the harbor. In June, he noted:

"Fishing has been GREAT, had the best night last night along with the fleet in what everyone is calling the mouth of Hempstead Harbor. It has been the place to fish all spring. Everyone is fishing the south side of the shipping channel in the sound in front of Hempstead Harbor in as far as off Lowe's break water by Welwyn. Tons of bunker pods through the area being worked hard by striped bass. Bluefish are also in solid and looks like they will inundate the harbor again this year. The bass bite has been phenomenal. Three of us released 20 bass to 30 lbs last night, not even putting in a solid effort. There have been fish caught of 62, 45 and 43 pounds that I am aware of. Hundreds and hundreds over 30 pounds.

By using some dead horseshoe crabs for bait, my traps in the marina are loaded with huge American eels, blackfish, green and calico crabs. Two nights ago during the full moon around 10 pm, we were mesmerized by the striped bass swimming casually on top in the Tappen Marina at the A dock. We saw dozens of them slurping the cinder worms that hatch with the June full moon. There is also larger baitfish which I was unable to identify, someone said they were mackerel. Yesterday I also saw huge amount of small fry, I assume the first hatch of sand eels and spearing in the marina.

Have not started fluking yet but I saw some caught last night by Motts Point and I am aware of a good catch by Crescent Beach. I do understand from a friend that for some reason the fluke are still deep, hanging out near the mud line, which is not where they are normally, My thought is we are still recovering from the cold spring. Sun and bait will change all this I'm sure.

The weakfish have been around; many good size fish 12 to 13 pounds caught around Matiniecock and the east side of the harbor. I understand that porgies have taken over everywhere, but the season does not open until 7/1."

On August 7, Pete observed large schools of baitfish and bluefish in Hempstead Harbor. The bluefish were not as large as those that were reported in Manhasset Bay (up to 15 pounds). He also reported:

"The fluke have finally made their way to the western Sound, I did very well off the Sands Point lighthouse Sunday with 4 keepers to over 4 pounds on Sunday, and was able to catch fluke at Mott's point and at Morgan's Park in Glen Cove. A friend had taken a large fluke over 5 pounds

at the broken pier just North of Morgan's in shallow water Sunday morning. Large porgies are everywhere, also in shallow water."

Bluefish and baitfish were also reported in significant quantities on September 7, 2005. Pete stated that fish, including spearing and peanut bunker, were breaking the water surface in an area of several acres. Numerous birds were observed wading in the shallows north of Tappen Beach on the morning of September 8, possibly eating the small fish. Significant quantities of peanut bunker (too numerous to count) were also noted on October 21, 2005.

On the weekend of November 4-6, 2005, two observers reported an unusually large quantity of bass. One fisherman reported catching 50 to 60 bass on November 6, off the western shore of the harbor. Many of the bass reported were undersized. It is possible that the bass were drawn to the harbor by the peanut bunker and other baitfish that were observed in significant quantities in previous weeks. The same source reported that he caught more blackfish in 2005 than in previous years, and that he had been successful trapping green crabs near the marina.

Jellies

Early in the 2004 monitoring season (June 3), numerous lion's mane jellyfish were observed throughout the harbor along with about 20 of what appeared to be moon jellies. Moon jellies were not reported in 2005. Comb jellies were observed in significant quantities from about mid-June to late October 2004 and from mid-June to mid-September, with the largest number during July and August for both years. The comb jellies observed in Hempstead Harbor include two varieties: the larger egg-shaped sea walnuts and the tiny, rounder sea gooseberries. The sea walnuts have lobes that are rimmed with short comb-like appendages that are phosphorescent. They can be seen at night glowing as the water is moved around them, as in the wake of a boat. Sea gooseberries have a tail-like appendage that can be seen when they are up close to the surface. Neither moon jellies nor comb jellies have stinging tentacles.

Seals

During the weekend of November 4 through 6, 2005, a seal was observed eating stripped bass in the harbor. This sighting corresponds with observations of large quantities of bass in the harbor (see **Fishing Reports**).

Birds

Birds observed during the 2004 and 2005 monitoring seasons include egrets, swans, terns, mallards, Canada geese, ospreys, herons, cormorants, and plovers. Several osprey nests were present, built on old pilings, platforms and even on a sailboat in the lower harbor.

Notable sightings include those for a pair of **Peregrine falcons** that were observed in the fall of 2004 roosting

Fledgling Osprey, July 2005 (Photo: Carol DiPaolo)

on the high–tension-wire pole connecting the Glenwood Landing power plant to Bar Beach. For the first time, Peregrine falcons were added to the North Shore Audubon Society's December bird count. In the spring of 2005, two fledgling Peregrine falcons were reportedly seen flying above the KeySpan power plant on the eastern shore of the harbor.

In August 2004, a six-month-old male **bald eagle** was seen flying over Glen Cove City Hall and other buildings in the area. He moved on to Tappen Beach, where people were able to approach and feed him. Wildlife Robert Horvath was called to take the eagle to his wildlife rehabilitation compound, where the eagle was cared for until it could be determined whether he could be released into the wild or kept in captivity.

Sea Turtles

Diamondback terrapins are up to 9" long, are found in salt or brackish water, and have been seen in Hempstead Harbor. In spring of 2005, Professor Matthew Draud (a recognized expert on the diamondback terrapin) of Long Island University observed several dozen diamondbacks off the eastern shoreline just north of the Roslyn viaduct. Professor Draud considered the area under the viaduct to be a critical habitat for the diamondbacks in the harbor, because diamondbacks typically converge by the hundreds in one area in the spring and mate for several weeks. This information was used to support efforts to extend Hempstead Harbor's designation as a "significant coastal fish and wildlife habitat" to include the area south of the Roslyn viaduct.

On November 13, 2005, visitors to Garvies Point Preserve reported that the decaying **carcass of a four-foot-long turtle** was on the Garvies shoreline and was tentatively identified as the carcass of a loggerhead turtle. Loggerheads are usually found in warm Atlantic waters but can also be found as far north as southern New England sounds and bays. The carcass was taken by the Turtle Rescue Foundation.

Algal Blooms

Color and turbidity of water within the harbor in 2005 was typical of conditions observed during the monitoring period of record. During most monitoring seasons, Hempstead Harbor Secchi-disk depths (an indicator of light penetration into the water column) consistently range from 0.25 to 3 m, as was the case in 2005. Low Secchi-disk depths are a strong indicator of the presence of algal blooms, since algae absorbs more light and is present in greater quantities than other particulate material. The water is typically characterized by a brown to green color. On August 18, 2005, an opaque pea-green color was observed in patches in the upper and lower harbor. CSHH collected samples the following day for algal analysis by the New York Department of Health. The predominant species of plankton were Gymnodinium splendens and Ochromonas sp. (both are protists, a subset of biological classification containing organisms that are not plants, animals, or fungi). The cause of this bloom is unknown.

Clam Kill

During an algal sample collection event on August 19 (requested by NY DEC), dead soft-shell clams were noted on the surface of the harbor in apparent quantities of greater than 1,000. The clams were1” to 2” in length. Additionally, approximately 12 horseshoe crabs and one crab of unknown species (possibly a lady crab) were observed floating on the surface, all likely

dead. According to Dr. Anita Freudenthal, a retired marine biologist who also had a long career with the Nassau County Department of Health, a possible factor involved in the clam kill is the combination of the moon tides with high air temperatures that heated up mud flats to a point beyond the tolerance level of the juvenile clams, which are not buried as deep into the mud as the adults. Other factors may be the low DO and the impact of plankton.

BLANK DATA REPORTING SHEETS

Water-Monitoring Data Sheet

Collection Date : _____ **Time :** _____
Monitor Name : _____
Site Name : _____ **Location :** _____

Weather : ☐ fog/haze ☐ drizzle ☐ intermittent rain ☐ rain ☐ snow ☐ clear ☐ partly cloudy

% Cloud Cover : ☐ 0% ☐ 25% ☐ 50% ☐ 75% ☐ 100% other _____

Wind Direction : ☐ N ☐ NE ☐ NW ☐ S ☐ SE ☐ SW ☐ E ☐ W **Velocity :** _____ kt (mph)

Rainfall :		Date	Amount
Previous 24 hrs accumulation	____.__ mm	_____	_____
Previous 48 hrs accumulation	____.__ mm	_____	_____
Previous week's accumulation	____.__ mm	_____	_____

Tidal Stage : ☐ incoming ☐ outgoing hours to high tide : _____

Water Surface : ☐ calm ☐ ripple ☐ waves ☐ whitecaps

Water Color : ☐ normal : ☐ brown ☐ green other _____
☐ abnormal : ☐ brown ☐ green other _____

Water Observations : ☐ jelly fish ☐ dead fish ☐ dead crabs ☐ algal bloom
☐ odors ☐ sea weed ☐ bubbles ☐ foam
☐ oil slick ☐ floatables ☐ ice
☐ submerged aquatic vegetation (SAV) ☐ turbidity (suspended particles)

Comments _____

Plankton count _____ type _____ sample taken : ☐ surface ☐ below surface

Wildlife Observations (type, approximate number ...)

Floatables Observations (type, approximate number ...)

Human Activities

Water Monitoring Data Sheet

Air Temperature : ________ **°C**

Station : **Time :** ________________

Depth (meters)	Temp °C	Salinity (ppt)	DO (ppm)	pH	Secchi (meters)	Nitrogen (ppm) NO_2	NO_3	NH_3
Surface								
0.5								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Station : **Time :** ________________

Depth (meters)	Temp °C	Salinity (ppt)	DO (ppm)	pH	Secchi (meters)	Nitrogen (ppm) NO_2	NO_3	NH_3
Surface								
0.5								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Station : **Time :** ________________

Depth (meters)	Temp °C	Salinity (ppt)	DO (ppm)	pH	Secchi (meters)	Nitrogen (ppm) NO_2	NO_3	NH_3
Surface								
0.5								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

TEMPLATE FOR RECORDING DATA IN MICROSOFT EXCEL FORMAT

Coalition to Save Hempstead Harbor (CSHH)
Water Monitoring Data

Date:

AM-- hrs to high tide

Station	Time	Depth (mm)	Water Temp °C	Salinity	DO(ppm)	pH*	Air Temp °C

CSHH #1 Beacon 11
CSHH #2 Bell Marker 6
CSHH #3 Glen Cove Creek, Red Marker
CSHH #4 Bar Beach Spit
CSHH #5 Mott's Cove
CSHH #6 East of old Incinerator
CSHH #7 West of Oil Dock
CSHH #8 Glen Cove Sewerage Treatment Plant Outflow

*pH samples taken within .5m below surface

Comments :

COALITION TO SAVE HEMPSTEAD HARBOR

Weekly Midharbor Coliform Sampling for Nassau County Health Department

Date: _____

Sampled By: _____

Lab # of 1st Sample: _____

Lab # of Last Sample: _____

FIELD NO.	AREA NO.	POINT NO.	TIME	TEMPERATURE		WIND	WEATHER	TOTAL COLI	FECAL COLI	WAVE HGT	SAMPLE TYPE	LOCATION
				AIR	WATER							
CSHH-1	10											
CSHH-2	10										5	Beacon Eleven
CSHH-3	10										5	Bell Buoy 6
CSHH-4	10										5	Red Marker Glen Cove Creek
CSHH-5	10										5	Bar Beach Spit
CSHH-6	10										5	Mott's Cove
CSHH-7	10										5	East of Incinerator
CSHH-8	10										5	West of Old Oil Dock
											5	Glen Cove STP

COMMENTS / REMARKS:

CODES FOR DAILY SAMPLING LOG

TIME - use military time; 9:00 a.m.= 0900, 2:30 p.m.= 1430

TEMP - use two spaces and report in degrees centigrade to nearest whole number (if 9 degrees, report as 09, if 23 degrees, report as 23)

WIND - use one or two places for direction and two places for speed: south at 15 mph should be reported as S-15; northwest at 2 mph should be entered as as NW-02. No wind or "calm" should be be entered as N-00.

WEATHER - 1 = fair, 2 = partly cloudy, 3 = cloudy, 4 = rain, 5 = snow, 6 = fog

WAVE HEIGHT - should be entered to nearest half foot, using two digits: CALM = 0.0; 2 1/2 FOOT WAVES = 2.5

SAMPLE TYPE - 3 = fresh water pond/stream/drain, 4 = sewage, 5 = beach, 6 = other

COMMENTS, REMARKS - use this area to record any unusal conditions or observations.

DEPLOYMENT RECORD

File name: _____ Site: _____

Date deployed: _____ Date recovered: _____

Sonde I.D.: _____ DO probe S/N: _____

Turbidity probe S/N: _____

CALIBRATION & SENSOR TEST INFORMATION

Date of Calibration: _____ Technician: _____

DO membrane changed? Y N Note: Should wait 6 to 8 hours before final calibration.

Turbidity wiper changed? Y N Wiper parks ≈ 180° from optics? Y N

Record battery voltage: _____

Record the following diagnostic numbers after calibration.

			Record Calibration Values Actual	Sonde
Conductivity cell constant _____	Range 4.5 to 5.5	Conductivity	_____	_____
pH MV Buffer 7 _____	Range 0 MV ±40 MV	pH	_____	_____
pH MV Buffer 10 _____	Range +180 ± 40 MV	Turbidity	_____	_____
pH MV Buffer 4 _____	Range +180 ± 40 MV	Turbidity	_____	_____
Note: Span between pH 7 and 10, milli-volt numbers should be ≈ 170 to 180 MV		Depth	_____	_____
		ORP	_____	_____
DO charge _____	Range 25 to 75	DO	_____	_____
DO gain _____	Range .7 to 1.7	pH	_____	_____

DISSOLVED OXYGEN HIGH/LOW OUTPUT TEST

610 – Turn off the 610, wait 60 seconds. Power up 610, watch DO %, it should read a number greater than 100% and drop with each 4 second sample, eventually stabilizing after approximately 60 seconds.

PC – Stop discrete and unattended sampling. Confirm that auto-sleep RS-232 is enabled (found in Advanced Menu under Setup). Wait 60 seconds. Start discrete sampling at 4 seconds. Reading should start at a number greater than 100% and drop to around 100% in approximately 40-60 seconds. Any sensor that starts at a number less than 100% and goes up or reads negative values must NOT be deployed. Contact YSI Technical Assistance for further details.

_____ ACCEPT _____ REJECT

DEPLOYMENT

In situ Date: _____ Time: _____

Field readings: DO MG/L _____ Temperature °C _____ Salinity _____

Air temperature _____ °C or _____ °F Wind speed MPH _____ Wind direction _____

Tide _____/_____ Nearest tide and stage (ebb, slack, flood)

Secchi depth _____ ft or M Total depth _____ ft or M Sonde depth _____ ft or M

Wave height _____ C = calm, SM = smooth wavelets, M = moderate (some whitecaps), R = rough (numerous whitecaps), VR = very rough

Cloud cover _____ S = sunny, PC = partly cloudy, OC = overcast, LR = light rain, HR = heavy rain, TS = thunder storms

RECOVERY INFORMATION

Date: _____ Time: _____

Field readings: DO MG/L _____ Temperature °C _____ Salinity _____

Air temperature _____ °C or _____ °F Wind speed MPH _____ Wind direction _____

Tide _____/_____ Nearest tide and stage (ebb, slack, flood)

Secchi depth _____ ft or M Total depth _____ ft or M Sonde depth _____ ft or M

Wave height _____ C = calm, SM = smooth wavelets, M = moderate (some whitecaps), R = rough (numerous whitecaps), VR = very rough

Cloud cover _____ S = sunny, PC = partly cloudy, OC = overcast, LR = light rain, HR = heavy rain, TS = thunder storms

Probe/Sensor fouling _____ 1 = none, 2 = light, 3 = moderate, 4 = heavy

Notes:

POST CALIBRATION AND CHECKOUT

Battery voltage as recovered _____

Data upload successful _____ Y or N

	As Recovered	After Cleaning
DO % in cal cup	_____	_____

Warning: DO reading for the post calibration must be recorded in either unattended mode or in discrete mode with a 120 second Sampling interval. Discrete samples taken at the 4 second rate will display a DO value that is lower than actual with the standard DO warm-up interval.

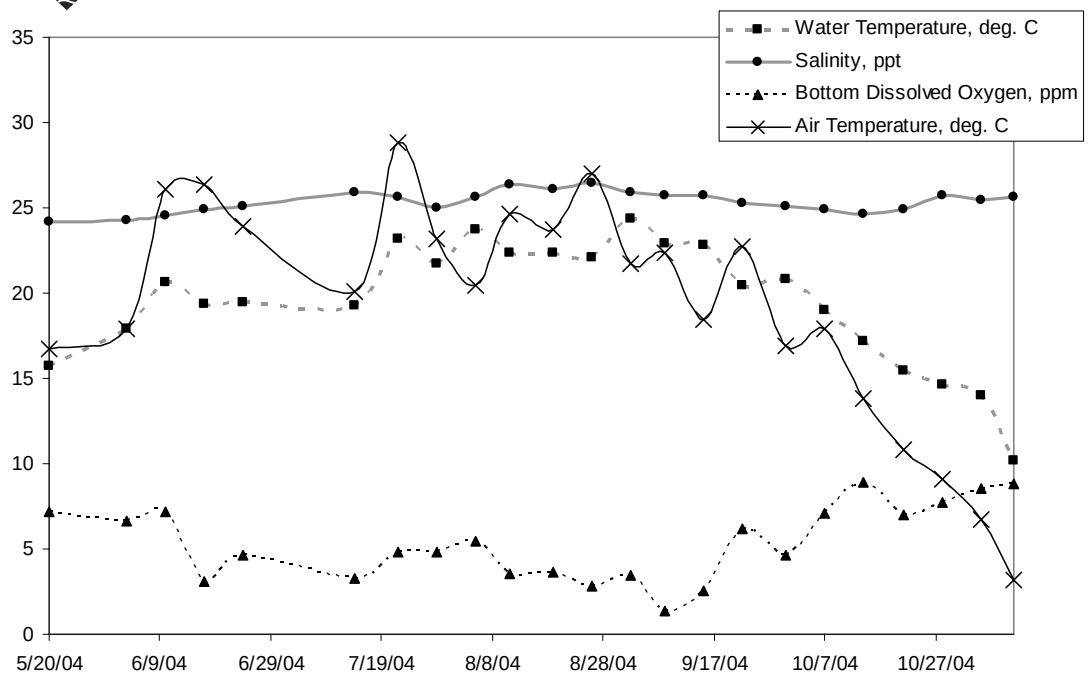
H 7 _____ other	_____	_____
H 10 _____ other	_____	_____
onductivity @ 50 MS/CM, _____ other	_____	_____
ubidity 0 NTU	_____	_____
ubidity 100 NTU _____ other	_____	_____
) charge (Range 25 – 75)	_____	_____
ubidity wiper parks 180° from optics _____ Y or N	_____	_____

otes:

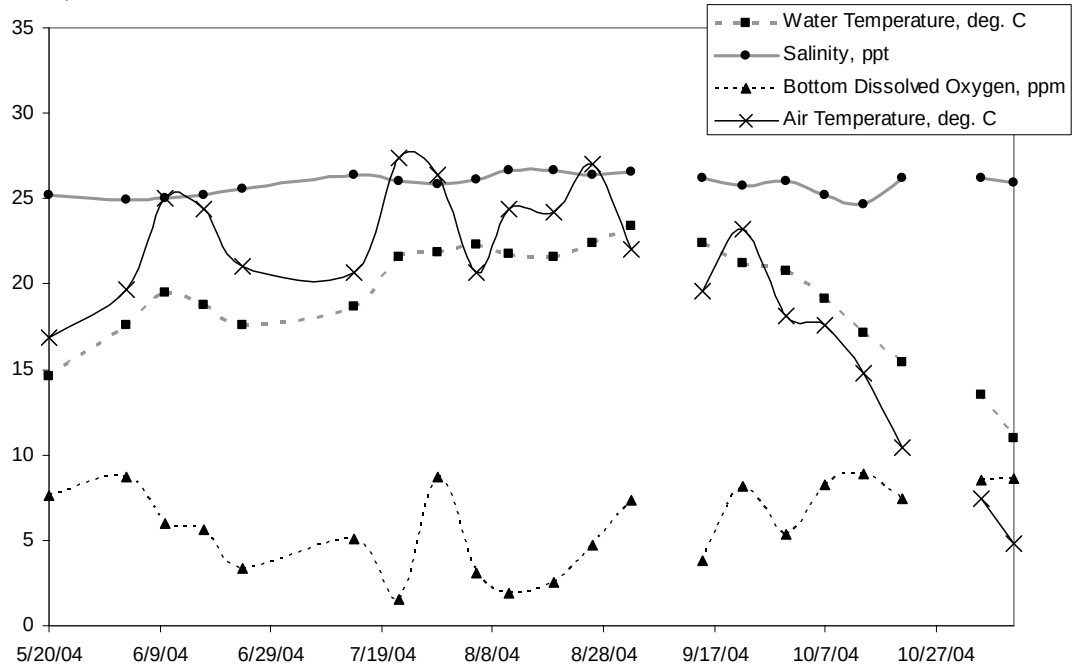
APPENDIX A

2004 - 2005 CSHH FIELD MONITORING RESULTS

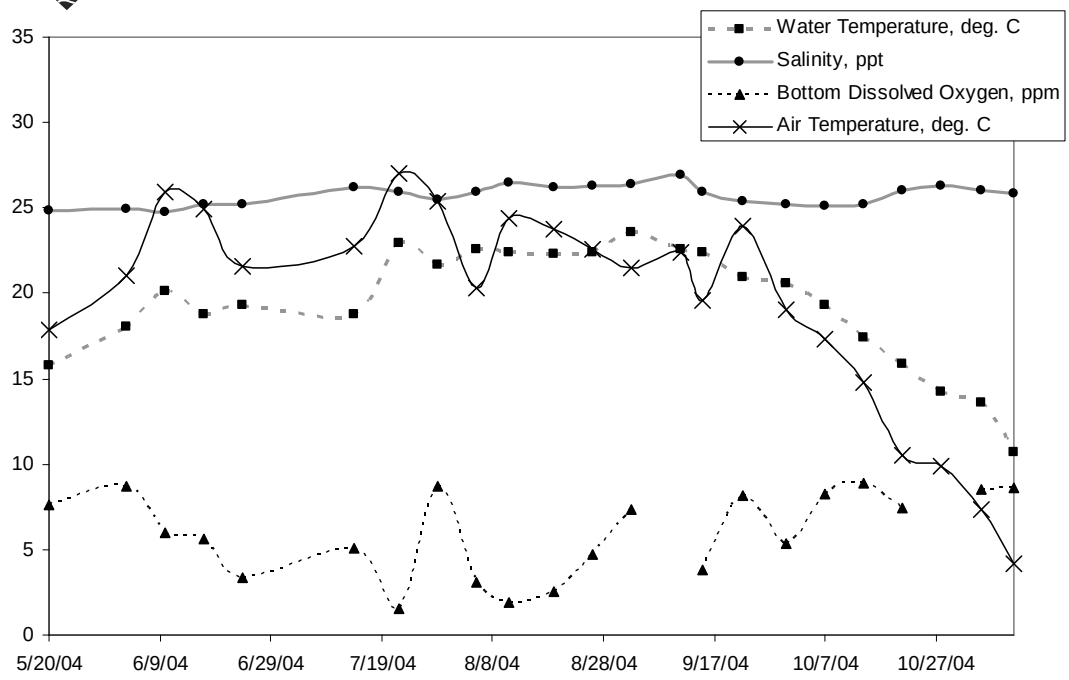
CSHH Water-Monitoring Program
2004 CSHH #1 - Beacon 11 Weekly Results



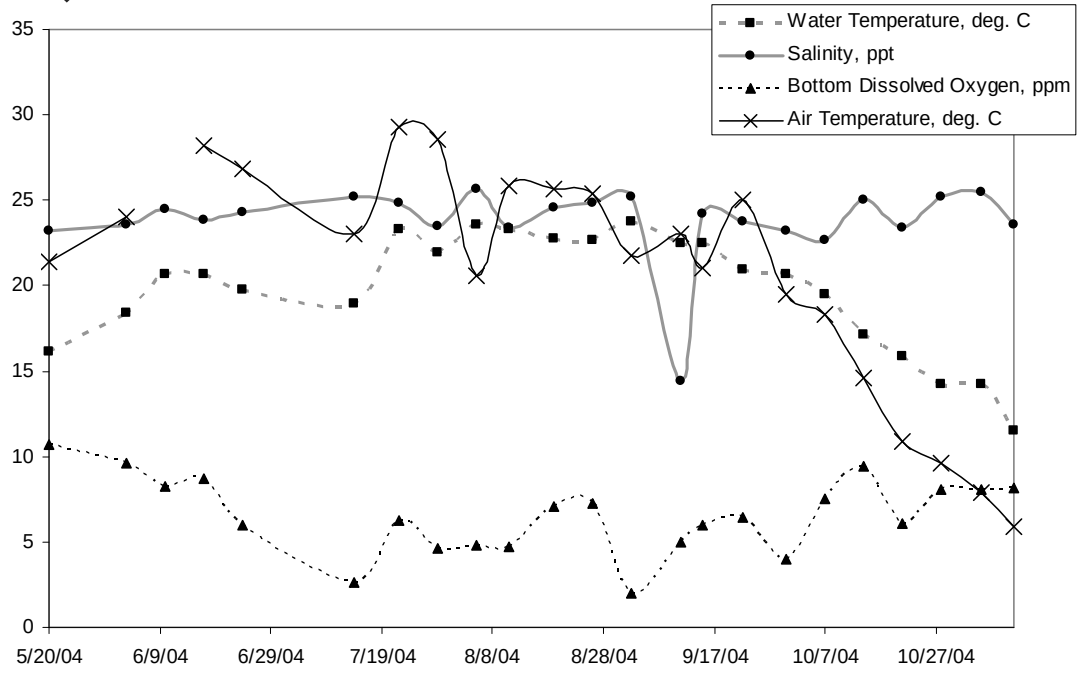
CSHH Water-Monitoring Program
2004 CSHH #2 - Bell Buoy 6 Weekly Results



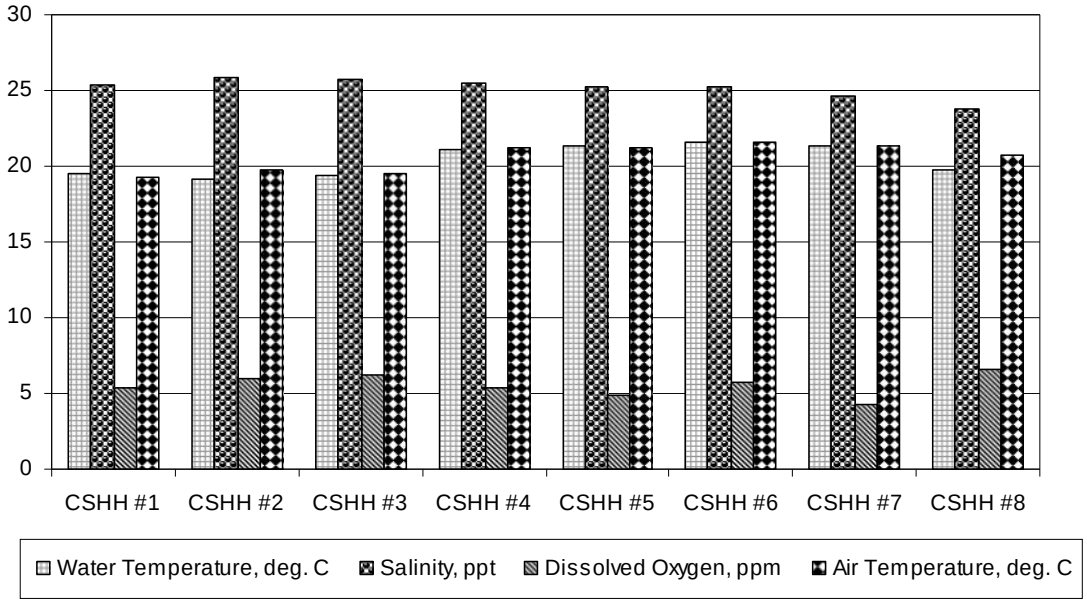
CSHH Water-Monitoring Program
2004 CSHH #3 - Glen Cove Creek, Red Marker Weekly Results



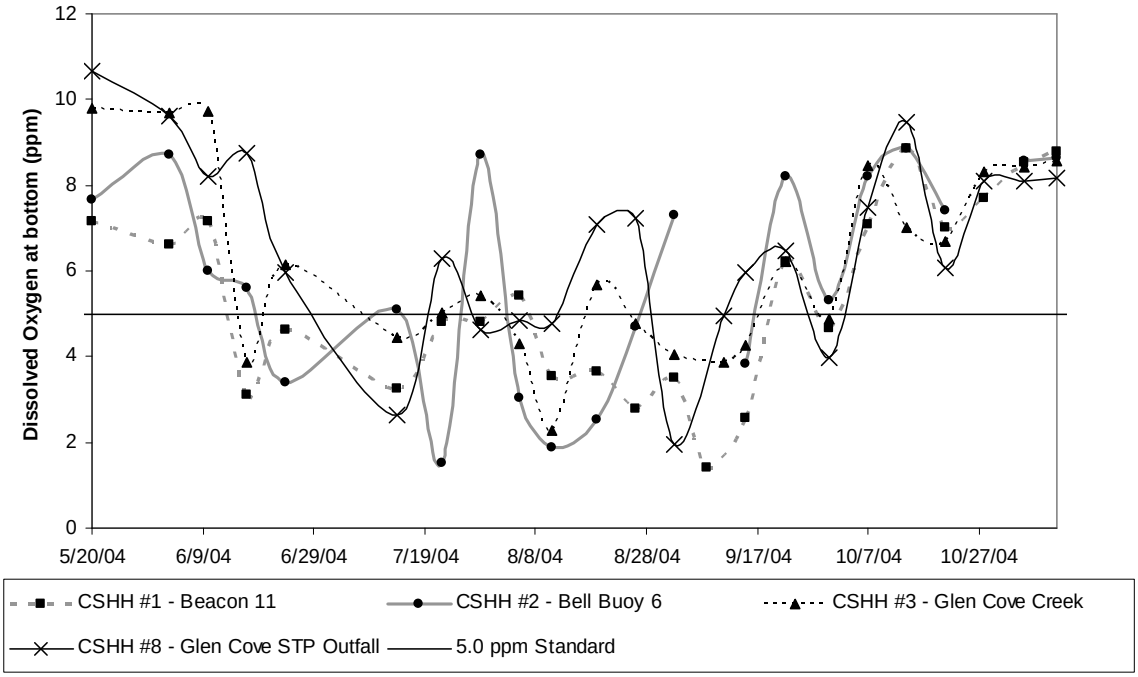
CSHH Water-Monitoring Program
2004 CSHH #8 - Glen Cove STP Outfall Weekly Results



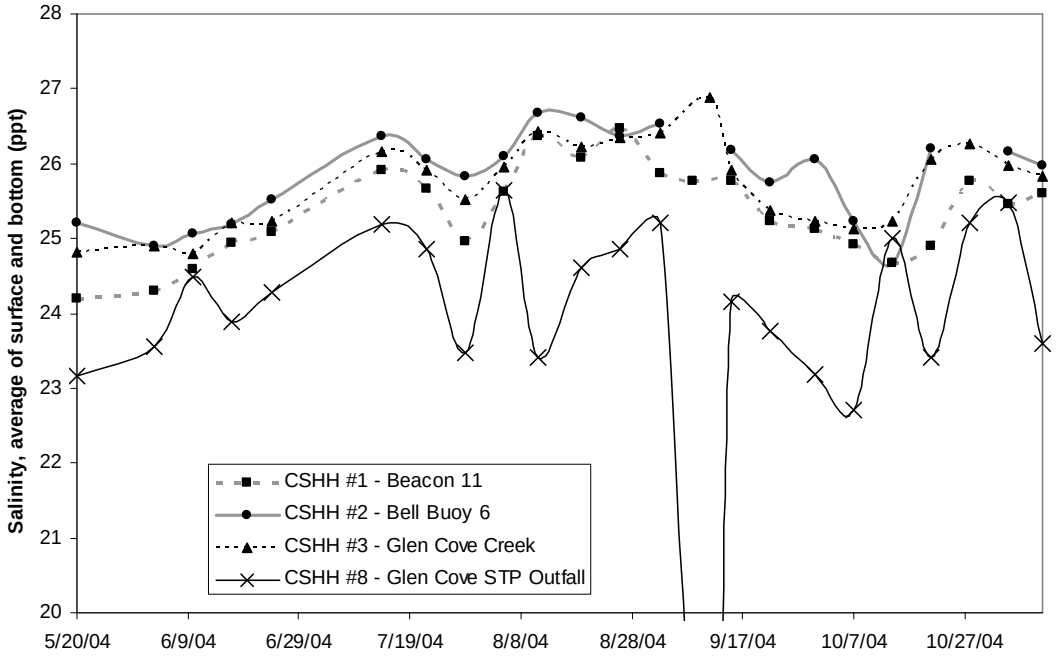
CSHH Water-Monitoring Program
2004 Seasonal Water Quality Parameter Averages



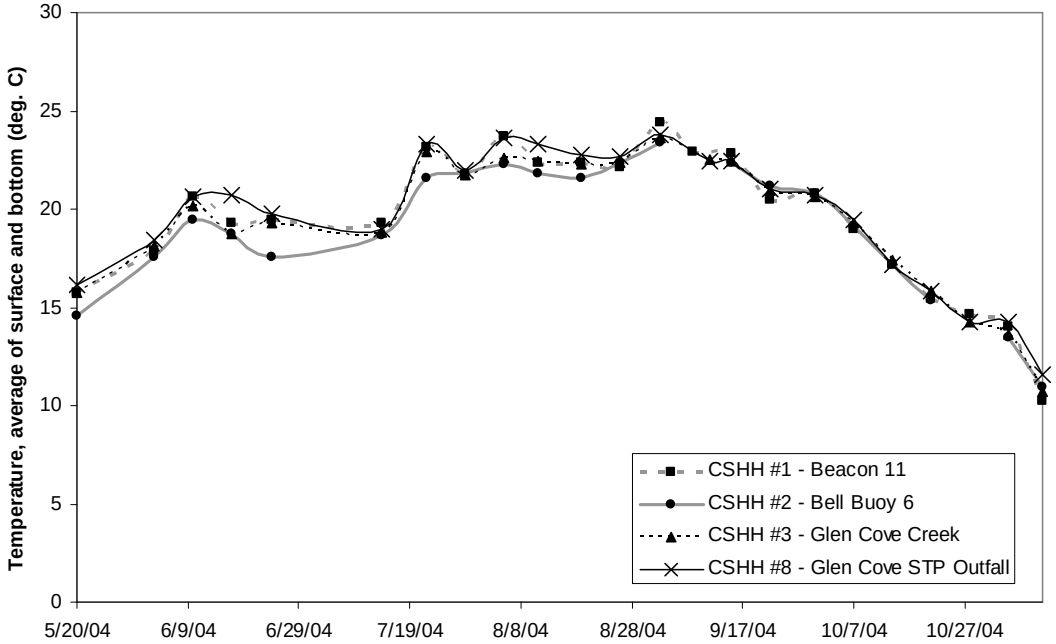
CSHH Water-Monitoring Program
2004 Dissolved Oygen Time Series



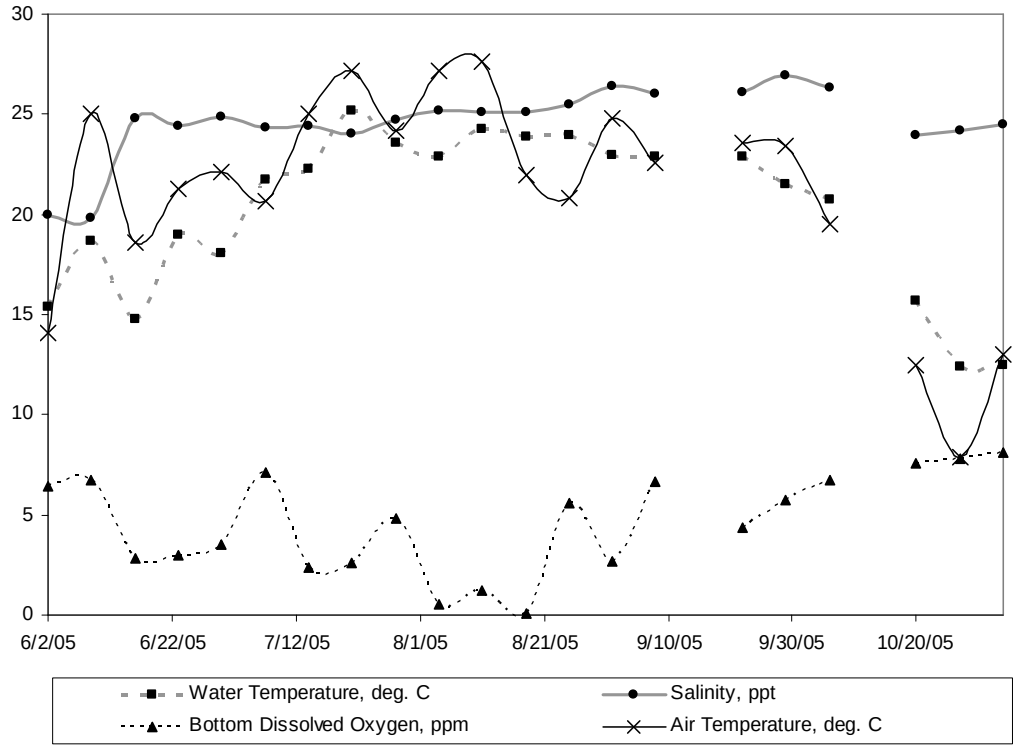
CSHH Water-Monitoring Program
2004 Salinity Time Series



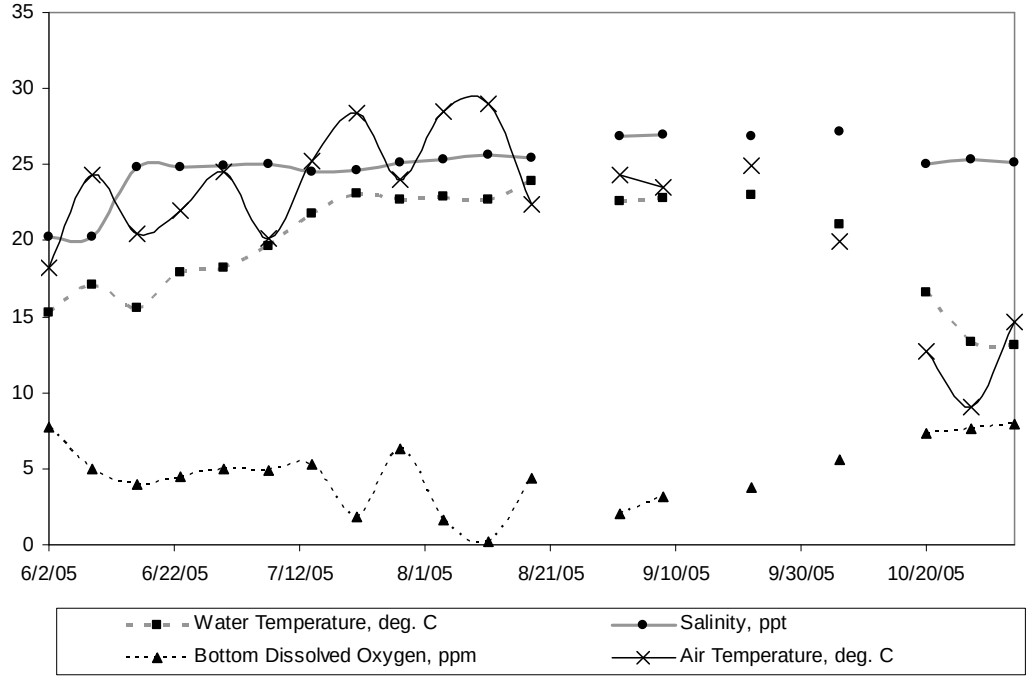
CSHH Water-Monitoring Program
2004 Water Temperature Time Series



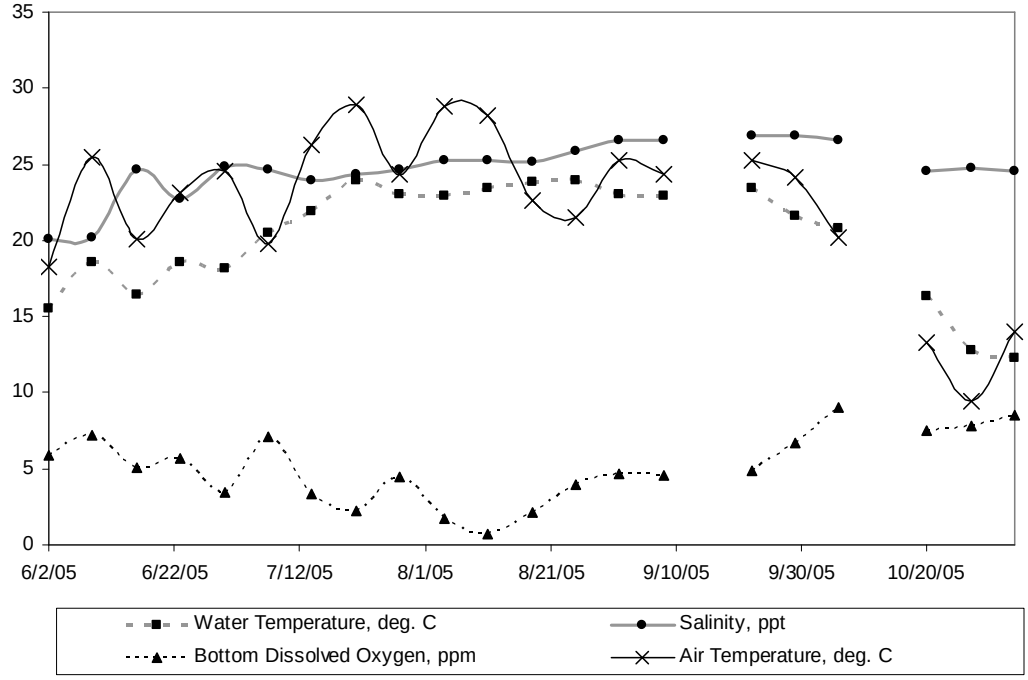
CSHH Water-Monitoring Program
2005 CSHH #1 - Beacon 11 Weekly Results



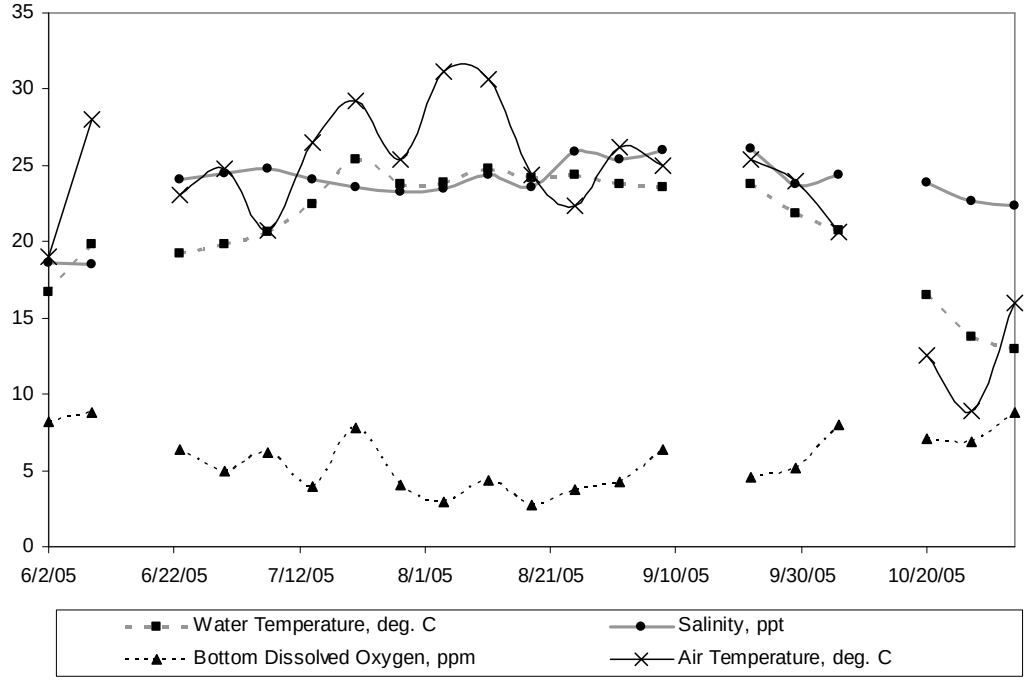
CSHH Water-Monitoring Program
2005 CSHH #2 - Bell Buoy 6 Weekly Results



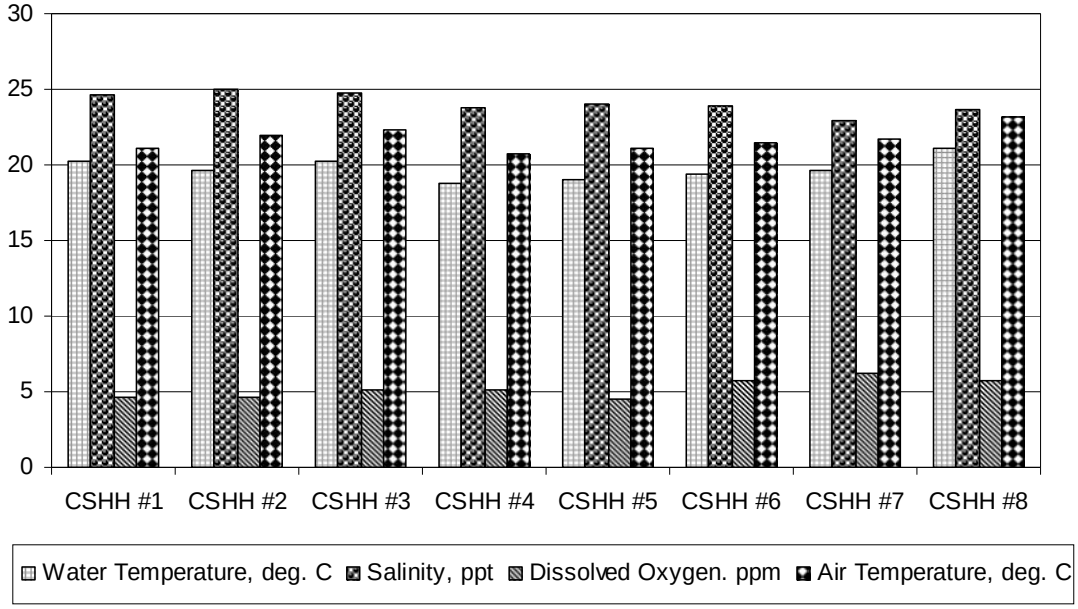
CSHH Water-Monitoring Program
2005 CSHH #3 - Glen Cove Creek Weekly Results



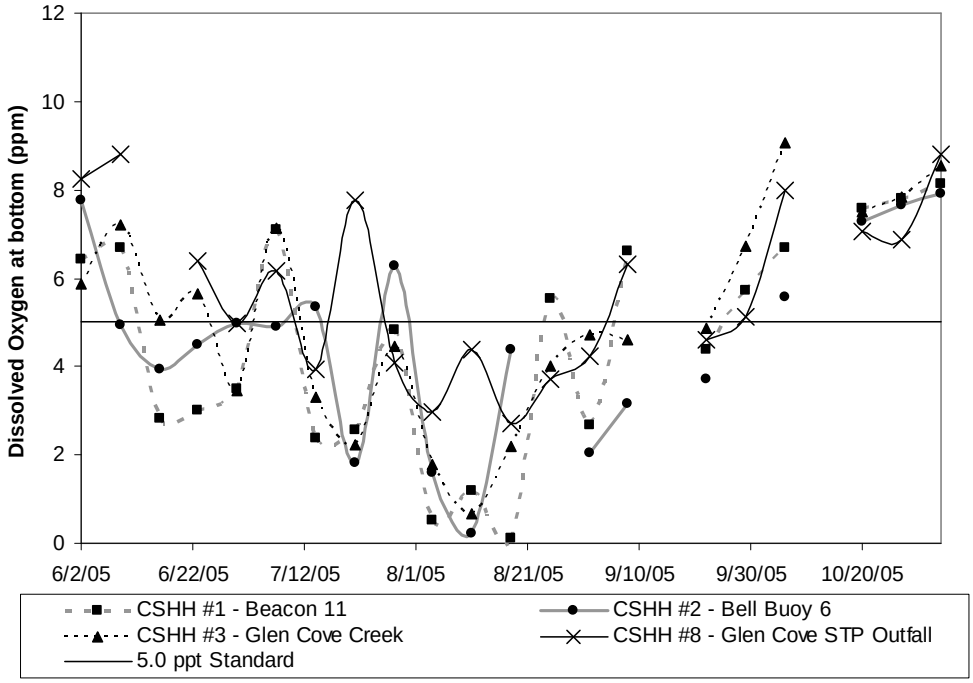
CSHH Water-Monitoring Program
2005 CSHH #8 - Glen Cove STP Weekly Results



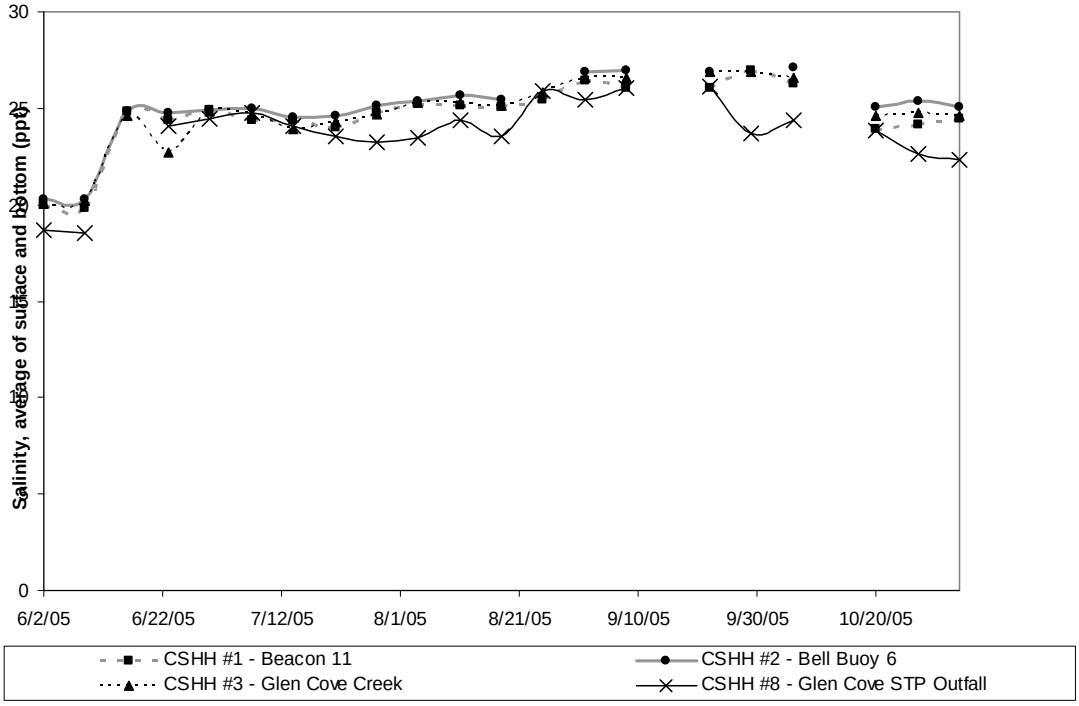
CSHH Water-Monitoring Program
2005 Seasonal Water Quality Parameter Averages



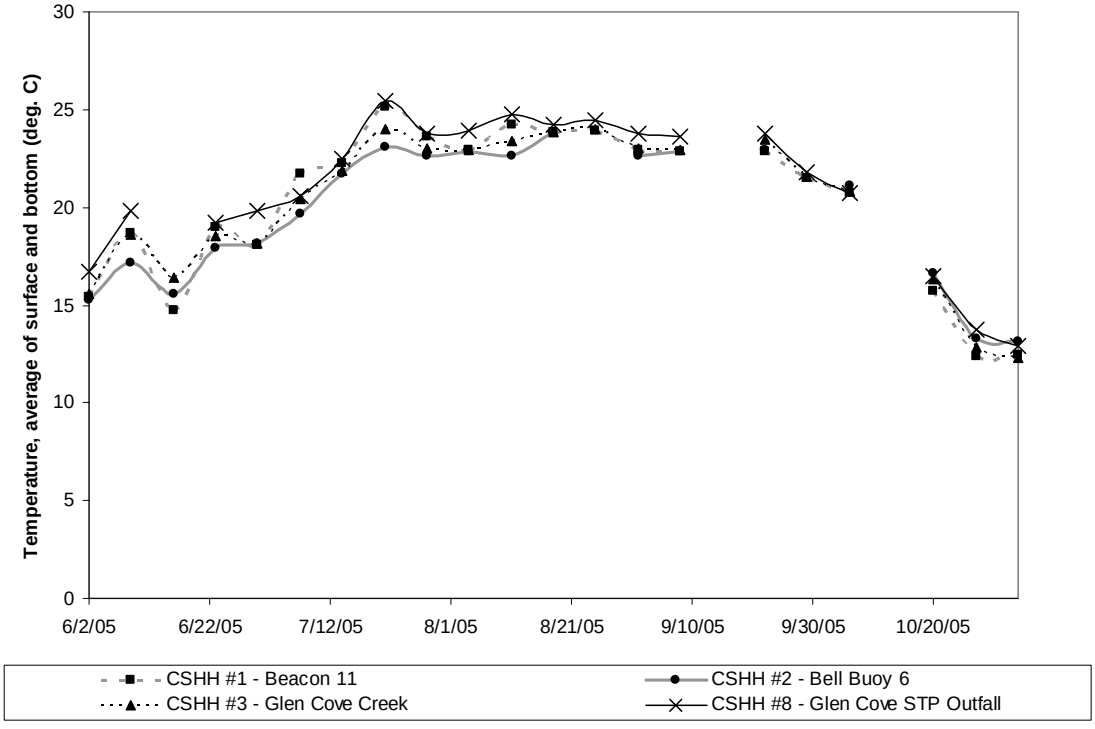
CSHH Water-Monitoring Program
2005 Dissolved Oxygen Weekly Results



CSHH Water-Monitoring Program
2005 Salinity Weekly Results at Four Stations



CSHH Water-Monitoring Program
2005 Water Temperature Weekly Results at Four Stations



CSHH Water-Monitoring Program 2004

Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #1 - Beacon 11												
5/20/2004	16.16	15.28	15.72	23.83	24.58	24.205	7.29	7.17	8	16.7	3	8:50
6/3/2004	18.3	17.44	17.87	23.83	24.76	24.295	9.49	6.62	8	17.9	4.1	9:30
6/10/2004	20.77	20.45	20.61	24.55	24.61	24.58	7.32	7.15	8	26.1	3.3	9:45
6/17/2004	21.91	16.74	19.325	24.5	25.39	24.945	11.97	3.11	8	26.4	4.2	9:45
6/24/2004	20.25	18.58	19.415	24.91	25.25	25.08	5.12	4.62	8	23.9	3.1	9:15
7/14/2004	19.79	18.75	19.27	25.63	26.18	25.905	6.30	3.24	8.0	20.1	5.0	9:20
7/22/2004	23.87	22.42	23.145	25.47	25.85	25.66	6.59	4.79	8	28.8	2.4	9:10
7/29/2004	21.95	21.45	21.7	24.27	25.67	24.97	8.44	4.8	8	23.2	4.8	9:15
8/5/2004	23.97	23.48	23.725	25.48	25.75	25.615	6.08	5.43	8	20.5	2.9	9:35
8/11/2004	22.8	21.95	22.375	26.13	26.59	26.36	6.46	3.56	8	24.6	4.4	8:55
8/19/2004	22.6	22.07	22.335	25.95	26.2	26.075	5.05	3.66	8	23.7	2.6	9:05
8/26/2004	22.45	21.81	22.13	26.23	26.72	26.475	8.96	2.79	8.0	27.0	5.1	9:20
9/2/2004	24.62	24.16	24.39	25.63	26.1	25.865	4.16	3.5	7.5	21.7	3.3	8:55
9/8/2004	23.4	22.5	22.95	24.56	26.98	25.77	4.85	1.4	8.0	22.4	4.2	10:00
9/15/2004	23.12	22.6	22.86	25.27	26.25	25.76	5.67	2.58	8.0	18.5	3.7	9:15
9/22/2004	20.44	20.53	20.485	25.02	25.44	25.23	6.54	6.21	8.0	22.7	3.9	9:30
9/30/2004	20.69	20.93	20.81	24.28	25.97	25.125	5.38	4.68	8.0	16.9	1.2	9:17
10/7/2004	19.05	18.94	18.995	24.92	24.93	24.925	7.19	7.07	8.0	17.9	4.1	9:15
10/14/2004	17.16	17.14	17.15	24.31	25.04	24.675	8.64	8.87	8.0	13.8	4.1	9:05
10/21/2004	15.45	15.42	15.435	24.89	24.91	24.9	7.00	7.01	8.0	10.8	4.0	9:20
10/28/2004	14.73	14.63	14.68	25.57	25.95	25.76	7.90	7.69	8.0	9.1	4.3	9:00
11/4/2004	14.43	13.62	14.025	25.26	25.65	25.455	8.19	8.52	8.0	6.7	3.6	9:05
11/10/2004	9.98	10.45	10.215	25.40	25.79	25.595	8.98	8.79	8.0	3.2	5.3	8:50
AVERAGE	*19.91*	*19.19*	*19.55*	*25.04*	*25.68*	*25.36*	*7.11*	*5.36*	*7.98*	*19.24*		

Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #2 - Bell Buoy 6												
5/20/2004	15.98	13.20	14.59	24.88	25.53	25.205	11.42	7.66	8.0	16.9	7.1	9:35
6/3/2004	17.97	17.18	17.575	24.82	24.97	24.895	11.01	8.71	8.5	19.7	9	11:15
6/10/2004	21.88	17.05	19.465	24.92	25.19	25.055	13.53	6.00	8.0	25.0	8.0	10:20
6/17/2004	21.35	16.15	18.75	24.93	25.43	25.18	11.78	5.60	8.0	24.4	7.5	10:20
6/24/2004	20.01	15.13	17.57	25.02	26.03	25.525	12.14	3.38	8.0	21.0	6.6	9:50
7/14/2004	18.87	18.41	18.64	26.28	26.44	26.36	6.80	5.09	8.5	20.7	8.2	10:55
7/22/2004	23.33	19.83	21.58	25.75	26.37	26.06	10.21	1.53	8.0	27.4	5.9	9:45
7/29/2004	22.43	21.21	21.82	25.72	25.92	25.82	9.23	8.72	8.0	26.4	8.3	10:40
8/5/2004	22.95	21.60	22.275	26.00	26.20	26.1	8.60	3.04	8.0	20.7	6.0	10:05
8/11/2004	22.80	20.75	21.775	26.26	27.11	26.685	9.45	1.89	8.0	24.4	9.1	9:24
8/19/2004	21.82	21.33	21.575	26.54	26.70	26.62	7.22	2.54	8.0	24.2	7.2	9:35
8/26/2004	22.55	22.20	22.375	26.28	26.45	26.365	6.10	4.70	8.0	27.0	3.2	9:55
9/2/2004	23.52	23.24	23.38	26.46	26.61	26.535	8.42	7.30	8.0	22.0	4.2	9:35
9/15/2004	22.30	22.42	22.36	25.92	26.43	26.175	7.14	3.84	8.0	19.6	8.4	10:15
9/22/2004	21.17	21.25	21.21	25.62	25.87	25.745	6.77	8.19	8.0	23.2	7.1	10:40
9/30/2004	20.64	20.91	20.775	25.70	26.40	26.05	5.97	5.33	8.0	18.1	8.1	9:50
10/7/2004	19.16	19.16	19.16	25.14	25.34	25.24	7.57	8.21	8.0	17.6	7.9	9:55
10/14/2004	17.16	17.14	17.15	24.31	25.04	24.675	8.64	8.87	8.0	14.8	4.1	9:05
10/21/2004	14.95	15.81	15.38	25.89	26.50	26.195	8.20	7.40	8.5	10.4	7.4	10:10
11/4/2004	13.48	13.52	13.5	26.16	26.17	26.165	8.68	8.55	8.0	7.4	7.0	9:30
11/10/2004	10.94	10.94	10.94	25.96	25.97	25.965	8.95	8.63	8.0	4.8	8.4	10:10
AVERAGE	*19.77*	*18.50*	*19.14*	*25.65*	*26.03*	*25.84*	*8.94*	*5.96*	*8.07*	*19.80*		

Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #3 - Glen Cove Creek, Red Marker												
5/20/2004	16.25	15.32	15.785	24.50	25.12	24.81	11.87	9.81	8.0	17.9	4.2	10:05
6/3/2004	18.63	17.54	18.085	24,67	24.89	24.89	10.57	9.68	8.5	21	5.37	11:35
6/10/2004	21.09	19.19	20.14	24.58	25.01	24.795	11.93	9.74	8.0	25.9	3.5	10:37
6/17/2004	21.51	16.00	18.755	24.86	25.56	25.21	12.37	3.85	8.0	24.9	4.5	10:30
6/24/2004	20.64	17.94	19.29	25.03	25.45	25.24	10.59	6.15	8.0	21.6	3.2	10:10
7/14/2004	19.01	18.56	18.785	26.04	26.29	26.165	5.44	4.45	8.5	22.8	5.0	11:25
7/22/2004	24.32	21.48	22.9	25.68	26.14	25.91	12.32	5.02	8.0	27.0	3.0	10:07
7/29/2004	22.28	21.13	21.705	25.01	26.03	25.52	9.06	5.41	8.0	25.4	4.9	11:10
8/5/2004	22.93	22.22	22.575	25.82	26.09	25.955	8.05	4.30	8.0	20.3	3.6	10:25
8/11/2004	23.00	21.88	22.44	26.17	26.70	26.435	7.14	2.28	8.0	24.4	5.2	9:45
8/19/2004	22.61	22.03	22.32	26.04	26.41	26.225	8.85	5.68	8.0	23.8	3.6	9:55
8/26/2004	22.92	21.88	22.4	25.97	26.71	26.34	8.79	4.78	8.0	22.6	4.6	11:15
9/2/2004	23.75	23.46	23.605	26.14	26.66	26.4	6.89	4.06	8.0	21.5	3.7	9:50
9/11/2004	22.69	22.40	22.545	26.75	27.03	26.89	5.57	3.88	8.0	22.4	4.7	10:25
9/15/2004	22.41	22.46	22.435	25.65	26.19	25.92	6.75	4.27	8.0	19.6	5.1	10:30
9/22/2004	21.12	20.81	20.965	25.10	25.66	25.38	6.73	6.20	8.0	23.9	4.0	11:00
9/30/2004	20.27	20.97	20.62	24.33	26.14	25.235	5.87	4.88	8.0	19.0	4.9	10:20
10/7/2004	19.35	19.19	19.27	24.91	25.36	25.135	8.29	8.46	8.5	17.3	4.0	10:15
10/14/2004	16.99	17.82	17.405	24.87	25.61	25.24	9.98	7.02	8.0	14.8	5.6	10:35
10/21/2004	15.60	16.12	15.86	25.62	26.51	26.065	7.04	6.68	8.0	10.5	4.3	10:35
10/28/2004	14.22	14.29	14.255	26.15	26.38	26.265	8.54	8.31	8.0	9.9	6.0	9:55
11/4/2004	13.60	13.63	13.615	25.86	26.10	25.98	8.74	8.41	8.0	7.3	4.2	9:55
11/10/2004	10.58	10.84	10.71	25.68	25.96	25.82	7.00	8.56	8.0	4.2	5.8	10:35
AVERAGE	*19.82*	*19.01*	*19.41*	*25.49*	*26.00*	*25.73*	*8.63*	*6.17*	*8.07*	*19.48*		

Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #8 - Glen Cove Sewerage Treatment Plant Outfall	**Glen Cove**	**Sewage**					**Treatment Plant**					
5/20/2004	16.54	15.71	16.125	21.47	24.87	23.17	10.63	10.68	8.0	21.4	3.1	10:30
6/3/2004	18.78	18.12	18.45	22.55	24.55	23.55	10.39	9.63	8	24	4	12:00
6/10/2004	21.38	19.88	20.63	24.32	24.64	24.48	9.90	8.22	8.0		1.5	10:55
6/17/2004	21.33	20.08	20.705	22.87	24.90	23.885	10.28	8.73	8.0	28.2	3.7	11:00
6/24/2004	20.12	19.43	19.775	23.42	25.12	24.27	6.67	5.98	8.0	26.8	1.6	10:45
7/14/2004	19.07	18.85	18.96	24.63	25.73	25.18	3.58	2.65	7.5	23.0	3.3	11:45
7/22/2004	23.44	23.24	23.34	24.51	25.22	24.865	6.53	6.28	8.0	29.3	1.3	10:30
7/29/2004	22.23	21.70	21.965	21.71	25.23	23.47	6.95	4.62	8.0	28.6	3.5	11:30
8/5/2004	24.21	23.01	23.61	25.37	25.92	25.645	10.10	4.83	8.0	20.6	1.4	10:55
8/11/2004	23.62	22.92	23.27	21.68	25.14	23.41	6.60	4.76	8.0	25.8	3.1	10:10
8/19/2004	22.93	22.57	22.75	23.06	26.16	24.61	9.19	7.09	8.0	25.7	1.2	10:20
8/26/2004	22.82	22.60	22.71	23.40	26.33	24.865	7.32	7.22	8.0	25.4	2.8	11:35
9/2/2004	23.97	23.58	23.775	24.13	26.30	25.215	4.87	1.96	8.0	21.8	1.7	10:10
9/11/2004	21.49	23.41	22.45	2.42	26.34	14.38	8.48	4.95	7.5	23.0	2.2	11:05
9/15/2004	22.49	22.40	22.445	22.97	25.36	24.165	5.66	5.95	8.0	21.0	3.8	11:15
9/22/2004	21.12	20.85	20.985	22.37	25.16	23.765	5.55	6.47	8.0	25.0	1.8	11:25
9/30/2004	20.55	20.86	20.705	21.42	24.95	23.185	5.56	3.97	8.0	19.5	3.4	10:40
10/7/2004	19.64	19.28	19.46	20.48	24.93	22.705	7.14	7.50	7.5	18.3	1.6	10:55
10/14/2004	17.16	17.10	17.13	24.11	25.90	25.005	9.59	9.46	8.0	14.6	4.0	11:00
10/21/2004	15.94	15.78	15.86	20.88	25.94	23.41	6.52	6.08	8.0	10.9	1.6	11:05
10/28/2004	14.28	14.23	14.255	24.32	26.11	25.215	8.42	8.10	8.0	9.6	4.0	10:30
11/4/2004	14.46	14.10	14.28	25.03	25.92	25.475	7.59	8.09	8.0	7.9	2.2	10:20
11/10/2004	12.28	10.80	11.54	21.40	25.81	23.605	8.24	8.18	8.0	5.9	3.7	11:15
AVERAGE	*19.99*	*19.59*	*19.79*	*22.11*	*25.50*	*23.81*	*7.64*	*6.58*	*7.93*	*20.74*		

Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #4 - Bar Beach Spit												
06/03/04	18.31	18.01	18.16	24.09	24.46	24.275	8.96	8.26	8.0	17.9	5.7	10:00
08/26/04	22.55	22.20	22.375	26.28	26.45	26.365	6.10	4.70	8.0	27.0	3.2	9:55
09/15/04	22.77	22.69	22.73	25.84	26.07	25.955	3.66	3.14	8.0	18.8	5.1	9:35
AVERAGE	*21.21*	*20.97*	*21.09*	*25.40*	*25.66*	*25.53*	*6.24*	*5.37*	*8.00*	*21.23*		
CSHH #5 - Mott's Cove												
06/03/04	18.45	18.28	18.365	24.34	24.44	24.39	7.26	7.11	8.0	19.1	1.8	10:20
08/26/05	22.66	22.61	22.635	25.74	26.14	25.94	4.72	4.38	8.0	23.2	1.7	10:05
09/15/04	23.25	23.03	23.14	25.24	25.87	25.555	3.80	3.15	8.0	21.2	2.3	11:45
AVERAGE	*21.45*	*21.31*	*21.38*	*25.11*	*25.48*	*25.30*	*5.26*	*4.88*	*8.00*	*21.17*		
CSHH #6 - East of old Incinerator												
6/3/2004	18.39	18.32	18.355	24.33	24.37	24.35	7.37	7.09	8.0	20.0	2.0	10:40
08/26/04	23.05	22.88	22.965	25.73	26.13	25.93	6.63	6.26	8.0	23.7	1.8	10:20
09/15/04	23.60	23.43	23.515	24.96	25.61	25.285	4.57	3.81	8.0	20.9	2.4	11:55
AVERAGE	*21.68*	*21.54*	*21.61*	*25.01*	*25.37*	*25.19*	*6.19*	*5.72*	*8.00*	*21.53*		
CSHH #7 - West of Oil Dock												
06/03/04	19.07	18.96	19.015	24.06	24.09	24.075	7.19	6.88	8.0	19.5	1.9	10:50
7/14/2004	20.16	20.31	20.235	23.56	24.72	24.14	4.17	2.66	7.5	20.8	1.8	10:15
08/26/04	22.20	23.16	22.68	25.60	25.75	25.675	4.24	3.90	7.5	24.4	1.5	10:30
09/15/04	23.19	23.53	23.36	24.30	24.93	24.615	4.38	3.44	8.0	20.9	1.1	12:05
AVERAGE	*21.16*	*21.49*	*21.32*	*24.38*	*24.87*	*24.63*	*5.00*	*4.22*	*7.75*	*21.40*		

CSHH Water-Monitoring Program 2005

Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #1 - Beacon 11												
6/2/2005	16.17	14.65	15.41	19.76	20.23	19.995	8.89	6.44	8.04	14.1	5.3	8:35
6/9/2005	18.85	18.57	18.71	19.81	19.86	19.835	6.94	6.70	7.50	25.0	1.3	9:15
6/16/2005	15.78	13.71	14.745	24.64	24.98	24.81	4.17	2.84	7.45	18.6	5.2	8:40
6/23/2005	19.97	18.00	18.985	24.16	24.64	24.4	5.61	3.02	7.62	21.3	3.5	9:25
06/30/05	18.73	17.44	18.085	24.75	25.01	24.88	5.30	3.51	7.51	22.1	3.9	8:40
07/07/05	21.73	21.75	21.74	24.31	24.39	24.35	7.15	7.09	7.86	20.7	1.8	7:55
07/14/05	22.80	21.75	22.275	24.17	24.63	24.4	3.02	2.39	7.36	25.0	3.0	8:10
07/21/05	26.40	23.90	25.15	23.70	24.29	23.995	7.69	2.57	7.80	27.2	3.0	8:05
07/28/05	23.60	23.58	23.59	24.74	24.76	24.75	4.97	4.84	7.45	24.2	4.3	9:15
08/04/05	23.84	21.96	22.9	25.04	25.39	25.215	2.95	0.53	7.28	27.2	3.6	8:30
08/11/05	24.53	23.95	24.24	25.02	25.22	25.12	2.23	1.19	7.20	27.6	2.9	8:15
08/18/05	24.19	23.51	23.85	24.89	25.31	25.1	2.06	0.11	7.29	22.0	3.6	8:15
08/25/05	23.93	23.95	23.94	25.44	25.52	25.48	5.68	5.55	7.59	20.8	2.3	8:15
09/01/05	23.17	22.75	22.96	26.15	26.73	26.44	4.34	2.67	7.40	24.8	3.9	8:15
09/08/05	22.91	22.82	22.865	25.99	26.11	26.05	7.32	6.62	7.75	22.6	2.5	9:15
09/15/05	Survey cancelled because of wind an rain.											
09/22/05	22.84	22.85	22.845	26.01	26.16	26.085	4.67	4.37	7.55	23.6	2.3	9:00
09/29/05	21.49	21.51	21.5	26.90	26.97	26.935	6.45	5.73	7.69	23.4	4.9	10:05
10/06/05	20.76	20.78	20.77	25.97	26.61	26.29	7.20	6.70	7.84	19.5	2.4	9:20
10/13/05	Survey cancelled because of wind and rain.											
10/20/05	15.70	15.73	15.715	23.90	23.97	23.935	7.72	7.58	7.88	12.5	2.7	9:05
10/27/05	11.60	13.20	12.4	23.64	24.69	24.165	8.35	7.81	8.06	7.9	4.5	9:00
11/03/05	12.12	12.78	12.45	24.19	24.74	24.465	8.72	8.12	8.27	13.0	4.5	9:40
AVERAGE	*20.53*	*19.96*	*20.24*	*24.44*	*24.77*	*24.60*	*5.78*	*4.59*	*7.64*	*21.10*		

Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #2 - Bell Buoy 6												
6/2/2005	16.15	14.32	15.235	20.08	20.45	20.265	10.59	7.77	8.29	18.2	8.6	10:55
6/9/2005	19.17	15.10	17.135	20.04	20.52	20.28	9.79	4.94	7.50	24.3	7.0	9:40
6/16/2005	17.56	13.53	15.545	24.6	25.07	24.835	8.77	3.94	8.17	20.5	8.3	10:05
06/23/05	19.10	16.69	17.895	24.63	24.92	24.775	8.30	4.49	8.10	22.0	7.2	10:10
06/30/05	19.28	17.05	18.165	24.77	25.11	24.94	8.45	4.98	7.95	24.5	8.3	9:20
7/7/2005	21.02	18.29	19.655	24.72	25.24	24.98	9.56	4.91	8.28	20.1	5.0	8:25
7/14/2005	22.39	21.10	21.745	24.26	24.79	24.525	7.19	5.34	7.90	25.2	7.3	8:40
07/21/05	25.25	20.87	23.06	24.31	24.95	24.63	9.41	1.82	8.17	28.4	7.3	9:00
07/28/05	22.82	22.51	22.665	25.09	25.12	25.105	6.85	6.27	7.81	24.0	5.5	9:45
08/04/05	24.06	21.64	22.85	25.24	25.48	25.36	6.06	1.59	7.65	28.5	7.6	9:15
08/11/05	23.78	21.52	22.65	25.49	25.79	25.64	6.37	0.23	7.68	29.0	7.4	8:45
08/18/05	24.21	23.56	23.885	25.42	25.47	25.445	5.79	4.38	7.74	22.4	8.6	10:00
08/25/05	Abandoned station because of wind and waves.											
9/1/2005	22.94	22.27	22.605	26.74	27.00	26.87	4.75	2.06	7.58	24.3	9.5	8:44
09/08/05	23.01	22.65	22.83	26.82	27.06	26.94	7.34	3.16	7.93	23.5	6.6	9:40
09/15/05	Survey cancelled because of wind and rain.											
09/22/05	23.03	22.89	22.96	26.82	26.97	26.895	5.23	3.73	7.61	24.9	7.2	9:23
09/29/05	Station abandoned after surface sampling due to strong wind and waves.											
10/6/2005	21.08	21.09	21.085	27.08	27.22	27.15	8.42	5.59	8.12	19.9	7.5	9:50
10/13/05	Survey cancelled because of wind and rain.											
10/20/05	16.74	16.52	16.63	25.06	25.08	25.07	7.38	7.28	8.07	12.7	6.4	9:30
10/27/05	13.19	13.44	13.315	25.25	25.43	25.34	8.25	7.64	8.03	9.1	9.0	10:21
11/03/05	13.15	13.13	13.14	25.09	25.10	25.095	8.34	7.92	8.05	14.7	9.1	10:05
AVERAGE	*20.42*	*18.85*	*19.63*	*24.82*	*25.09*	*24.95*	*7.73*	*4.63*	*7.93*	*21.91*		

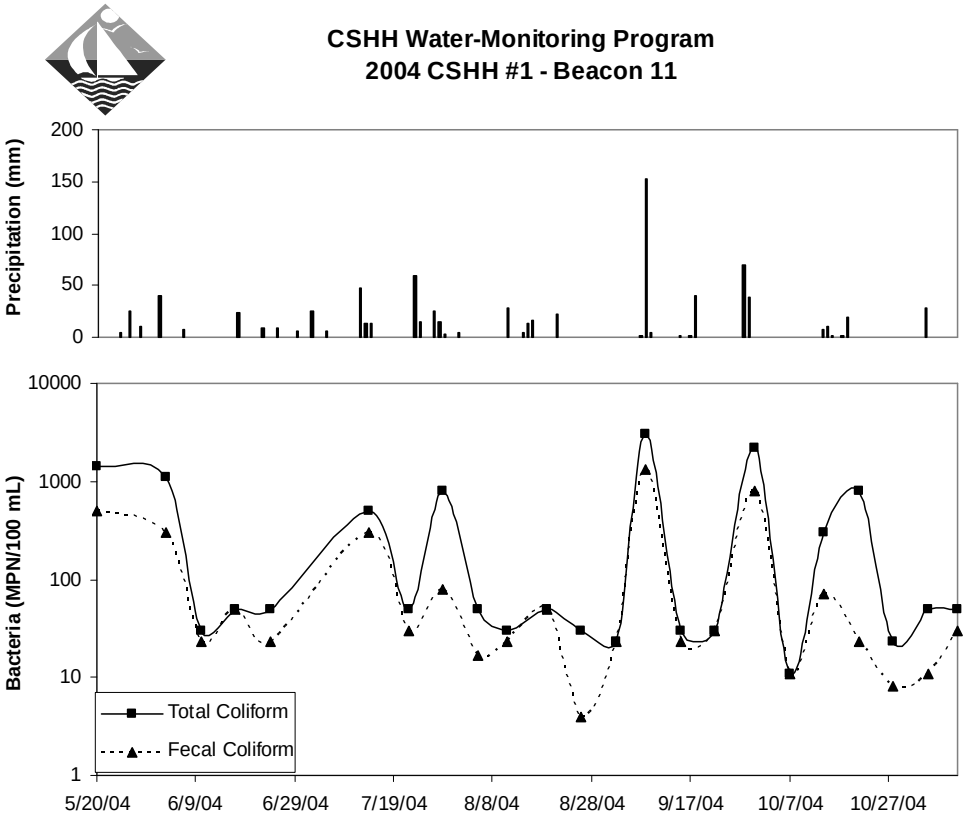
Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #3 - Glen Cove Creek, Red Marker												
6/2/2005	16.63	14.50	15.565	19.66	20.42	20.04	9.43	5.88	8.16	18.3	4.4	11:25
6/9/2005	19.52	17.70	18.61	20.10	20.24	20.17	11.05	7.22	8.00	25.5	3.5	10:20
06/16/05	17.57	15.26	16.415	24.41	24.85	24.63	7.45	5.07	7.99	20.1	4.0	10:30
06/23/05	19.13	17.95	18.54	20.52	24.83	22.675	6.95	5.64	7.91	23.1	4.6	10:40
06/30/05	19.25	17.07	18.16	24.58	25.06	24.82	6.34	3.47	7.63	24.6	4.4	9:45
07/07/05	20.56	20.33	20.445	24.50	24.89	24.695	7.95	7.14	8.05	19.8	3.6	9:00
07/14/05	22.50	21.23	21.865	23.05	24.80	23.925	5.70	3.30	7.64	26.3	3.8	9:00
07/21/05	25.71	22.23	23.97	24.06	24.62	24.34	9.23	2.24	8.07	28.9	4.0	9:20
07/28/05	23.29	22.68	22.985	24.35	24.97	24.66	5.83	4.47	7.61	24.3	3.3	10:20
08/04/05	23.94	21.92	22.93	25.18	25.43	25.305	5.51	1.77	7.57	28.8	4.9	9:55
08/11/05	24.47	22.31	23.39	24.81	25.70	25.255	6.51	0.68	7.70	28.2	3.2	9:10
08/18/05	24.22	23.44	23.83	24.83	25.40	25.115	4.65	2.18	7.46	22.6	5.5	10:35
08/25/05	23.99	23.96	23.975	25.57	26.15	25.86	4.58	4.00	7.54	21.5	3.1	8:50
09/01/05	23.05	23.01	23.03	26.58	26.63	26.605	5.18	4.70	7.62	25.3	4.6	9:22
09/08/05	23.03	22.90	22.965	26.39	26.77	26.58	8.14	4.59	7.99	24.3	3.0	10:03
09/15/05	Survey cancelled because of wind and rain.											
09/22/05	23.49	23.41	23.45	26.82	26.92	26.87	5.45	4.88	7.62	25.3	2.4	9:41
09/29/05	21.61	21.60	21.605	26.86	26.86	26.86	6.85	6.74	7.76	24.1	5.0	10:45
10/06/05	20.85	20.81	20.83	26.53	26.61	26.57	9.38	9.06	8.15	20.2	3.7	10:15
10/13/05	Survey cancelled because of wind and rain.											
10/20/05	16.23	16.42	16.325	24.40	24.75	24.575	7.65	7.50	8.08	13.3	3.1	9:47
10/27/05	12.16	13.47	12.815	24.21	25.37	24.79	8.46	7.85	8.03	9.4	3.9	10:37
11/03/05	12.30	12.29	12.295	24.58	24.57	24.575	8.59	8.53	8.02	14.0	5.3	10:25
AVERAGE	*20.64*	*19.74*	*20.19*	*24.38*	*25.04*	*24.71*	*7.18*	*5.09*	*7.84*	*22.28*		

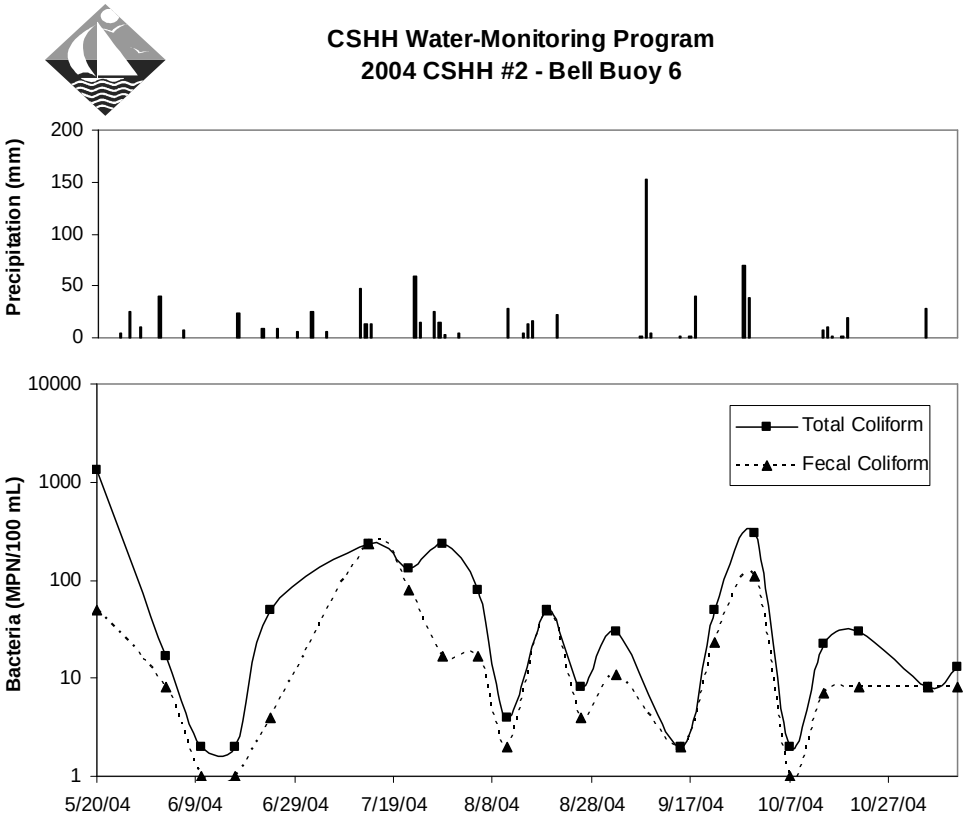
Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #8 -	**Glen Cove Sewage Treatment Plant**											
6/2/2005	16.97	16.50	16.735	17.31	20.00	18.655	7.92	8.24	7.76	19.0	1.9	11:45
6/9/2005	20.15	19.50	19.825	17.02	19.99	18.505	8.99	8.81	7.90	28.0	1.7	10:50
6/16/2005	Cleanup of oil spill (6/15/05) in Glen Cove Creek prevented sampling by STP.											
06/23/05	19.39	19.11	19.25	23.83	24.39	24.11	7.00	6.38	7.91	23.1	3.3	11:05
06/30/05	20.19	19.38	19.785	24.29	24.63	24.46	5.10	4.97	7.44	24.8	2.4	10:05
07/07/05	20.62	20.57	20.595	24.70	24.78	24.74	6.25	6.16	7.79	20.7	2.0	9:30
07/14/05	22.62	22.31	22.465	23.85	24.29	24.07	5.10	3.92	7.60	26.5	2.0	9:20
07/21/05	25.45	25.39	25.42	23.19	23.97	23.58	8.35	7.75	7.97	29.2	3.1	9:50
07/28/05	24.16	23.45	23.805	21.60	24.95	23.275	4.61	4.07	7.41	25.4	1.5	10:50
08/04/05	24.51	23.33	23.92	21.74	25.23	23.485	5.44	2.97	7.43	31.2	3.2	10:20
08/11/05	25.38	24.13	24.755	23.69	25.09	24.39	7.95	4.40	7.48	30.6	1.5	9:35
08/18/05	24.26	24.12	24.19	22.05	25.02	23.535	3.31	2.72	7.34	24.4	3.8	11:05
08/25/05	24.63	24.22	24.425	25.81	25.95	25.88	3.61	3.72	7.41	22.4	1.4	9:30
09/01/05	24.23	23.38	23.805	24.50	26.33	25.415	6.06	4.22	7.64	26.2	3.2	9:46
09/08/05	23.74	23.44	23.59	25.68	26.35	26.015	7.93	6.33	7.92	25.0	1.7	10:20
09/15/05	Survey cancelled because of wind and rain.											
09/22/05	23.78	23.70	23.74	25.86	26.39	26.125	5.12	4.60	7.53	25.4	1.5	10:03
09/29/05	21.90	21.76	21.83	20.84	26.62	23.73	6.01	5.13	7.51	24.0	3.0	11:15
10/06/05	20.65	20.87	20.76	22.23	26.60	24.415	9.48	8.00	8.15	20.6	2.4	10:36
10/13/05	Survey cancelled because of wind and rain.											
10/20/05	16.44	16.47	16.455	23.48	24.23	23.855	7.00	7.07	7.96	12.5	2.1	10:10
10/27/05	13.52	13.93	13.725	20.25	25.00	22.625	7.38	6.87	7.82	8.9	2.6	10:50
11/03/05	13.39	12.49	12.94	20.10	24.61	22.355	9.11	8.80	7.91	16.0	3.2	10:45
AVERAGE	*21.30*	*20.90*	*21.10*	*22.60*	*24.72*	*23.66*	*6.59*	*5.76*	*7.69*	*23.20*		

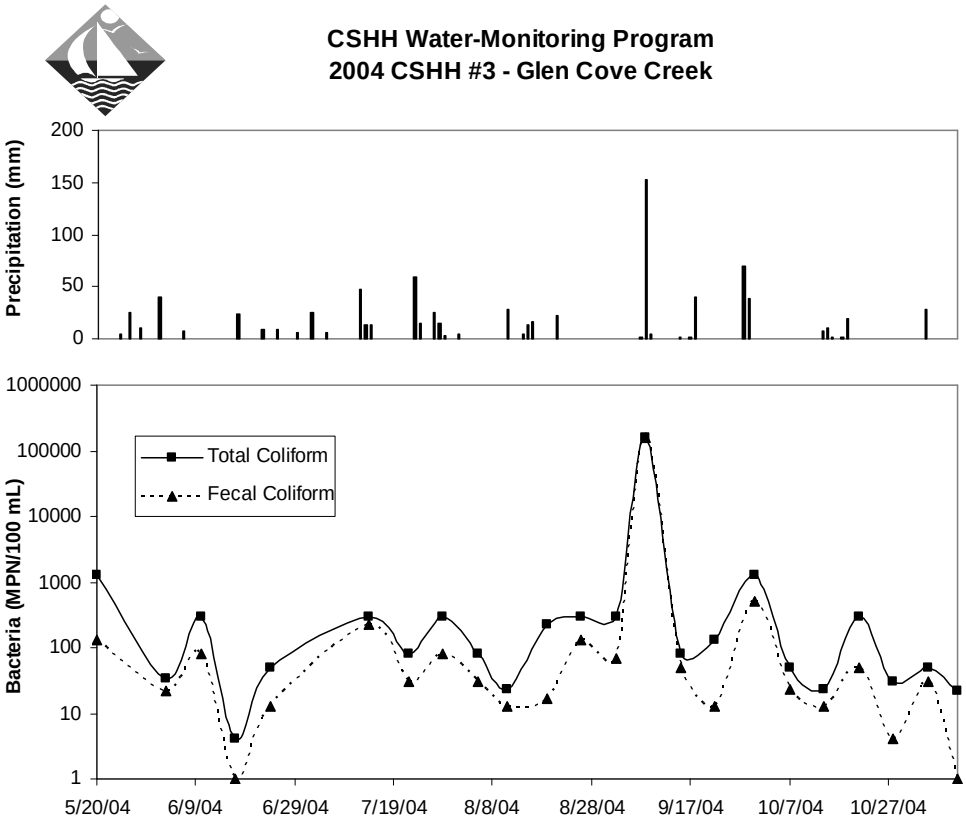
Date	Water Temp (°C)			Salinity (ppt)			DO (ppm)		pH	Air Temp (°C)	Depth (m)	Time
	Surface	Bottom	Average	Surface	Bottom	Average	Surface	Bottom			(bottom)	
CSHH #4 - Bar Beach Spit												
06/02/05	15.77	15.20	15.485	20.05	20.21	20.13	7.88	6.77	7.90	17.4	3.2	10:35
08/04/05	25.25	22.40	23.825	24.90	25.33	25.115	7.23	1.53	7.72	30.6	6.1	11:15
09/01/05	23.34	23.31	23.325	26.02	26.06	26.04	4.61	4.57	7.53	26.2	1.9	10:16
9/29/2005	Abandoned station because of wind.											
10/27/2005	12.17	12.55	12.36	23.85	24.04	23.945	8.33	7.75	8.02	8.9	2.7	9:24
AVERAGE	*19.13*	*18.37*	*18.75*	*23.71*	*23.91*	*23.81*	*7.01*	*5.16*	*7.79*	*20.78*		
CSHH #5 - Mott's Cove												
06/02/05	16.26	15.30	15.78	19.61	19.94	19.775	7.66	6.61	7.88	16.5	1.6	10:15
08/04/05	24.42	23.38	23.9	25.06	25.19	25.125	4.45	2.45	7.37	29.9	2.0	11:40
8/25/05	Clam kill between CSHH #5 and CSHH #6							1.50				
9/1/2005	22.97	23.05	23.01	26.08	26.20	26.14	3.68	3.46	7.45	27.0	1.6	10:28
9/29/2005	21.20	21.41	21.305	26.25	26.57	26.41	6.02	5.29	7.61	22.7	1.6	9:05
10/27/2005	10.94	11.85	11.395	22.35	23.07	22.71	8.89	7.80	7.97	9.2	1.5	9:35
AVERAGE	*19.16*	*19.00*	*19.08*	*23.87*	*24.19*	*24.03*	*6.14*	*4.52*	*7.66*	*21.06*		
CSHH #6 - East of Former Incinerator Site												
6/2/2005	16.52	15.78	16.15	19.72	20.04	19.88	7.75	6.48	7.90	16.5	1.9	10:00
08/04/05	25.23	24.66	24.945	24.85	25.02	24.935	4.73	4.76	7.40	31.4	1.9	11:55
09/01/05	23.40	23.21	23.305	26.18	26.28	26.23	4.71	3.88	7.59	27.5	2.1	10:41
09/29/05	21.18	21.19	21.185	26.27	26.32	26.295	5.22	5.74	7.59	22.9	2.0	9:20
10/27/05	10.93	11.82	11.375	21.60	22.58	22.09	8.43	7.78	8.0	8.9	1.6	9:47
AVERAGE	*19.45*	*19.33*	*19.39*	*23.72*	*24.05*	*23.89*	*6.17*	*5.73*	*7.69*	*21.44*		
CSHH #7 - West of Bryant Landing (formerly site of oil dock)												
06/02/05	16.92	16.22	16.57	19.49	19.89	19.69	7.05	6.41	7.75	16.3	1.6	9:55
8/4/2004	26.39	25.62	26.005	24.49	24.67	24.58	8.35	7.19	7.79	30.9	1.9	12:00
09/01/05	23.82	23.73	23.775	25.53	25.76	25.645	6.17	5.68	7.72	28.2	1.5	10:51
09/29/05	20.84	20.94	20.89	25.19	25.89	25.54	4.79	4.27	7.44	23.2	1.5	9:38
10/27/05	10.00	11.48	10.74	16.75	21.75	19.25	8.70	7.64	7.9	9.7	1.1	9:56
AVERAGE	*19.59*	*19.60*	*19.60*	*22.29*	*23.59*	*22.94*	*7.01*	*6.24*	*7.72*	*21.66*		

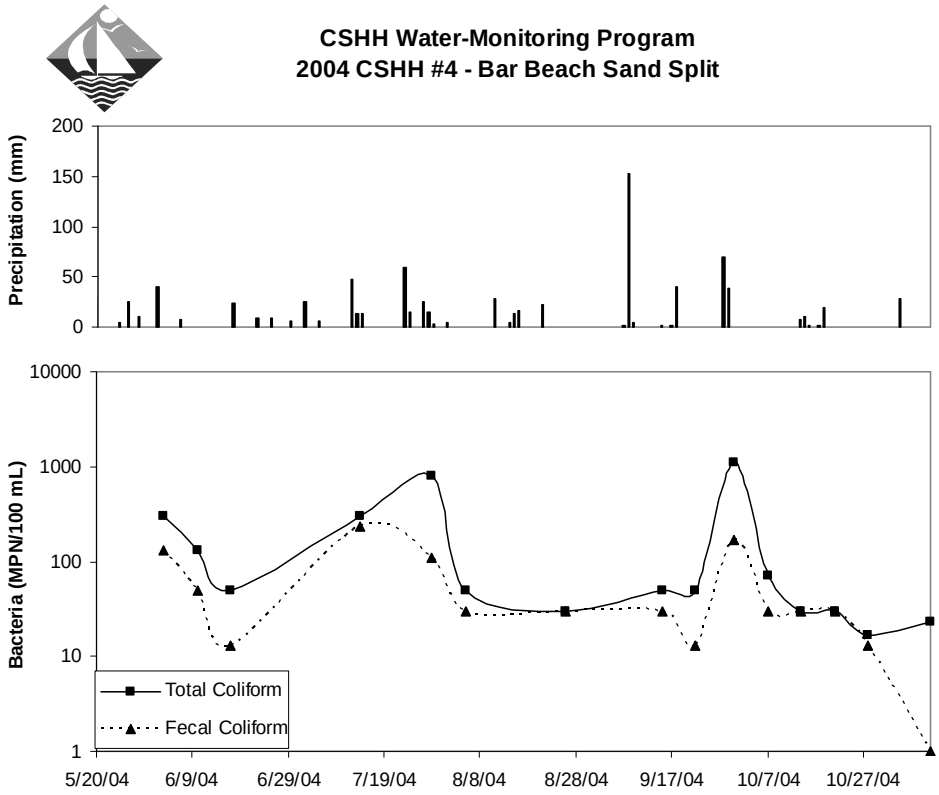
APPENDIX B

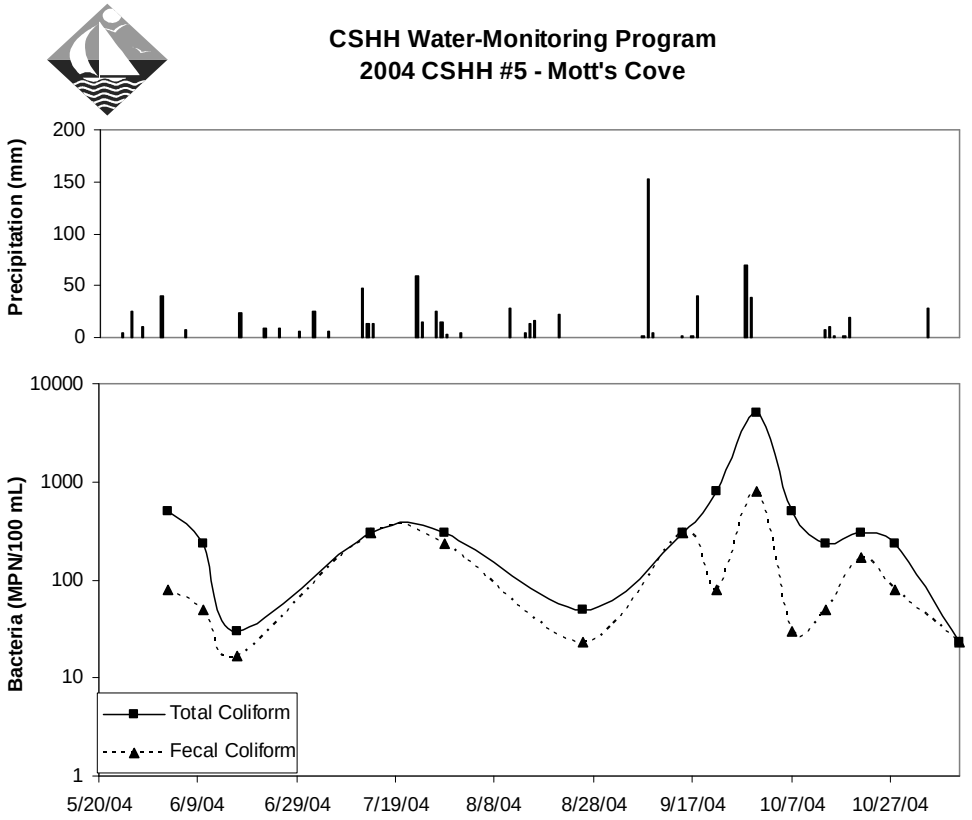
2004 - 2005 BACTERIA AND PRECIPITATION RESULTS

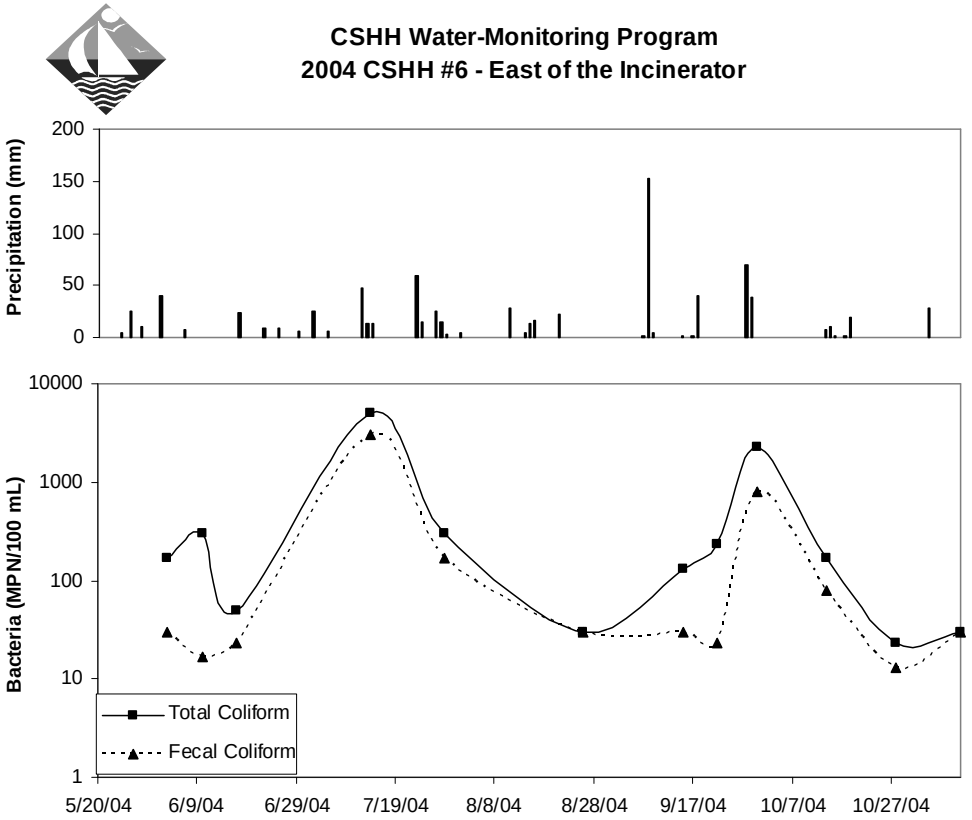

CSHH Water-Monitoring Program
2004 CSHH #1 - Beacon 11
Precipitation (mm)
200
150
100
50
0
Bacteria (MPN/100 mL)
10000
1000
100
10
1
Total Coliform
Fecal Coliform
5/20/04
6/9/04
6/29/04
7/19/04
8/8/04
8/28/04
9/17/04
10/7/04
10/27/04

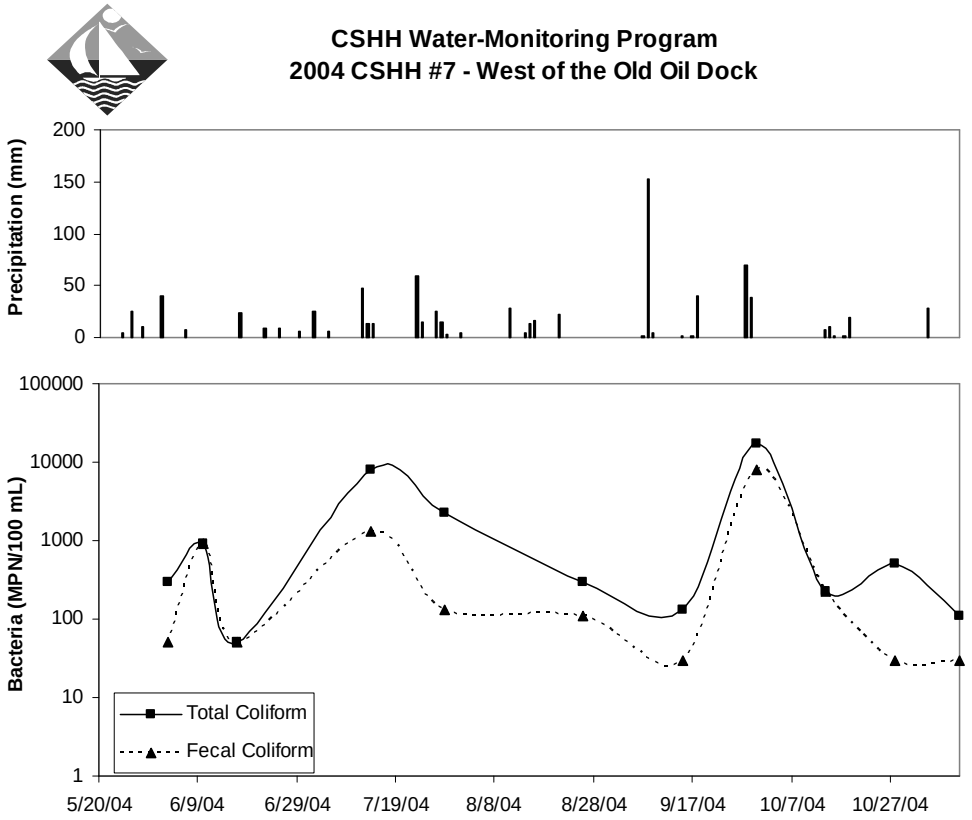

CSHH Water-Monitoring Program
2004 CSHH #2 - Bell Buoy 6
Precipitation (mm)
200
150
100
50
0
Bacteria (MPN/100 mL)
10000
1000
100
10
1
Total Coliform
Fecal Coliform
5/20/04
6/9/04
6/29/04
7/19/04
8/8/04
8/28/04
9/17/04
10/7/04
10/27/04

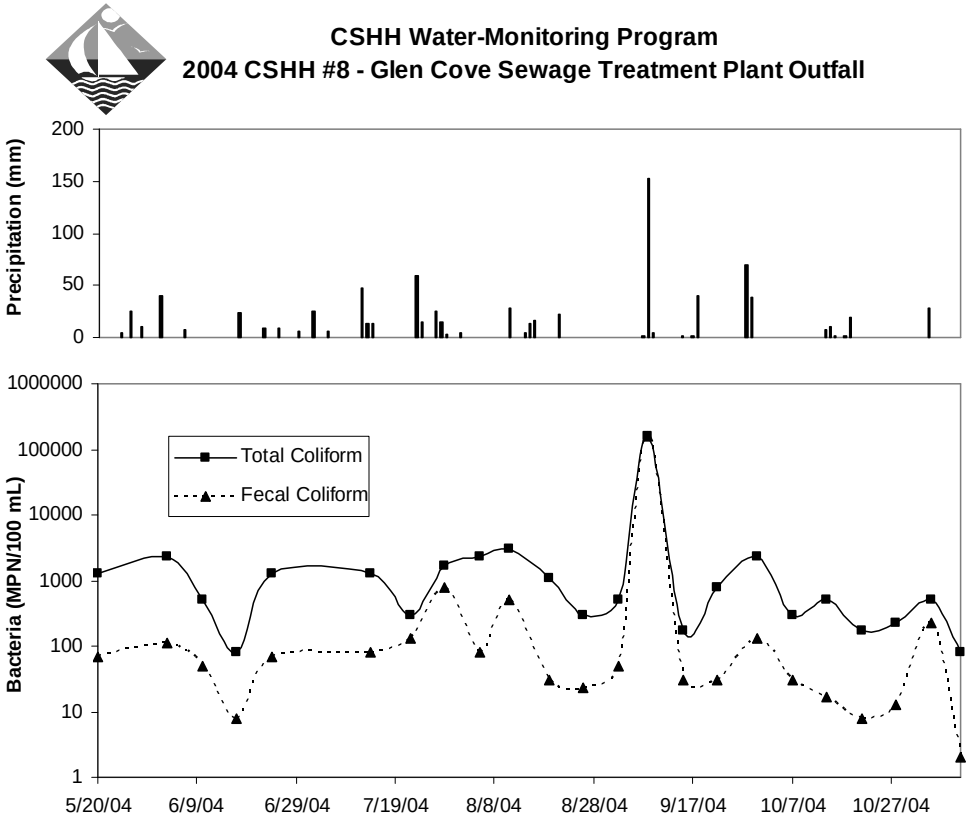

CSHH Water-Monitoring Program
2004 CSHH #3 - Glen Cove Creek
Precipitation (mm)
200
150
100
50
0
Bacteria (MPN/100 mL)
1000000
100000
10000
1000
100
10
1
Total Coliform
Fecal Coliform
5/20/04
6/9/04
6/29/04
7/19/04
8/8/04
8/28/04
9/17/04
10/7/04
10/27/04

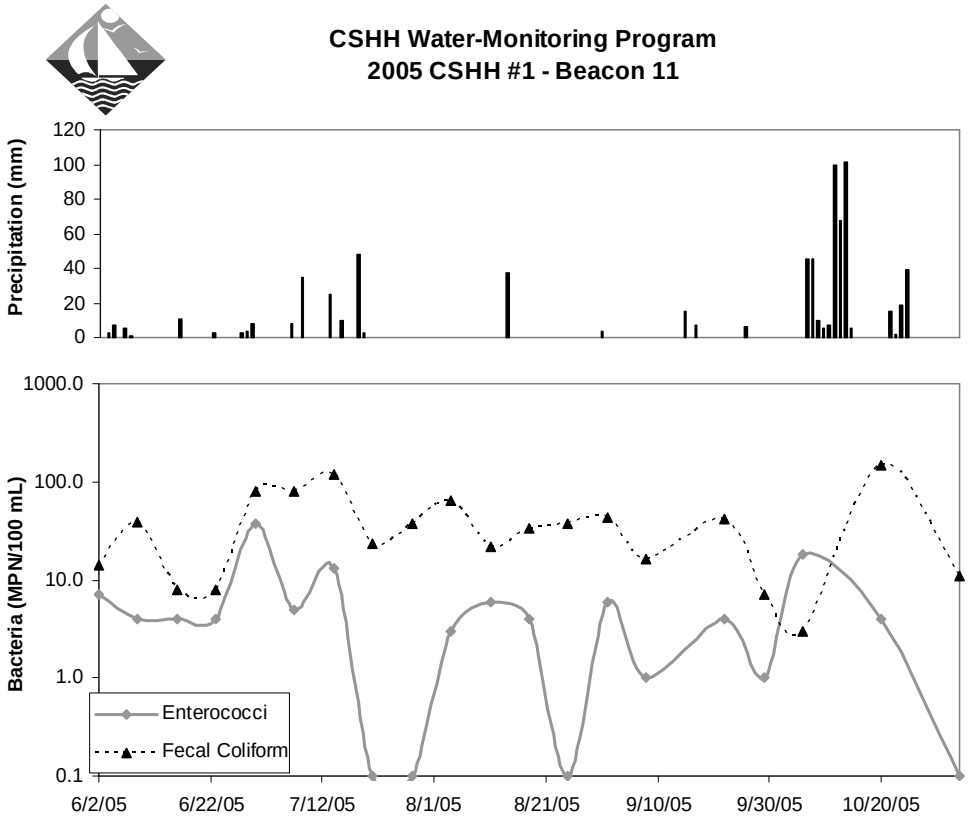

CSHH Water-Monitoring Program
2004 CSHH #4 - Bar Beach Sand Split
Precipitation (mm)
200
150
100
50
0
Bacteria (MPN/100 mL)
10000
1000
100
10
1
Total Coliform
Fecal Coliform
5/20/04
6/9/04
6/29/04
7/19/04
8/8/04
8/28/04
9/17/04
10/7/04
10/27/04

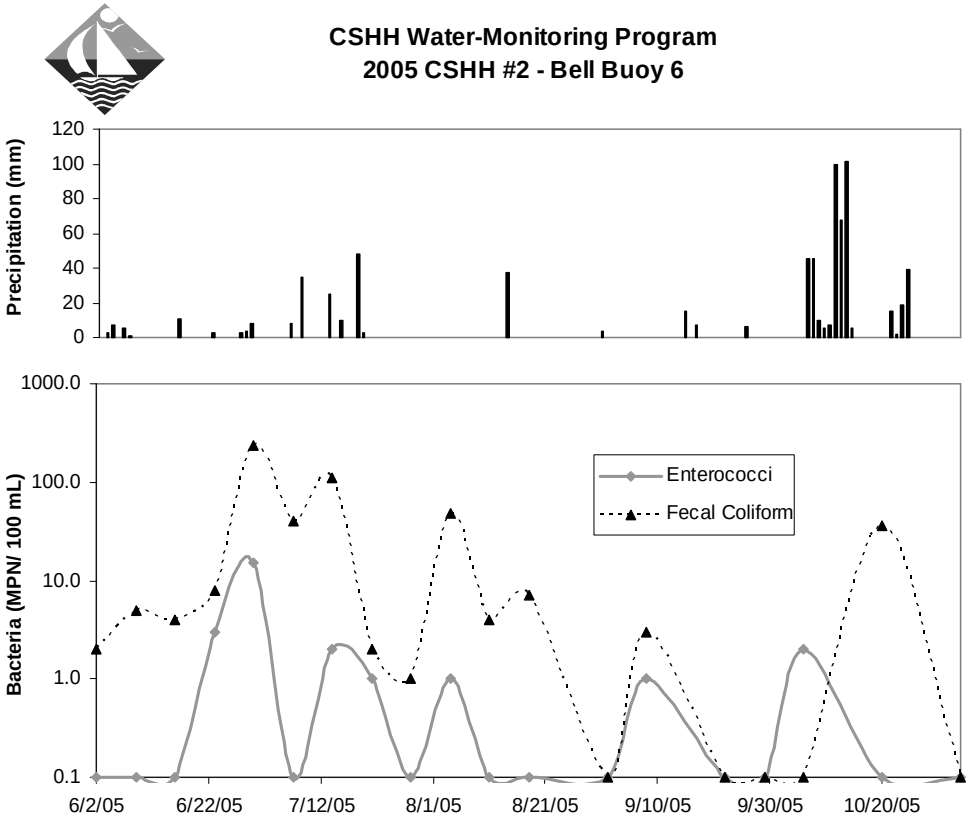

CSHH Water-Monitoring Program
2004 CSHH #5 - Mott's Cove
Precipitation (mm)
200
150
100
50
0
Bacteria (MPN/100 mL)
10000
1000
100
10
1
Total Coliform
Fecal Coliform
5/20/04
6/9/04
6/29/04
7/19/04
8/8/04
8/28/04
9/17/04
10/7/04
10/27/04

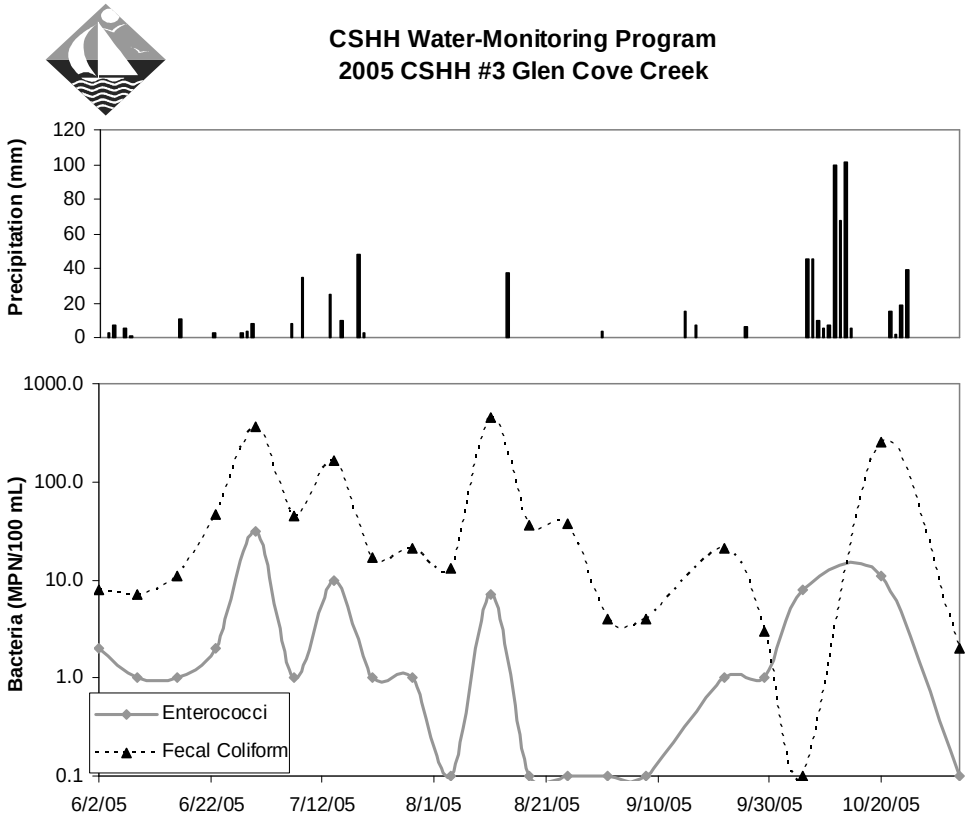

CSHH Water-Monitoring Program
2004 CSHH #6 - East of the Incinerator
Precipitation (mm)
200
150
100
50
0
Bacteria (MPN/100 mL)
10000
1000
100
10
1
Total Coliform
Fecal Coliform
5/20/04
6/9/04
6/29/04
7/19/04
8/8/04
8/28/04
9/17/04
10/7/04
10/27/04

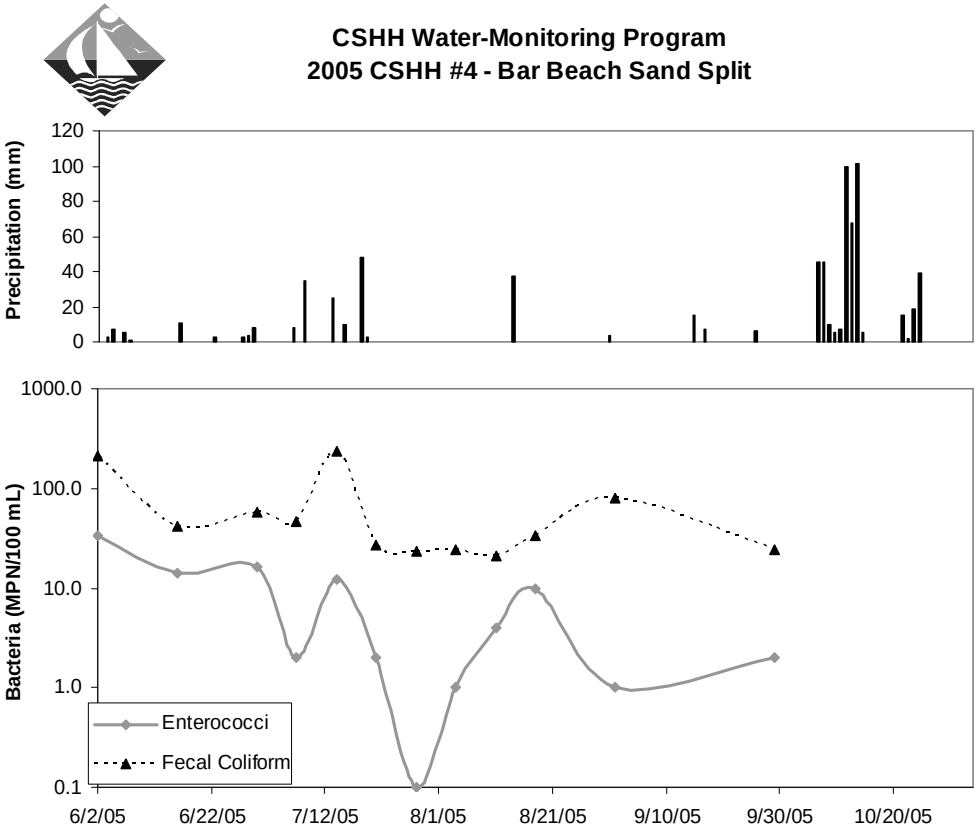

CSHH Water-Monitoring Program
2004 CSHH #7 - West of the Old Oil Dock
Precipitation (mm)
200
150
100
50
0
Bacteria (MPN/100 mL)
100000
10000
1000
100
10
1
Total Coliform
Fecal Coliform
5/20/04
6/9/04
6/29/04
7/19/04
8/8/04
8/28/04
9/17/04
10/7/04
10/27/04

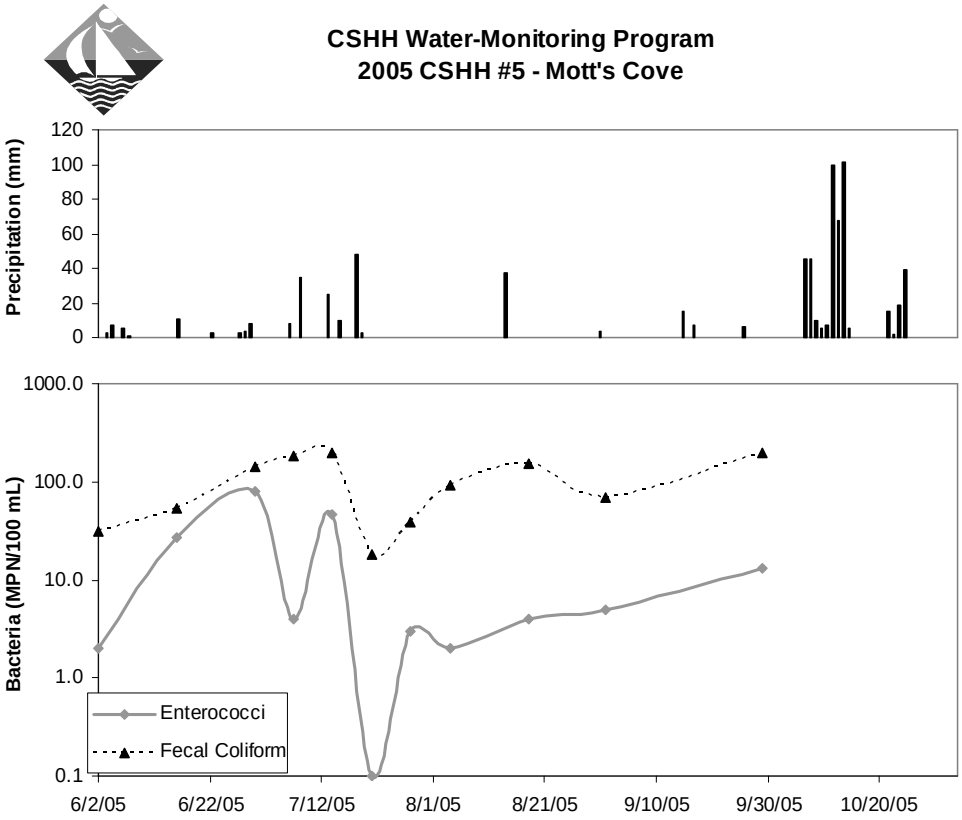

CSHH Water-Monitoring Program
2004 CSHH #8 - Glen Cove Sewage Treatment Plant Outfall
Precipitation (mm)
200
150
100
50
0
Bacteria (MPN/100 mL)
1000000
100000
10000
1000
100
10
1
Total Coliform
Fecal Coliform
5/20/04
6/9/04
6/29/04
7/19/04
8/8/04
8/28/04
9/17/04
10/7/04
10/27/04

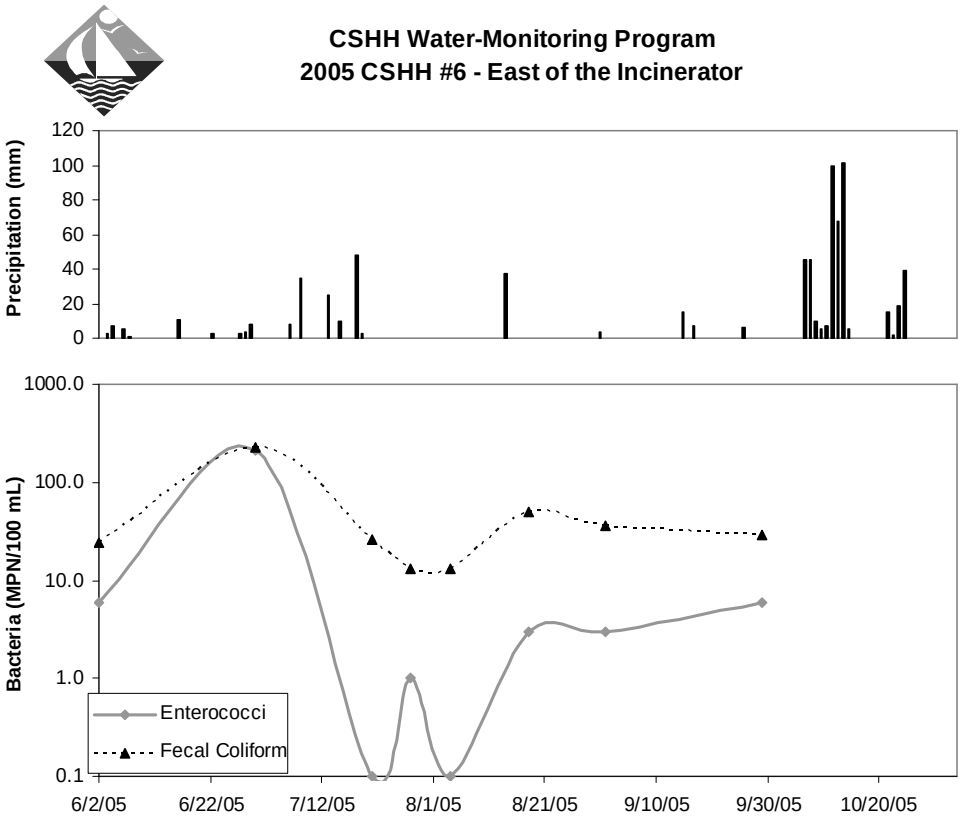

CSHH Water-Monitoring Program
2005 CSHH #1 - Beacon 11
Precipitation (mm)
120
100
80
60
40
20
0
Bacteria (MPN/100 mL)
1000.0
100.0
10.0
1.0
0.1
Enterococci
Fecal Coliform
6/2/05
6/22/05
7/12/05
8/1/05
8/21/05
9/10/05
9/30/05
10/20/05

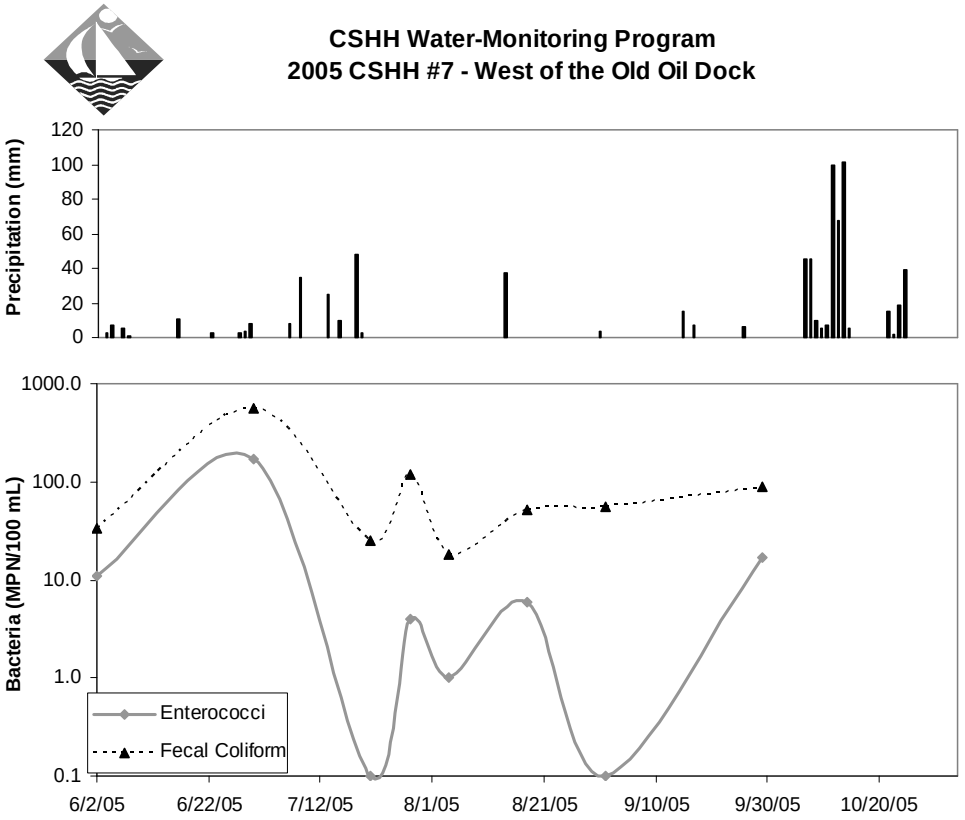

CSHH Water-Monitoring Program
2005 CSHH #2 - Bell Buoy 6
Precipitation (mm)
120
100
80
60
40
20
0
Bacteria (MPN/ 100 mL)
1000.0
100.0
10.0
1.0
0.1
Enterococci
Fecal Coliform
6/2/05
6/22/05
7/12/05
8/1/05
8/21/05
9/10/05
9/30/05
10/20/05

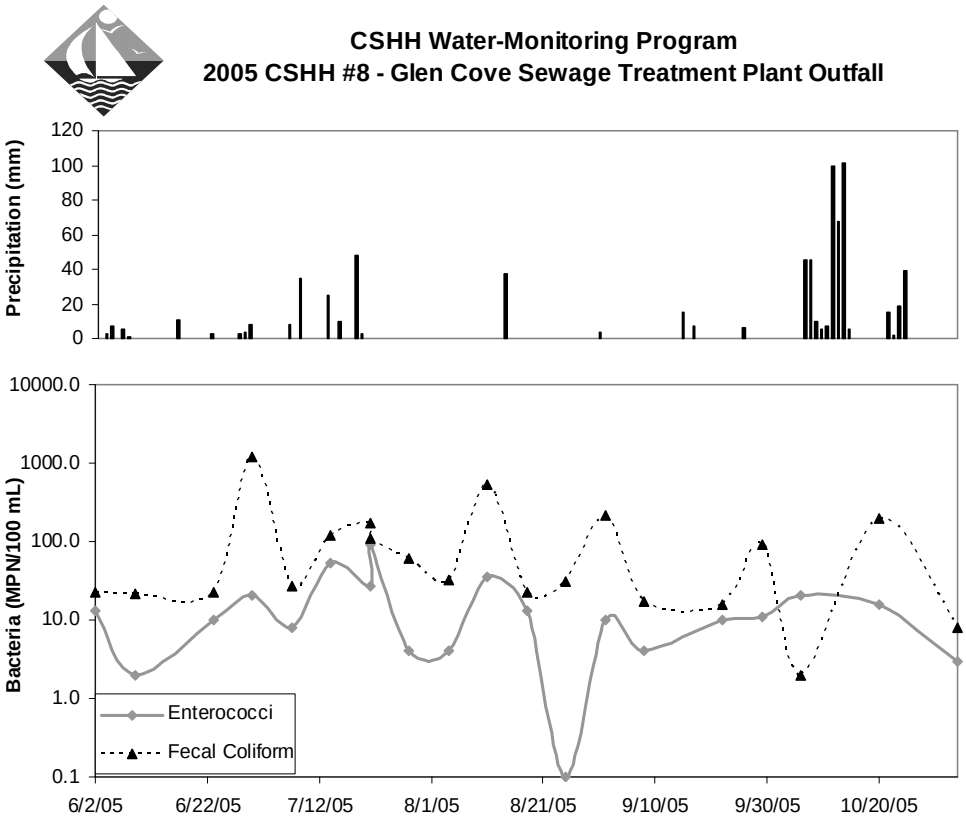

CSHH Water-Monitoring Program
2005 CSHH #3 Glen Cove Creek
Precipitation (mm)
120
100
80
60
40
20
0
Bacteria (MPN/100 mL)
1000.0
100.0
10.0
1.0
0.1
Enterococci
Fecal Coliform
6/2/05
6/22/05
7/12/05
8/1/05
8/21/05
9/10/05
9/30/05
10/20/05


CSHH Water-Monitoring Program
2005 CSHH #4 - Bar Beach Sand Split
Precipitation (mm)
120
100
80
60
40
20
0
Bacteria (MPN/100 mL)
1000.0
100.0
10.0
1.0
0.1
Enterococci
Fecal Coliform
6/2/05
6/22/05
7/12/05
8/1/05
8/21/05
9/10/05
9/30/05
10/20/05


CSHH Water-Monitoring Program
2005 CSHH #5 - Mott's Cove
Precipitation (mm)
120
100
80
60
40
20
0
Bacteria (MPN/100 mL)
1000.0
100.0
10.0
1.0
0.1
Enterococci
Fecal Coliform
6/2/05
6/22/05
7/12/05
8/1/05
8/21/05
9/10/05
9/30/05
10/20/05


CSHH Water-Monitoring Program
2005 CSHH #6 - East of the Incinerator
Precipitation (mm)
120
100
80
60
40
20
0
Bacteria (MPN/100 mL)
1000.0
100.0
10.0
1.0
0.1
Enterococci
Fecal Coliform
6/2/05
6/22/05
7/12/05
8/1/05
8/21/05
9/10/05
9/30/05
10/20/05


CSHH Water-Monitoring Program
2005 CSHH #7 - West of the Old Oil Dock
Precipitation (mm)
120
100
80
60
40
20
0
Bacteria (MPN/100 mL)
1000.0
100.0
10.0
1.0
0.1
Enterococci
Fecal Coliform
6/2/05
6/22/05
7/12/05
8/1/05
8/21/05
9/10/05
9/30/05
10/20/05


CSHH Water-Monitoring Program
2005 CSHH #8 - Glen Cove Sewage Treatment Plant Outfall
Precipitation (mm)
120
100
80
60
40
20
0
Bacteria (MPN/100 mL)
10000.0
1000.0
100.0
10.0
1.0
0.1
Enterococci
Fecal Coliform
6/2/05
6/22/05
7/12/05
8/1/05
8/21/05
9/10/05
9/30/05
10/20/05

Beacon Eleven - CSHH #1

	Total Coliform		*Fecal Coliform*	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
05/20/04	1400.00		500.00	
06/03/04	1100.00	**1240.97**	300.00	***387.30***
06/10/04	30.00	**358.82**	23.00	**151.10**
06/17/04	50.00	**219.23**	50.00	**114.60**
06/24/04	50.00	**95.30**	23.00	**53.07**
07/14/04	500.00	**107.72**	300.00	**70.14**
07/22/04	50.00	**107.72**	30.00	**59.15**
07/29/04	800.00	**271.44**	80.00	**89.63**
08/05/04	50.00	**177.83**	17.00	**59.15**
08/11/04	30.00	**124.57**	23.00	**48.97**
08/19/04	50.00	**78.60**	50.00	**34.22**
08/26/04	30.00	**70.97**	4.00	**22.87**
09/02/04	23.00	**34.90**	23.00	**17.82**
09/08/04	3000.00	**79.14**	***1300.00***	**42.43**
09/15/04	30.00	**79.14**	23.00	**42.43**
09/22/04	30.00	**71.46**	30.00	**38.31**
09/30/04	2200.00	**168.70**	800.00	**110.54**
10/07/04	11.00	**145.56**	11.00	**95.38**
10/14/04	300.00	**91.84**	70.00	**53.17**
10/21/04	800.00	**177.10**	23.00	**53.17**
10/28/04	23.00	**167.94**	8.00	**40.82**
11/04/04	50.00	**78.79**	11.00	**17.32**
11/10/04	50.00	**106.65**	30.00	**21.17**

MPN refers to Most Probable Number of bacterial cells in the sample. TC refers to Total Coliform, and FC refers to Fecal Coliform. Log AvgTC or FC refers to the running seasonal average of bacteria results at that location. Bold, italicized values are outside the normal range.

Bell Buoy 6 - CSHH #2

	Total Coliform		*Fecal Coliform*	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
05/20/04	1300.00		50.00	
06/03/04	17.00	**148.66**	8.00	**20.00**
06/10/04	2.00	**35.36**	1.00	**7.37**
06/17/04	2.00	**17.24**	1.00	**4.47**
06/24/04	50.00	**7.64**	4.00	**2.38**
07/14/04	230.00	**28.44**	230.00	**9.73**
07/22/04	130.00	**114.34**	80.00	**41.91**
07/29/04	230.00	**190.17**	17.00	**67.88**
08/05/04	80.00	**153.15**	17.00	**48.02**
08/11/04	4.00	**73.88**	2.00	**25.43**
08/19/04	50.00	**54.45**	50.00	**18.74**
08/26/04	8.00	**31.17**	4.00	**10.29**
09/02/04	30.00	**20.74**	11.00	**9.44**
09/15/04	2.00	**12.45**	2.00	**8.14**
09/22/04	50.00	**12.45**	23.00	**6.71**
09/30/04	300.00	**30.80**	110.00	**15.36**
10/07/04	2.00	**15.65**	1.00	**8.43**
10/14/04	22.00	**16.75**	7.00	**8.13**
10/21/04	30.00	**28.80**	8.00	**10.72**
11/04/04	8.00	**10.14**	8.00	**4.60**
11/10/04	13.00	**16.19**	8.00	**7.74**

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Red Marker Glen Cove Creek - CSHH #3

	Total Coliform		*Fecal Coliform*	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
05/20/04	1300.00		130.00	
06/03/04	34.00	**210.24**	22.00	**53.48**
06/10/04	300.00	**236.69**	80.00	**61.16**
06/17/04	4.00	**85.34**	1.00	**21.87**
06/24/04	50.00	**37.79**	13.00	**12.30**
07/14/04	300.00	**39.15**	230.00	**14.41**
07/22/04	80.00	**106.27**	30.00	**44.76**
07/29/04	300.00	**193.10**	80.00	**82.03**
08/05/04	80.00	**154.92**	30.00	**63.79**
08/11/04	23.00	**105.79**	13.00	**46.41**
08/19/04	230.00	**100.31**	17.00	**27.56**
08/26/04	300.00	**130.66**	130.00	**36.96**
09/02/04	300.00	**130.66**	70.00	**35.98**
09/08/04	***160001.00***	**597.54**	***160000.00***	***200.22***
09/15/04	80.00	**766.72**	50.00	***262.13***
09/22/04	130.00	**684.04**	13.00	***248.44***
09/30/04	1300.00	**917.16**	500.00	***325.25***
10/07/04	50.00	**640.93**	23.00	***260.34***
10/14/04	23.00	**109.23**	13.00	**39.58**
10/21/04	300.00	**142.28**	50.00	**39.58**
10/28/04	30.00	**106.11**	4.00	**31.27**
11/04/04	50.00	**55.31**	30.00	**17.81**
11/10/04	22.00	**46.93**	1.00	**9.52**

Bar Beach Spit - CSHH #4

	Total Coliform		*Fecal Coliform*	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
06/03/04	300.00		130.00	
06/10/04	130.00	**197.48**	50.00	**80.62**
06/17/04	50.00	**124.93**	13.00	**43.88**
07/14/04	300.00	**122.47**	230.00	**54.68**
07/29/04	800.00	**489.90**	110.00	**159.06**
08/05/04	50.00	**228.94**	30.00	**91.22**
08/26/04	30.00	**106.27**	30.00	**46.26**
09/15/04	50.00	**38.73**	30.00	**30.00**
09/22/04	50.00	**42.17**	13.00	**22.70**
09/30/04	1100.00	**140.10**	170.00	**40.47**
10/07/04	70.00	**117.79**	30.00	**37.55**
10/14/04	30.00	**89.60**	30.00	**35.90**
10/21/04	30.00	**80.90**	30.00	**35.90**
10/28/04	17.00	**65.20**	13.00	**35.90**
11/10/04	23.00	**24.36**	1.00	**10.40**

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Mott's Cove - CSHH #5

	Total Coliform		*Fecal Coliform*	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
06/03/04	500.00		80.00	
06/10/04	230.00	**339.12**	50.00	**63.25**
06/17/04	30.00	**151.10**	17.00	**40.82**
07/14/04	300.00	**94.87**	300.00	**71.41**
07/29/04	300.00	**300.00**	230.00	***262.68***
08/26/04	50.00	**122.47**	23.00	**72.73**
09/15/04	300.00	**122.47**	300.00	**83.07**
09/22/04	800.00	**228.94**	80.00	**82.03**
09/30/04	5000.00	**1062.66**	800.00	***267.77***
10/07/04	500.00	**880.11**	30.00	**154.92**
10/14/04	230.00	**672.94**	50.00	**123.56**
10/21/04	300.00	**672.94**	170.00	**110.29**
10/28/04	230.00	**524.45**	80.00	**110.29**
11/10/04	23.00	**138.22**	23.00	**62.89**

East of the Incinerator - CSHH #6

	Total Coliform		*Fecal Coliform*	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
06/03/04	170.00		30.00	
06/10/04	300.00	**225.83**	17.00	**22.58**
06/17/04	50.00	**136.62**	23.00	**22.72**
07/14/04	5000.00	**500.00**	***3000.00***	***262.68***
07/29/04	300.00	**1224.74**	170.00	***714.14***
08/26/04	30.00	**94.87**	30.00	**71.41**
09/15/04	130.00	**62.45**	30.00	**30.00**
09/22/04	230.00	**96.44**	23.00	**27.46**
09/30/04	2300.00	**409.70**	800.00	**82.03**
10/14/04	170.00	**328.82**	80.00	**81.52**
10/28/04	23.00	**207.95**	13.00	**94.05**
11/10/04	30.00	**48.95**	30.00	**31.48**

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West of Old Oil Dock (now just outside Bryan Landing development) - CSHH #7

	Total Coliform		*Fecal Coliform*	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
06/03/04	300.00		50.00	
06/10/04	900.00	**519.62**	900.00	***212.13***
06/17/04	50.00	**238.11**	50.00	**131.04**
07/14/04	***8000.00***	**632.46**	***1300.00***	***254.95***
07/29/04	2300.00	***4289.52***	130.00	***411.10***
08/26/04	300.00	**830.66**	110.00	**119.58**
09/15/04	130.00	**197.48**	30.00	**57.45**
09/30/04	***17000.00***	**1486.61**	***8000.00***	***489.90***
10/14/04	230.00	**798.07**	230.00	***380.76***
10/28/04	500.00	**1250.40**	30.00	***380.76***
11/10/04	110.00	**233.00**	30.00	**59.15**

Glen Cove STP - CSHH #8

	Total Coliform		*Fecal Coliform*	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
05/20/04	1300.00		70.00	
06/03/04	2300.00	**1729.16**	110.00	**87.75**
06/10/04	500.00	**1143.44**	50.00	**72.75**
06/17/04	80.00	**588.08**	8.00	**41.89**
06/24/04	1300.00	**588.08**	70.00	**41.89**
07/14/04	1300.00	**513.25**	80.00	**35.52**
07/22/04	300.00	**797.39**	130.00	**89.96**
07/29/04	1700.00	**871.98**	800.00	***202.63***
08/05/04	2300.00	**1111.25**	80.00	**160.62**
08/11/04	3000.00	**1355.42**	500.00	***201.57***
08/19/04	1100.00	**1310.88**	30.00	**165.67**
08/26/04	300.00	**1310.88**	23.00	**117.17**
09/02/04	500.00	**1026.28**	50.00	**67.29**
09/08/04	***160001.00***	**2397.43**	***160001.00***	***307.74***
09/15/04	170.00	**1350.24**	30.00	**175.31**
09/22/04	800.00	**1266.92**	30.00	**175.31**
09/30/04	2300.00	**1904.02**	130.00	***247.89***
10/07/04	300.00	**1719.10**	30.00	***223.81***
10/14/04	500.00	**542.34**	17.00	**35.90**
10/21/04	170.00	**542.34**	8.00	**27.56**
10/28/04	220.00	**418.93**	13.00	**23.32**
11/04/04	500.00	**308.74**	230.00	**26.14**
11/10/04	80.00	**237.02**	2.00	**15.21**

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Beacon Eleven - CSHH #1

	Fecal Coliform		*Enterococci*	
Date	**MPNFC**	**Log AvgFC**	**MPNEnt**	**Log AvgEnt**
06/02/05	14.00	**0.00**	7.00	**0.00**
06/09/05	39.00	**23.37**	4.00	**5.29**
06/16/05	8.00	**16.35**	4.00	**4.82**
06/23/05	8.00	**13.67**	4.00	**4.60**
06/30/05	80.00	**19.47**	37.00	**6.98**
07/07/05	80.00	**27.59**	5.00	**6.53**
07/14/05	118.00	**34.42**	13.00	**8.26**
07/21/05	23.00	**42.52**	0.10	**3.95**
07/28/05	37.00	**57.76**	0.10	**1.89**
08/04/05	64.00	**55.24**	3.00	**1.14**
08/11/05	22.00	**42.67**	6.00	**1.19**
08/18/05	33.00	**33.07**	4.00	**0.94**
08/25/05	37.00	**36.37**	0.10	**0.94**
09/01/05	43.00	**37.48**	6.00	**2.12**
09/08/05	16.00	**28.40**	1.00	**1.70**
09/22/05	42.00	**32.16**	4.00	**1.24**
09/29/05	7.00	**21.21**	1.00	**2.21**
10/06/05	3.00	**10.90**	18.00	**2.91**
10/20/05	145.00	**18.91**	4.00	**4.12**
11/03/05	11.00	**16.85**	0.10	**1.93**

Bell Buoy 6 - CSHH #2

	Fecal Coliform		*Enterococci*	
Date	**MPNFC**	**Log AvgFC**	**MPNEnt**	**Log AvgEnt**
06/02/05	2.00	**0.00**	0.10	**0.00**
06/09/05	5.00	**3.16**	0.10	**0.10**
06/16/05	4.00	**3.42**	0.10	**0.10**
06/23/05	8.00	**4.23**	3.00	**0.23**
06/30/05	240.00	**9.49**	15.00	**0.54**
07/07/05	40.00	**17.27**	0.10	**0.54**
07/14/05	110.00	**32.05**	2.00	**0.98**
07/21/05	2.00	**27.90**	1.00	**1.55**
07/28/05	1.00	**18.41**	0.10	**0.79**
08/04/05	48.00	**13.34**	1.00	**0.46**
08/11/05	4.00	**8.42**	0.10	**0.46**
08/18/05	7.00	**4.85**	0.10	**0.25**
09/01/05	0.10	**3.40**	0.10	**0.18**
09/08/05	3.00	**1.70**	1.00	**0.18**
09/22/05	0.10	**0.31**	0.10	**0.22**
09/29/05	0.10	**0.23**	0.10	**0.18**
10/06/05	0.10	**0.23**	2.00	**0.38**
10/20/05	36.00	**0.44**	0.10	**0.21**
11/03/05	0.10	**0.71**	0.10	**0.27**

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Red Marker Glen Cove Creek - CSHH #3

	Fecal Coliform		*Enterococci*	
Date	**MPNFC**	**Log AvgFC**	**MPNEnt**	**Log AvgEnt**
06/02/05	8.00	0.00	2.00	0.00
06/09/05	7.00	7.48	1.00	1.41
06/16/05	11.00	8.51	1.00	1.26
06/23/05	46.00	12.97	2.00	1.41
06/30/05	360.00	25.22	31.00	2.62
07/07/05	44.00	35.47	1.00	2.28
07/14/05	164.00	66.64	10.00	3.62
07/21/05	17.00	72.70	1.00	3.62
07/28/05	21.00	62.15	1.00	3.15
08/04/05	13.00	**31.99**	0.10	**1.00**
08/11/05	445.00	**50.81**	7.00	**1.48**
08/18/05	36.00	**37.52**	0.10	**0.59**
08/25/05	37.00	**43.83**	0.10	**0.37**
09/01/05	4.00	**31.46**	0.10	**0.23**
09/08/05	4.00	**24.85**	0.10	**0.23**
09/22/05	21.00	**10.56**	1.00	**0.18**
09/29/05	3.00	**5.63**	1.00	**0.32**
10/06/05	0.10	**2.24**	8.00	**0.95**
10/20/05	255.00	**6.33**	11.00	**3.06**
11/03/05	2.00	**3.71**	0.10	**2.06**

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Bar Beach Spit - CSHH #4

	Fecal Coliform		*Enterococci*	
Date	**MPNFC**	**Log AvgFC**	**MPNEnt**	**Log AvgEnt**
06/02/05	210.00	**0.00**	33.00	**0.00**
06/16/05	42.00	**93.91**	14.00	**21.49**
06/30/05	57.00	**79.51**	16.00	**19.48**
07/07/05	46.00	**47.93**	2.00	**7.65**
07/14/05	236.00	**71.40**	12.00	**8.56**
07/21/05	27.00	**63.93**	2.00	**5.26**
07/28/05	23.00	**52.11**	0.10	**2.38**
08/04/05	24.00	**43.83**	1.00	**1.37**
08/11/05	21.00	**37.47**	4.00	**1.57**
08/18/05	33.00	**25.28**	10.00	**1.52**
09/01/05	80.00	**33.96**	1.00	**2.51**
09/29/05	24.00	**43.82**	2.00	**1.41**

Mott's Cove - CSHH #5

	Fecal Coliform		*Enterococci*	
Date	**MPNFC**	**Log AvgFC**	**MPNEnt**	**Log AvgEnt**
06/02/05	31.00	**0.00**	2.00	**0.00**
06/16/05	54.00	**40.91**	27.00	**7.35**
06/30/05	140.00	**61.65**	80.00	**16.29**
07/07/05	180.00	**110.81**	4.00	**20.52**
07/14/05	200.00	**128.44**	46.00	**25.11**
07/21/05	18.00	**97.59**	0.10	**6.19**
07/28/05	39.00	**81.24**	3.00	**5.36**
08/04/05	91.00	**74.53**	2.00	**2.56**
08/18/05	155.00	**56.10**	4.00	**1.24**
09/01/05	70.00	**99.58**	5.00	**3.42**
09/29/05	200.00	**118.32**	13.00	**8.06**

East of the Incinerator – CSHH #6

	Fecal Coliform		*Enterococci*	
Date	**MPNFC**	**Log AvgFC**	**MPNEnt**	**Log AvgEnt**
06/02/05	24.00	0.00	6.00	0.00
06/30/05	230.00	74.30	210.00	35.50
07/21/05	26.00	77.33	0.10	4.58
07/28/05	13.00	42.68	1.00	2.76
08/04/05	13.00	16.38	0.10	0.22
08/18/05	50.00	21.65	3.00	0.42
09/01/05	36.00	28.60	3.00	0.97
09/29/05	29.00	32.31	6.00	4.24

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West of Old Oil Dock (now outside Bryant Landing development) - CSHH #7

	Fecal Coliform		***Enterococci***	
Date	**MPNFC**	**Log AvgFC**	**MPNEnt**	**Log AvgEnt**
06/02/05	33.00	**0.00**	11.00	**0.00**
06/30/05	570.00	**137.15**	170.00	***43.24***
07/21/05	25.00	**119.37**	0.10	**4.12**
07/28/05	120.00	**119.58**	4.00	**4.08**
08/04/05	18.00	**37.80**	1.00	**0.74**
08/18/05	52.00	**40.94**	6.00	**1.24**
09/01/05	56.00	**37.42**	0.10	**0.84**
09/29/05	90.00	**70.99**	17.00	**1.30**

	Fecal Coliform		***Enterococci***	
Date	**MPNFC**	**Log AvgFC**	**MPNEnt**	**Log AvgEnt**
06/02/05	12.00	**0.00**	9.00	**0.00**
06/09/05	24.00	**16.97**	2.00	**4.24**
06/23/05	46.00	**23.66**	7.00	**5.01**
06/30/05	70.00	**31.03**	19.00	**6.99**
07/07/05	30.00	**39.02**	4.00	**5.71**
07/14/05	100.00	**55.75**	80.00	**14.36**
07/21/05	56.00	**55.80**	16.00	**14.68**
07/28/05	70.00	**60.69**	25.00	**18.93**
08/04/05	41.00	**54.53**	7.00	**15.50**
08/11/05	136.00	**73.78**	5.00	**16.21**
08/18/05	39.00	**61.11**	11.00	**10.90**
08/25/05	29.00	**53.58**	0.10	**3.95**
09/01/05	300.00	**71.68**	7.00	**3.06**
09/08/05	418.00	**114.04**	4.00	**2.74**
09/22/05	15.00	**85.94**	14.00	**2.50**
09/29/05	45.00	**95.92**	6.00	**6.96**
10/06/05	1.00	**23.05**	39.00	**10.70**
10/20/05	200.00	**19.17**	12.00	**14.08**
11/03/05	10.00	**12.60**	0.10	**3.60**

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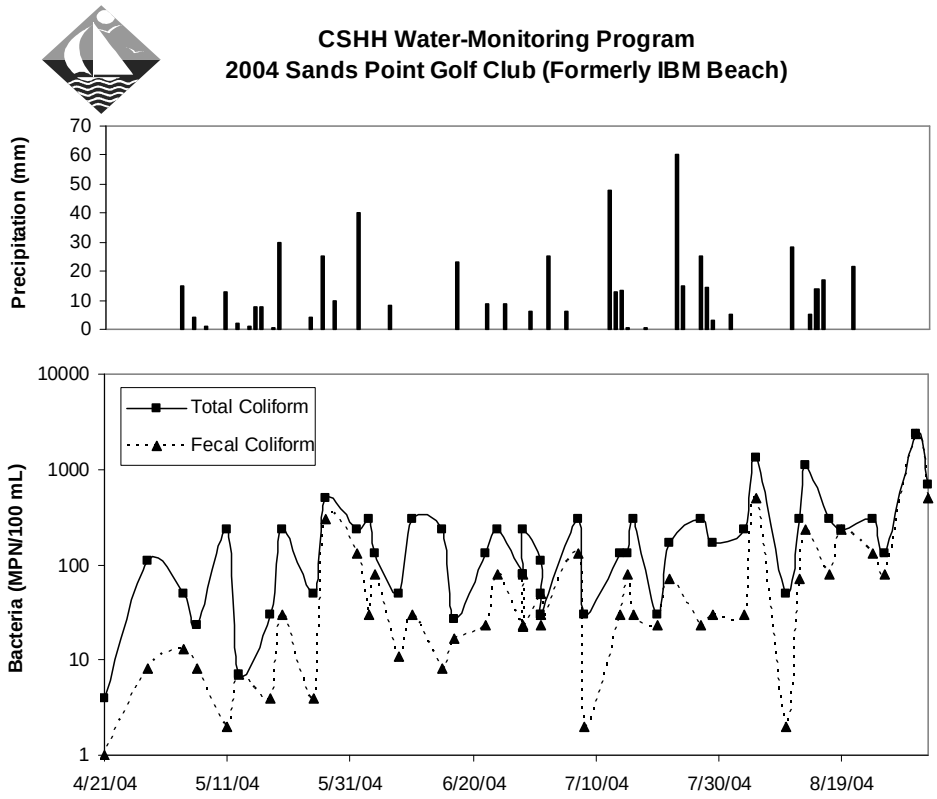

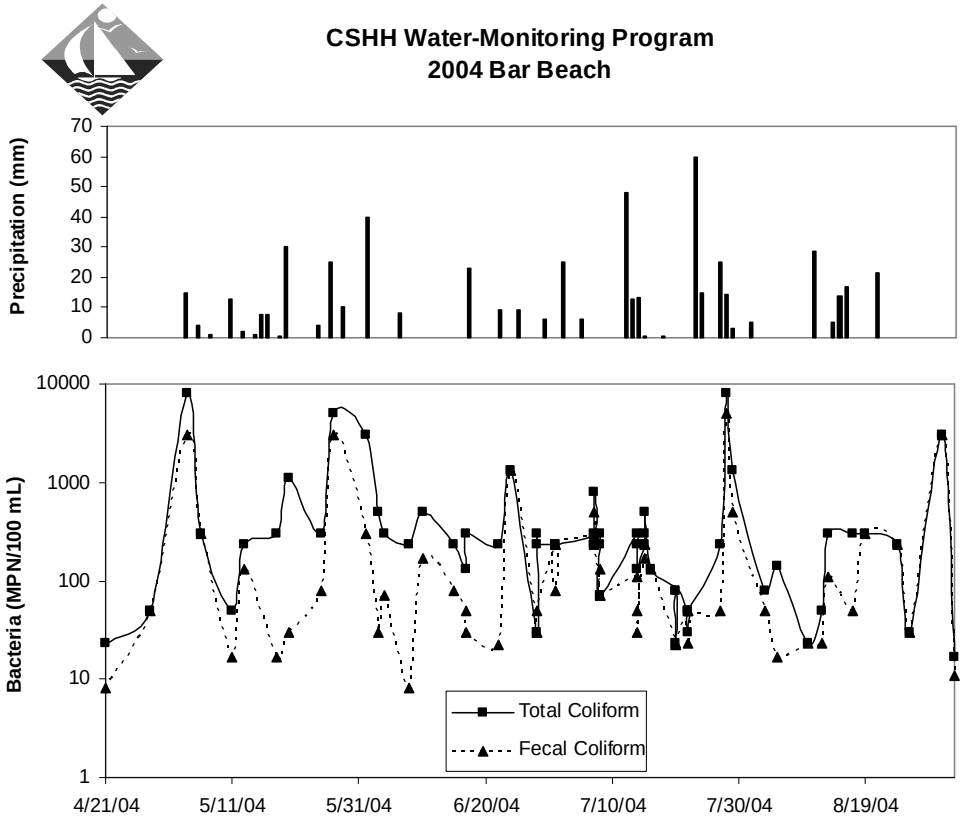

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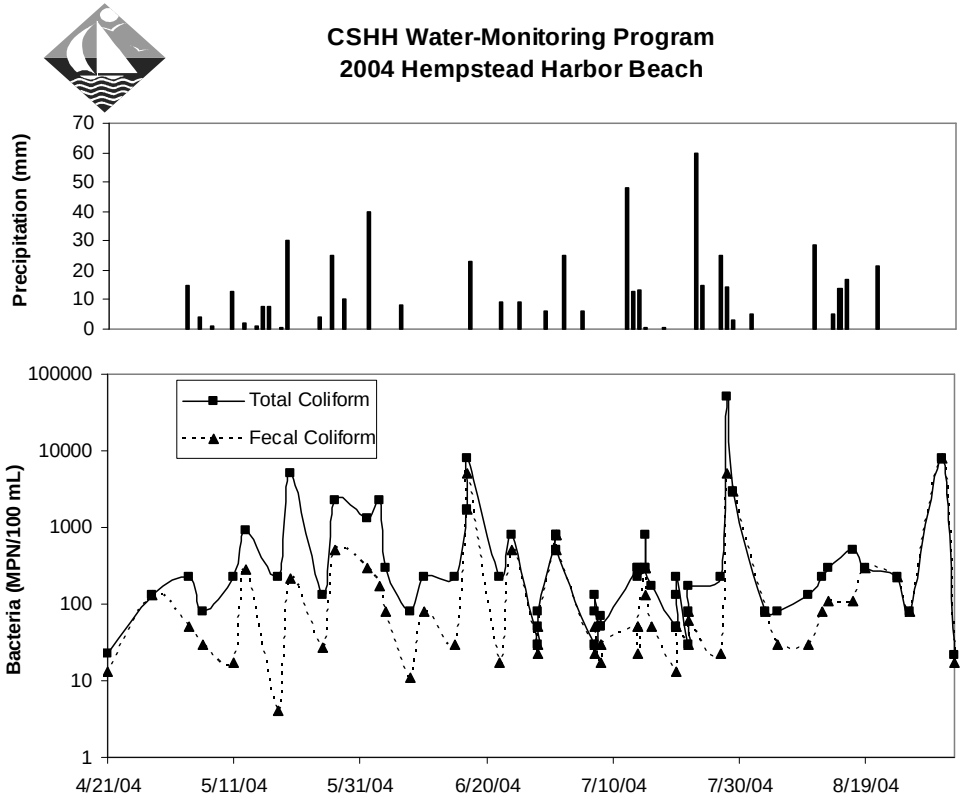

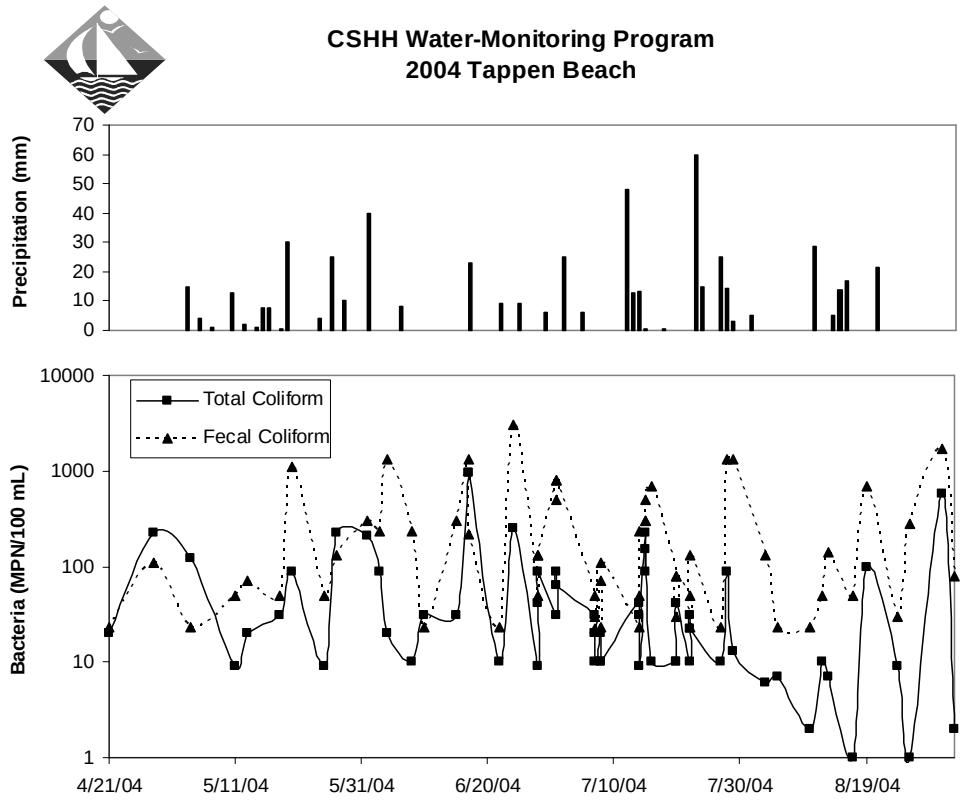

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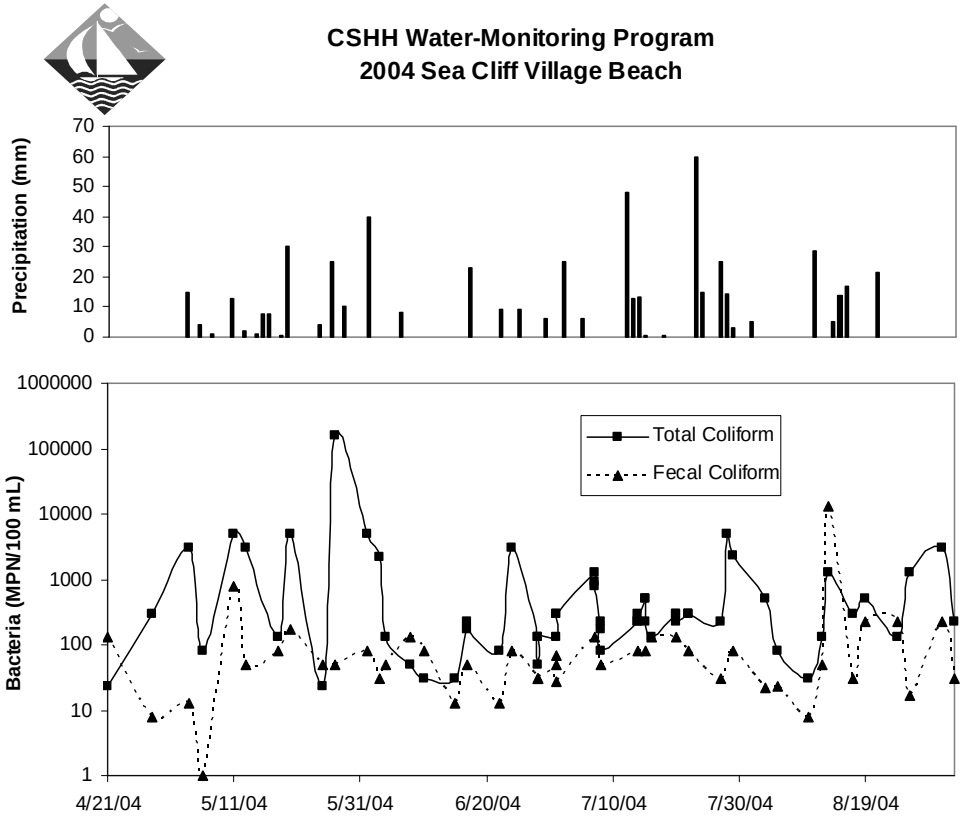

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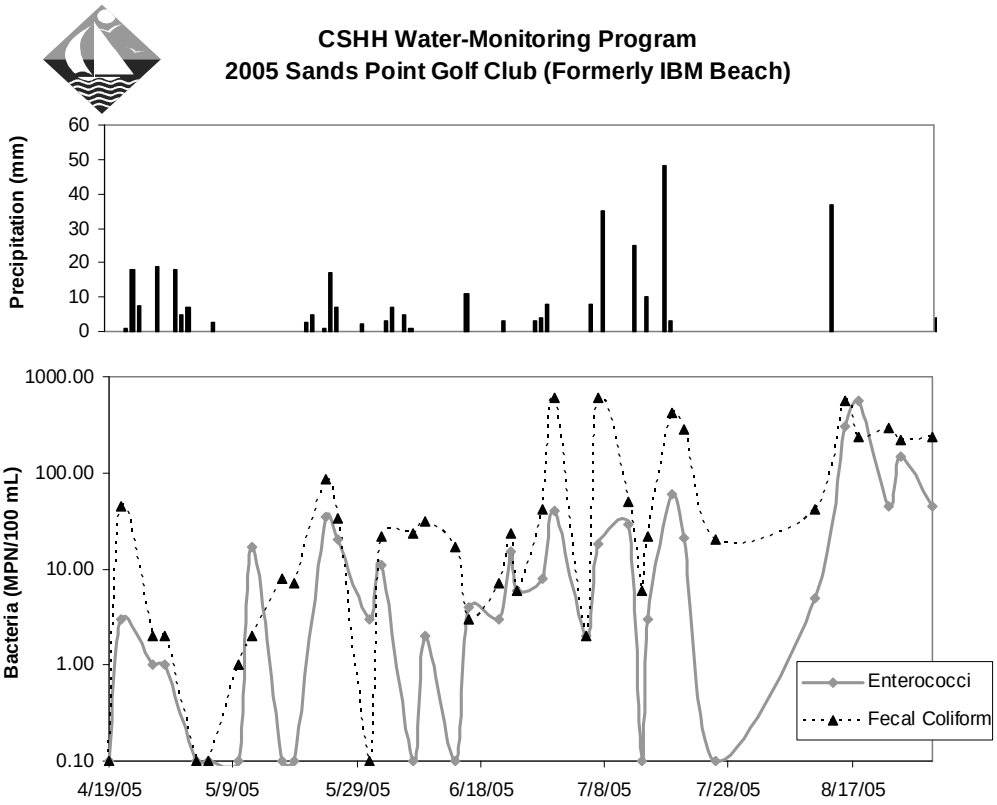

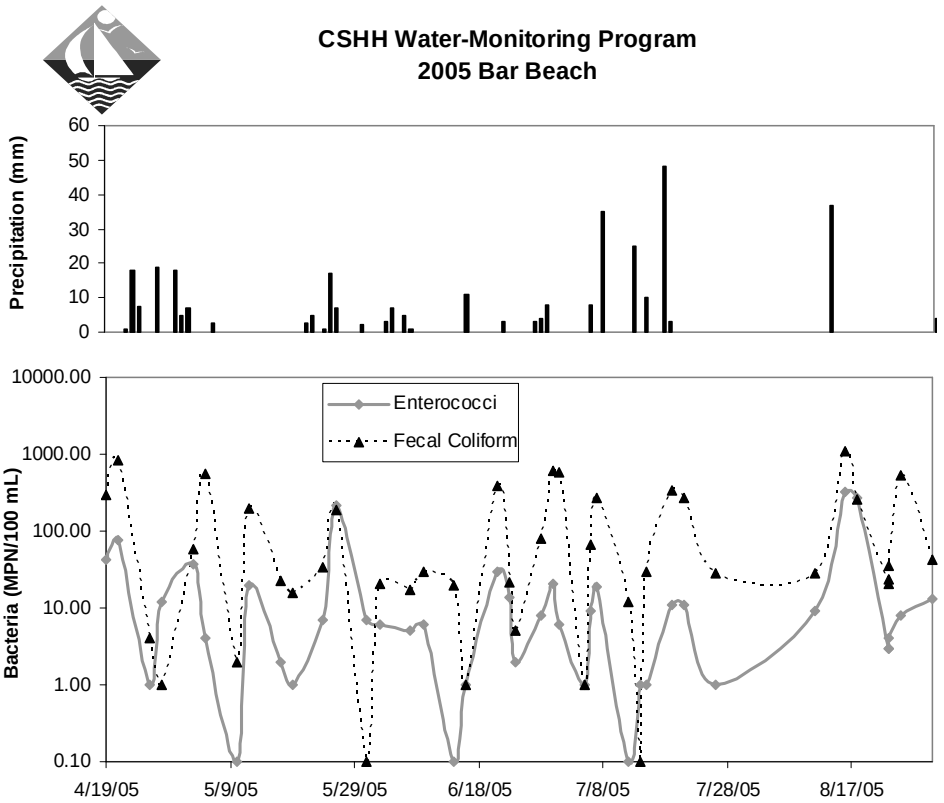

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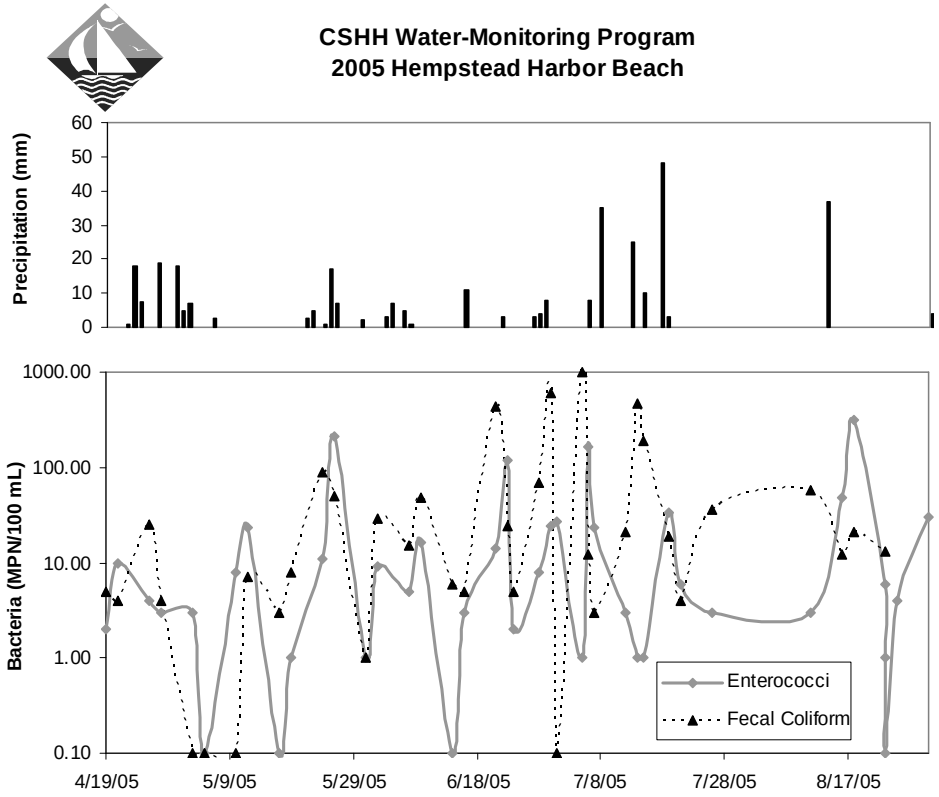

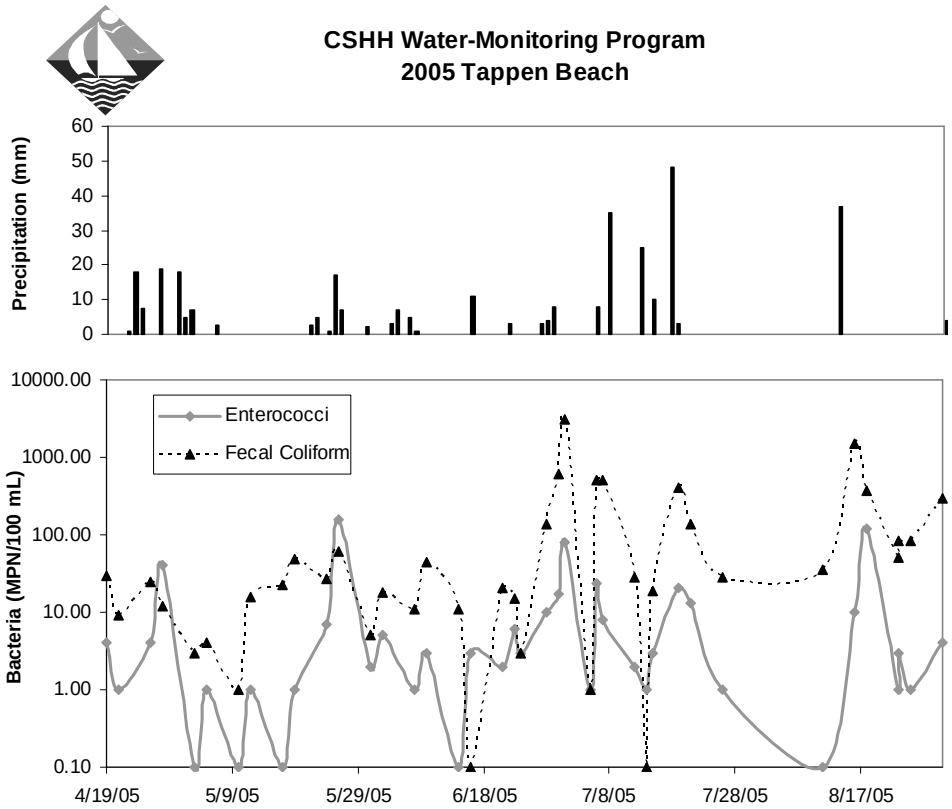

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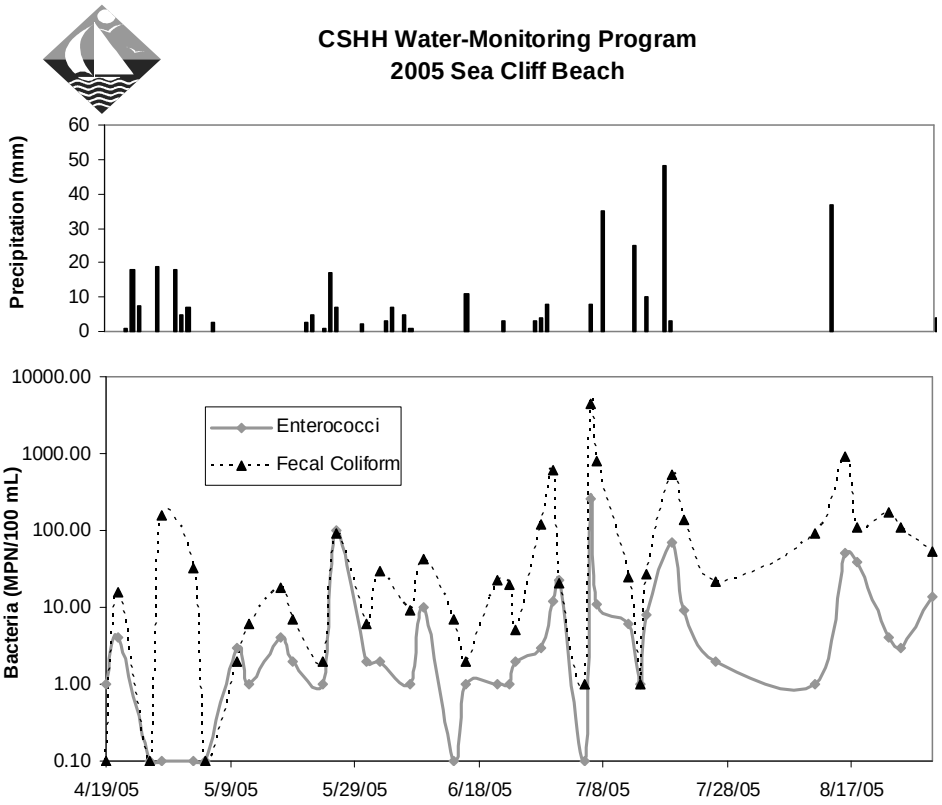

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Sands Point Golf Club Beach

	Total Coliform		Fecal Coliform	
Date	MPNTC	Log AvgTC	MPNFC	Log AvgFC
04/21/04	4.00		1.00	
04/28/04	110.00	20.98	8.00	2.83
05/04/04	50.00	28.02	13.00	4.70
05/06/04	23.00	26.67	8.00	5.37
05/11/04	230.00	41.04	2.00	4.41
05/13/04	7.00	30.56	7.00	4.76
05/18/04	30.00	30.48	4.00	4.64
05/20/04	230.00	39.24	30.00	5.86
05/25/04	50.00	53.81	4.00	6.97
05/27/04	500.00	68.93	300.00	10.59
06/01/04	230.00	74.82	130.00	14.44
06/03/04	300.00	85.96	30.00	15.53
06/04/04	130.00	94.58	80.00	18.63
06/08/04	50.00	102.22	11.00	19.23
06/10/04	300.00	112.73	30.00	20.02
06/15/04	230.00	148.85	8.00	25.55
06/17/04	27.00	127.45	17.00	24.62
06/22/04	130.00	139.12	23.00	28.75
06/24/04	230.00	145.62	80.00	31.56
06/28/04	80.00	134.92	22.00	29.88
06/28/04	80.00	128.66	80.00	32.68
06/28/04	230.00	135.04	23.00	31.73
07/01/04	110.00	132.93	50.00	32.86
07/01/04	50.00	123.96	30.00	32.65
07/01/04	30.00	112.77	23.00	31.90
07/07/04	300.00	105.60	130.00	29.86
07/08/04	30.00	96.52	2.00	24.62
07/14/04	130.00	95.20	30.00	26.19
07/15/04	130.00	97.34	80.00	28.36
07/16/04	300.00	99.21	30.00	31.17
07/20/04	30.00	99.96	23.00	31.85
07/22/04	170.00	103.56	70.00	33.57
07/27/04	300.00	103.84	23.00	31.55
07/29/04	170.00	105.76	30.00	30.76
08/03/04	230.00	139.19	30.00	30.17
08/05/04	1300.00	170.54	500.00	38.94
08/10/04	50.00	169.62	2.00	34.52
08/12/04	300.00	178.65	70.00	36.81
08/13/04	1100.00	207.86	230.00	42.88
08/17/04	300.00	228.32	80.00	46.05
08/19/04	230.00	228.47	230.00	53.30
08/24/04	300.00	296.26	130.00	61.68
08/26/04	130.00	274.88	80.00	63.16
08/31/04	2400.00	355.08	***2400.00***	108.29
09/02/04	700.00	377.68	500.00	124.45

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Bar Beach

	Total Coliform		Fecal Coliform	
Date	MPNTC	Log AvgTC	MPNFC	Log AvgFC
04/21/04	23.00		8.00	
04/28/04	50.00	33.91	50.00	20.00
05/04/04	***8000.00***	209.54	***3000.00***	106.27
05/06/04	300.00	229.21	300.00	137.74
05/11/04	50.00	169.03	17.00	90.65
05/13/04	230.00	177.94	130.00	96.26
05/18/04	300.00	191.72	17.00	75.14
05/20/04	1100.00	238.51	30.00	66.99
05/25/04	300.00	328.81	80.00	89.34
05/27/04	5000.00	444.91	***3000.00***	132.01
06/01/04	3000.00	701.21	300.00	161.09
06/03/04	500.00	677.89	30.00	136.17
06/04/04	300.00	488.16	70.00	93.51
06/08/04	230.00	475.36	8.00	65.08
06/10/04	500.00	477.55	170.00	71.02
06/15/04	230.00	598.45	80.00	78.05
06/17/04	130.00	520.89	50.00	74.95
06/17/04	300.00	497.48	30.00	69.45
06/22/04	230.00	451.81	22.00	76.73
06/24/04	1300.00	493.41	***1300.00***	97.14
06/28/04	30.00	324.24	30.00	65.05
06/28/04	300.00	322.14	30.00	60.98
06/28/04	230.00	313.90	50.00	60.06
07/01/04	230.00	307.01	230.00	66.11
07/01/04	230.00	301.15	80.00	66.95
07/01/04	230.00	296.12	230.00	72.32
07/07/04	300.00	241.76	300.00	77.19
07/07/04	800.00	261.84	500.00	87.43
07/07/04	230.00	259.73	230.00	92.88
07/08/04	300.00	261.94	70.00	91.35
07/08/04	230.00	260.05	130.00	93.15
07/08/04	70.00	242.70	70.00	91.76
07/14/04	300.00	236.61	110.00	102.57
07/14/04	230.00	236.26	50.00	98.77
07/14/04	130.00	229.31	30.00	93.05
07/15/04	230.00	229.34	230.00	97.15
07/15/04	300.00	232.16	230.00	101.03
07/15/04	500.00	240.03	170.00	103.34
07/16/04	130.00	234.15	130.00	105.55
07/20/04	80.00	226.47	22.00	107.67
07/20/04	23.00	205.04	23.00	100.68
07/20/04	80.00	197.15	23.00	94.67
07/22/04	50.00	186.62	50.00	92.28
07/22/04	30.00	173.95	23.00	87.48

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07/22/04	50.00	166.10	50.00	85.69
07/27/04	230.00	153.47	50.00	79.66
07/28/04	***8000.00***	177.67	***5000.00***	92.85
07/29/04	1300.00	200.21	500.00	111.44
08/03/04	80.00	188.94	50.00	102.52
08/05/04	140.00	186.59	17.00	95.13
08/10/04	23.00	151.67	23.00	73.85
08/12/04	50.00	143.49	23.00	69.67
08/13/04	300.00	148.62	110.00	71.20
08/17/04	300.00	125.62	50.00	56.80
08/19/04	300.00	132.64	300.00	63.03
08/24/04	230.00	245.05	230.00	107.13
08/26/04	30.00	205.70	30.00	96.35
08/31/04	3000.00	153.36	***3000.00***	82.91
09/02/04	17.00	125.57	11.00	69.01

Hempstead Harbor Beach

		Total Coliform	Fecal Coliform	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
04/21/04	23.00		13.00	
04/28/04	130.00	54.68	130.00	41.11
05/04/04	230.00	88.27	50.00	43.88
05/06/04	80.00	86.12	30.00	39.90
05/11/04	230.00	104.82	17.00	33.64
05/13/04	900.00	149.99	280.00	47.89
05/18/04	230.00	159.44	4.00	33.59
05/20/04	5000.00	245.27	220.00	42.49
05/25/04	130.00	304.56	27.00	46.55
05/27/04	2300.00	381.27	500.00	60.60
06/01/04	1300.00	492.43	300.00	66.50
06/03/04	2300.00	574.49	170.00	73.05
06/04/04	300.00	589.96	80.00	76.56
06/08/04	80.00	589.96	11.00	69.25
06/10/04	230.00	541.54	80.00	70.17
06/15/04	230.00	514.72	30.00	64.67
06/17/04	1700.00	573.77	***1700.00***	87.05
06/17/04	***8000.00***	714.67	***5000.00***	122.00
06/22/04	230.00	598.82	17.00	131.89
06/24/04	800.00	613.45	500.00	147.38
06/28/04	30.00	476.11	23.00	129.99
06/28/04	50.00	394.59	30.00	115.03
06/28/04	80.00	349.01	50.00	107.89
07/01/04	800.00	370.31	800.00	124.49
07/01/04	800.00	389.83	800.00	140.93
07/01/04	500.00	395.94	500.00	152.54
07/07/04	30.00	272.11	23.00	131.94
07/07/04	130.00	259.03	50.00	123.67
07/07/04	80.00	240.69	30.00	113.19
07/08/04	50.00	219.44	30.00	104.69

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07/08/04	70.00	205.94	17.00	94.63
07/08/04	50.00	191.16	30.00	89.08
07/14/04	300.00	203.62	50.00	97.48
07/14/04	300.00	207.81	23.00	90.34
07/14/04	230.00	208.87	50.00	87.71
07/15/04	300.00	212.50	300.00	93.00
07/15/04	800.00	225.70	300.00	98.09
07/15/04	300.00	228.51	130.00	99.29
07/16/04	170.00	225.53	50.00	101.52
07/20/04	50.00	163.36	13.00	68.15
07/20/04	130.00	161.74	50.00	67.23
07/20/04	230.00	164.13	50.00	66.41
07/22/04	30.00	153.35	30.00	64.33
07/22/04	80.00	149.56	80.00	64.87
07/22/04	170.00	150.27	60.00	64.69
07/27/04	230.00	140.91	23.00	60.49
07/28/04	***50000.00***	175.14	***5000.00***	71.24
07/29/04	3000.00	228.44	***3000.00***	90.89
08/03/04	80.00	189.16	80.00	69.46
08/05/04	80.00	182.50	30.00	67.08
08/10/04	130.00	252.62	30.00	84.32
08/12/04	230.00	251.44	80.00	84.09
08/13/04	300.00	253.56	110.00	85.18
08/17/04	500.00	242.89	110.00	86.45
08/19/04	300.00	246.11	300.00	93.44
08/24/04	230.00	418.15	230.00	159.15
08/26/04	80.00	364.31	80.00	150.28
08/31/04	***8000.00***	257.22	***8000.00***	140.87
09/02/04	22.00	205.69	17.00	116.23

Tappen Beach

	Total Coliform		**Fecal Coliform**	
Date	**MPNTC**	**Log AvgTC**	**MPNFC**	**Log AvgFC**
04/21/04	30.00		23.00	
04/28/04	500.00	122.47	110.00	50.30
05/04/04	80.00	106.27	23.00	38.75
05/11/04	300.00	137.74	50.00	41.30
05/13/04	1400.00	219.02	70.00	45.90
05/18/04	80.00	185.18	50.00	46.56
05/20/04	3000.00	275.66	***1100.00***	73.14
05/25/04	300.00	383.03	50.00	81.73
05/27/04	800.00	419.97	130.00	86.61
06/01/04	800.00	445.38	300.00	98.18
06/03/04	500.00	451.14	230.00	107.92
06/04/04	1300.00	614.97	***1300.00***	168.96
06/08/04	300.00	572.37	230.00	174.26
06/10/04	23.00	427.34	23.00	144.96
06/15/04	500.00	399.42	300.00	186.49
06/17/04	1300.00	444.65	***1300.00***	***222.50***

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06/17/04	500.00	449.02	220.00	***222.29***
06/22/04	130.00	394.86	23.00	179.11
06/24/04	3000.00	467.56	***3000.00***	***226.53***
06/28/04	230.00	434.65	50.00	***238.26***
06/28/04	300.00	421.43	130.00	***226.53***
06/28/04	230.00	402.24	130.00	***217.06***
07/01/04	1300.00	437.40	800.00	***238.25***
07/01/04	500.00	441.32	500.00	***250.32***
07/01/04	800.00	458.04	800.00	***269.18***
07/07/04	50.00	346.59	50.00	***214.03***
07/07/04	130.00	324.65	30.00	187.76
07/07/04	50.00	288.83	22.00	164.21
07/08/04	170.00	279.96	70.00	156.18
07/08/04	230.00	276.92	23.00	140.41
07/08/04	500.00	285.67	110.00	138.62
07/14/04	130.00	313.67	23.00	134.77
07/14/04	300.00	312.93	50.00	127.92
07/14/04	230.00	308.15	230.00	131.73
07/15/04	800.00	322.48	300.00	136.99
07/15/04	500.00	328.97	300.00	141.96
07/15/04	800.00	341.93	500.00	149.95
07/16/04	1100.00	353.85	700.00	155.58
07/20/04	1300.00	348.34	80.00	134.92
07/20/04	50.00	320.14	30.00	126.38
07/20/04	130.00	308.34	80.00	123.99
07/22/04	50.00	286.70	50.00	119.57
07/22/04	30.00	262.86	23.00	112.22
07/22/04	170.00	258.65	130.00	112.84
07/27/04	230.00	240.61	23.00	99.46
07/28/04	***8000.00***	273.95	***1300.00***	109.40
07/29/04	2200.00	300.86	***1300.00***	122.92
08/03/04	300.00	264.61	130.00	98.50
08/05/04	30.00	241.67	23.00	92.71
08/10/04	30.00	259.59	23.00	110.26
08/12/04	170.00	254.15	50.00	105.98
08/13/04	500.00	262.47	140.00	107.40
08/17/04	300.00	208.24	50.00	78.57
08/19/04	700.00	224.64	700.00	90.08
08/24/04	130.00	309.95	30.00	106.33
08/26/04	280.00	297.61	280.00	120.96
08/31/04	1700.00	0.00	***1700.00***	0.00
09/02/04	80.00	368.78	80.00	***368.78***

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Sea Cliff Beach

	Total Coliform		Fecal Coliform	
Date	MPNTC	Log AvgTC	MPNFC	Log AvgFC
04/21/04	23.00		1.00	
04/28/04	300.00	83.07	50.00	7.07
05/04/04	3000.00	274.57	130.00	18.66
05/06/04	80.00	201.73	30.00	21.01
05/11/04	5000.00	383.36	300.00	35.76
05/13/04	3000.00	540.16	220.00	48.41
05/18/04	130.00	440.71	2.00	30.71
05/20/04	5000.00	597.05	170.00	38.03
05/25/04	23.00	597.05	23.00	56.28
05/27/04	***160001.00***	1111.22	***30000.00***	113.06
06/01/04	5000.00	1519.01	500.00	146.03
06/03/04	2200.00	1576.33	500.00	165.15
06/04/04	130.00	1151.67	8.00	124.97
06/08/04	50.00	1098.79	7.00	108.04
06/10/04	30.00	792.05	13.00	89.12
06/15/04	30.00	415.65	13.00	59.49
06/17/04	230.00	393.88	230.00	67.27
06/17/04	170.00	367.25	170.00	72.67
06/22/04	80.00	277.14	8.00	76.31
06/24/04	3000.00	337.99	***2300.00***	101.35
06/28/04	130.00	225.99	80.00	67.67
06/28/04	50.00	199.29	17.00	60.31
06/28/04	130.00	192.85	30.00	57.15
07/01/04	130.00	187.49	80.00	58.54
07/01/04	300.00	193.46	300.00	65.28
07/01/04	300.00	198.84	80.00	66.12
07/07/04	1300.00	156.79	500.00	66.54
07/07/04	900.00	176.17	170.00	70.83
07/07/04	800.00	193.64	26.00	66.53
07/08/04	170.00	192.16	50.00	65.42
07/08/04	230.00	194.09	80.00	66.16
07/08/04	80.00	185.25	50.00	65.19
07/14/04	230.00	223.10	50.00	79.53
07/14/04	300.00	226.60	130.00	81.61
07/14/04	230.00	226.77	80.00	81.53
07/15/04	500.00	235.47	230.00	85.66
07/15/04	500.00	243.67	300.00	90.68
07/15/04	230.00	243.06	170.00	93.19
07/16/04	130.00	259.06	23.00	95.53
07/20/04	300.00	267.28	50.00	86.83
07/20/04	300.00	268.62	27.00	82.53
07/20/04	230.00	266.89	30.00	79.12
07/22/04	300.00	268.14	110.00	80.17
07/22/04	300.00	269.30	50.00	78.73

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07/22/04	300.00	270.38	130.00	80.20
07/27/04	230.00	256.69	230.00	80.21
07/28/04	5000.00	286.54	***1300.00***	88.93
07/29/04	2300.00	355.75	***1300.00***	110.94
08/03/04	500.00	382.84	230.00	112.83
08/05/04	80.00	358.67	50.00	109.07
08/10/04	30.00	309.52	8.00	101.99
08/12/04	130.00	296.38	50.00	98.41
08/13/04	1300.00	318.00	220.00	102.26
08/17/04	300.00	339.05	50.00	96.32
08/19/04	500.00	347.38	500.00	106.76
08/24/04	130.00	352.56	13.00	126.07
08/26/04	1300.00	393.06	300.00	135.51
08/31/04	3000.00	330.23	***3000.00***	111.46
09/02/04	230.00	319.55	130.00	113.03

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Sands Point Golf Club Beach

	Fecal Coliform		Enterococci	
Date	MPNFC	Log AvgFC	MPNEnt	Log AvgEnt
04/19/05	0.10	0.00	0.10	0.00
04/21/05	45.00	2.12	3.00	0.55
04/26/05	2.00	2.08	1.00	0.67
04/28/05	2.00	2.06	1.00	0.74
05/03/05	0.10	1.12	0.10	0.50
05/05/05	0.10	0.75	0.10	0.38
05/10/05	1.00	0.78	0.10	0.31
05/12/05	2.00	0.88	17.00	0.52
05/17/05	8.00	1.12	0.10	0.43
05/19/05	7.00	1.35	0.10	0.37
05/24/05	87.00	1.94	35.00	0.57
05/26/05	34.00	2.58	20.00	0.81
05/31/05	0.10	1.91	3.00	0.89
06/02/05	22.00	2.43	11.00	1.15
06/07/05	23.00	6.35	0.10	1.50
06/09/05	31.00	7.44	2.00	1.55
06/14/05	17.00	11.79	0.10	1.19
06/16/05	3.00	10.29	4.00	1.34
06/21/05	7.00	10.58	3.00	2.61
06/23/05	23.00	11.43	15.00	3.10
06/24/05	6.00	8.75	6.00	2.60
06/28/05	41.00	8.91	8.00	2.37
06/30/05	601.00	13.07	40.00	3.07
07/05/05	2.00	16.74	2.00	2.59
07/07/05	600.00	23.18	18.00	3.09
07/12/05	50.00	24.34	29.00	5.70
07/14/05	6.00	21.43	0.10	3.95
07/15/05	22.00	21.93	3.00	5.38
07/19/05	427.00	34.43	60.00	6.88
07/21/05	282.00	41.02	21.00	7.55
07/26/05	20.00	58.51	0.10	5.13
08/11/05	42.00	48.89	5.00	3.42
08/16/05	564.00	141.66	300.00	11.36
08/18/05	240.00	154.67	570.00	21.81
08/23/05	291.00	127.04	45.00	20.75
08/25/05	218.00	139.00	150.00	28.85
08/30/05	240.00	***210.32***	44.00	***79.58***

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Bar Beach

	Fecal Coliform		Enterococci	
Date	MPNFC	Log AvgFC	MPNEnt	Log AvgEnt
04/19/05	300.00	0.00	43.00	0.00
04/21/05	851.00	***505.27***	77.00	***57.54***
04/26/05	4.00	100.70	1.00	14.90
04/28/05	1.00	31.79	12.00	14.12
05/03/05	57.00	35.73	37.00	17.12
05/05/05	560.00	56.52	4.00	13.43
05/10/05	2.00	35.07	0.10	6.67
05/12/05	200.00	43.59	20.00	7.65
05/17/05	23.00	40.60	2.00	6.59
05/19/05	16.00	36.99	1.00	5.46
05/24/05	34.00	20.50	7.00	3.33
05/26/05	190.00	25.61	220.00	5.06
05/31/05	0.10	24.37	7.00	5.70
06/02/05	21.00	24.01	6.00	5.73
06/07/05	17.00	14.79	5.00	4.78
06/09/05	30.00	15.88	6.00	4.89
06/14/05	20.00	15.48	0.10	4.18
06/16/05	1.00	11.77	1.00	3.62
06/21/05	380.00	15.53	30.00	5.65
06/23/05	22.00	16.08	14.00	6.18
06/24/05	5.00	13.28	2.00	5.45
06/28/05	80.00	12.18	8.00	3.92
06/30/05	601.00	17.36	21.00	4.56
07/01/05	570.00	38.10	6.00	4.50
07/05/05	1.00	28.89	1.00	3.82
07/06/05	67.00	30.98	9.00	4.10
07/07/05	270.00	36.60	19.00	4.62
07/12/05	12.00	36.15	0.10	3.26
07/14/05	0.10	22.98	1.00	2.98
07/15/05	29.00	23.64	1.00	3.55
07/19/05	345.00	37.06	11.00	4.27
07/21/05	264.00	42.64	11.00	4.57
07/26/05	28.00	43.35	1.00	3.36
08/11/05	28.00	21.99	9.00	1.95
08/16/05	***1100.00***	151.02	320.00	12.84
08/18/05	260.00	165.33	270.00	21.33
08/23/05	21.00	86.02	3.00	18.77
08/23/05	36.00	74.39	3.00	13.83
08/23/05	24.00	63.29	4.00	11.58
08/25/05	536.00	82.67	8.00	11.06
08/30/05	43.00	87.22	13.00	15.24

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Hempstead Harbor Beach

	Fecal Coliform		Enterococci	
Date	MPNFC	Log AvgFC	MPNEnt	Log AvgEnt
04/19/05	124.00	0.00	2.00	0.00
04/21/05	5.00	24.90	10.00	4.47
04/26/05	42.00	29.64	4.00	4.31
04/28/05	70.00	36.74	3.00	3.94
05/03/05	4.00	23.58	3.00	3.73
05/05/05	4.00	17.54	0.10	2.04
05/10/05	49.00	20.32	8.00	2.48
05/12/05	360.00	29.10	23.00	3.28
05/17/05	27.00	28.86	0.10	2.22
05/19/05	23.00	28.21	1.00	2.05
05/24/05	60.00	31.54	11.00	2.08
05/26/05	270.00	39.10	210.00	3.30
05/31/05	6.00	29.52	1.00	2.86
06/02/05	23.00	28.79	9.00	3.21
06/07/05	13.00	40.87	5.00	4.99
06/09/05	54.00	42.03	16.00	5.61
06/14/05	16.00	29.23	0.10	2.94
06/16/05	2.00	22.36	3.00	2.95
06/21/05	120.00	26.30	14.00	5.76
06/23/05	***2300.00***	41.13	120.00	7.80
06/24/05	4.00	31.37	2.00	6.58
06/28/05	170.00	29.96	8.00	4.75
06/30/05	601.00	39.34	24.00	5.50
07/01/05	***1100.00***	63.19	27.00	7.42
07/05/05	2.00	50.61	1.00	6.08
07/06/05	***3500.00***	72.03	167.00	8.01
07/07/05	280.00	79.96	23.00	8.69
07/12/05	46.00	91.80	3.00	7.91
07/14/05	2.00	68.39	1.00	6.75
07/15/05	26.00	70.99	1.00	8.06
07/19/05	436.00	107.42	33.00	9.69
07/21/05	191.00	111.93	6.00	9.36
07/26/05	27.00	101.42	3.00	7.57
08/11/05	130.00	49.21	3.00	3.41
08/16/05	545.00	173.96	48.00	9.69
08/18/05	240.00	183.54	310.00	17.27
08/23/05	36.00	110.57	6.00	15.17
08/23/05	20.00	83.15	1.00	9.64
08/23/05	10.00	61.44	0.10	5.02
08/25/05	91.00	64.53	4.00	4.88
08/30/05	260.00	85.65	30.00	6.51

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Tappen Beach

	Fecal Coliform		Enterococci	
Date	MPNFC	Log AvgFC	MPNEnt	Log AvgEnt
04/19/05	30.00	0.00	4.00	0.00
04/21/05	9.00	16.43	1.00	2.00
04/26/05	25.00	18.90	4.00	2.52
04/28/05	12.00	16.87	41.00	5.06
05/03/05	3.00	11.94	0.10	2.31
05/05/05	4.00	9.95	1.00	2.01
05/10/05	1.00	7.17	0.10	1.31
05/12/05	16.00	7.92	1.00	1.27
05/17/05	23.00	8.92	0.10	0.95
05/19/05	49.00	10.58	1.00	0.96
05/24/05	27.00	10.64	7.00	1.02
05/26/05	60.00	12.65	160.00	1.68
05/31/05	5.00	10.64	2.00	1.09
06/02/05	18.00	11.22	5.00	1.27
06/07/05	11.00	14.53	1.00	1.69
06/09/05	45.00	16.27	3.00	1.79
06/14/05	11.00	21.28	0.10	1.91
06/16/05	0.10	12.45	3.00	2.00
06/21/05	21.00	10.58	2.00	3.01
06/23/05	15.00	10.96	6.00	3.22
06/24/05	3.00	8.80	3.00	2.96
06/28/05	140.00	9.58	10.00	2.24
06/30/05	601.00	13.95	17.00	2.70
07/01/05	***3100.00***	25.03	80.00	3.77
07/05/05	1.00	19.25	1.00	3.26
07/06/05	500.00	25.25	24.00	3.85
07/07/05	500.00	31.77	8.00	4.07
07/12/05	28.00	33.36	2.00	4.43
07/14/05	0.10	21.34	1.00	3.95
07/15/05	19.00	22.25	3.00	5.13
07/19/05	409.00	42.19	21.00	5.96
07/21/05	136.00	45.87	13.00	6.30
07/26/05	28.00	64.72	1.00	6.35
08/11/05	35.00	22.48	0.10	2.07
08/16/05	***1500.00***	152.24	10.00	3.07
08/18/05	370.00	176.52	120.00	5.66
08/23/05	51.00	122.64	1.00	2.61
08/23/05	82.00	114.68	3.00	2.67
08/25/05	82.00	109.31	1.00	2.32
08/30/05	300.00	153.40	4.00	2.83

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Sea Cliff Beach

	Fecal Coliform		Enterococci	
Date	MPNFC	Log AvgFC	MPNEnt	Log AvgEnt
04/19/05	0.10	0.00	1.00	0.00
04/21/05	16.00	1.26	4.00	2.00
04/26/05	0.10	0.54	0.10	0.74
04/28/05	155.00	2.23	0.10	0.45
05/03/05	33.00	3.82	0.10	0.33
05/05/05	0.10	2.08	0.10	0.27
05/10/05	2.00	2.07	3.00	0.38
05/12/05	6.00	2.37	1.00	0.43
05/17/05	18.00	2.96	4.00	0.55
05/19/05	7.00	3.23	2.00	0.63
05/24/05	2.00	3.77	1.00	0.51
05/26/05	90.00	5.18	100.00	0.87
05/31/05	6.00	5.60	2.00	1.54
06/02/05	30.00	6.62	2.00	1.58
06/07/05	9.00	9.13	1.00	2.77
06/09/05	42.00	10.64	10.00	3.15
06/14/05	7.00	13.03	0.10	2.45
06/16/05	2.00	10.80	1.00	2.24
06/21/05	23.00	11.65	1.00	1.95
06/23/05	20.00	12.29	1.00	1.82
06/24/05	5.00	13.47	2.00	1.95
06/28/05	120.00	13.87	3.00	1.37
06/30/05	601.00	19.53	12.00	1.67
07/01/05	21.00	21.89	23.00	2.09
07/05/05	1.00	16.07	0.10	1.59
07/06/05	***4400.00***	25.65	260.00	2.43
07/07/05	800.00	33.42	11.00	2.73
07/12/05	25.00	35.70	6.00	2.85
07/14/05	1.00	27.12	1.00	2.63
07/15/05	27.00	30.09	8.00	3.68
07/19/05	527.00	46.19	70.00	5.10
07/21/05	136.00	49.90	9.00	5.31
07/26/05	22.00	64.99	2.00	7.02
08/11/05	90.00	37.05	1.00	4.82
08/16/05	900.00	166.44	50.00	9.12
08/18/05	110.00	155.34	38.00	11.57
08/23/05	172.00	127.52	4.00	6.86
08/25/05	109.00	124.23	3.00	5.98
08/30/05	53.00	143.83	14.00	8.27

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CSHH 2004 RAINFALL DATA (SEA CLIFF)

MO/DAY	AMT(MM)	TOTAL	MO/DAY	AMT(MM)	TOTAL	MO/DAY	AMT(MM)	TOTAL	MO/DAY	AMT(MM)	TOTAL
MAY			**JULY**			**SEPT**			**NOV**		
2	trace		2	15		7	2		4	28	
3	15		5	6		8	153		12	29	
5	4		12	48		9	4.5		13	10	
6	trace		13	13		15	1		20	11	
7	1		14	13.5		17	1.5		21	1	
10	13		15	0.5		18	40		23-25	11	
12	2		18	0.5		28	70		28	33	
14	1		23	60		29	38			**Total**	**123**
15-16(n)	15		24	15		30	0.5				
18	0.5		27	25			**Total**	**310.5**			
19	30		28	14.5							
24	4		29	3							
26	25			**Total**	**214**						
28	10										
	Total	**120.5**									
JUNE			**AUG**			**OCT**			**DEC**		
1	40		1	5		2	0.5		1	28	
6	8		4	trace		14	7		8	5	
17	23		11	28.5		15	10		9-11(n)	18	
22	9		14	5		16	1.5		13	2	
25	9		15	14		18	1				
29	6		16	17		19	20				
	Total	**95**	21	21.5							
			30	trace			**Total**	**40**			
				Total	**91**						

CSHH 2005 RAINFALL DATA (SEA CLIFF)

MO/DAY	AMT(MM)	TOTAL	MO/DAY	AMT(MM)	TOTAL	MO/DAY	AMT(MM)	TOTAL	MO/DAY	AMT(MM)	TOTAL
MAY			**JULY**			**SEPT**			**NOV**		
1	5		6	8		15	15		6	1	
2	7		8	35		17	7		7	14	
6	2.5		13	25		26	6.5				
15-16	trace		15	10			**Total--28.5**				
21	2.5		18	48*							
22	5		19	3							
23	trace			**Total--81***							
24	1										
25	17										
26	7										
30	2										
	Total--49										

JUNE		**AUG**		**OCT**	
3	3	9	trace	7,8	90
4	7	10	trace	9	10
6	5	14	37	10	5
7	1	16	trace	11	7
16	11	19	trace	12	100
22	3	28	trace	13	68
27	**3**	30	trace	14	101
28	4	31	4	15	5
29	8		**Total--41**	22	15
	Total--45			23	1.5
				24	19
				25	39
				29	trace
					Total--460.5

APPENDIX C

SUMMARY TABLES

Comparison of Indicator Bacteria MPN Averages

2001

	Average MPN	Tappen Beach	Sea Cliff Beach	Bar Beach	Hempstead Harbor Beach	Sands Point Golf Club
April	Total	194	86	68	239	26
	Fecal	**103**	**43**	**36**	**85**	**9**
May	Total	944	1689	364	486	559
	Fecal	**555**	**274**	**106**	**83**	**21**
June	Total	1045	494	1091	974	2373
	Fecal	**365**	**60**	**451**	**488**	**157**
July	Total	1308	1501	11526	6025	242
	Fecal	**566**	**399**	**11297**	**3458**	**44**
August	Total	12230	24148	2594	3360	2183
	Fecal	**10285**	**1623**	**1872**	**1000**	**124**
September	Total	1500	1100	570	348	468
	Fecal	**1308**	**300**	**116**	**110**	**53**
Season Averages	***Total***	***4513***	***9080***	***4187***	***2848***	***1143***
	Fecal	***3559***	***717***	***3754***	***1325***	***75***

2002

	Average MPN	Tappen Beach	Sea Cliff Beach	Bar Beach	Hempstead Harbor Beach	Sands Point Golf Club
April	Total	728	163	157	326	160
	Fecal	**658**	**53**	**11**	**39**	**44**
May	Total	282	194	127	145	130
	Fecal	**169**	**46**	**78**	**124**	**76**
June	Total	1604	750	431	674	560
	Fecal	**1016**	**154**	**168**	**559**	**123**
July	Total	2770	4779	964	1921	613
	Fecal	**1367**	**210**	**831**	**810**	**246**
August	Total	1625	1832	6202	3277	4773
	Fecal	**1278**	**839**	**2130**	**2971**	**2593**
Season Averages	*Total*	*1463*	*1626*	*3096*	*1969*	*1226*
	Fecal	***1008***	***451***	***1133***	***1637***	***605***

Comparison of Indicator Bacteria MPN Averages

2003

	Average MPN	Tappen Beach	Sea Cliff Beach	Bar Beach	Hempstead Harbor Beach	Sands Pont Gof Club
April	Total	155	19	159	140	13
	Fecal	**19**	**5**	**152**	**44**	**8**
May	Total	154	1277	130	122	161
	Fecal	**88**	**143**	**47**	**35**	**62**
June	Total	724	915	478	1747	197
	Fecal	**255**	**111**	**64**	**136**	**80**
July	Total	517	1810	1237	781	239
	Fecal	**203**	**304**	**874**	**539**	**65**
August	Total	2117	22364	804	678	347
	Fecal	**1904**	**3114**	**334**	**344**	**81**
September	Total	*910*	*1820*	*1033*	*3500*	*6567*
	Fecal	***274***	***110***	***177***	***1090***	***977***
Season Averages	*Total*	*1097*	*8735*	*816*	*949*	*632*
	Fecal	***809***	***1222***	***421***	***370***	***126***

2004

	Average MPN	Tappen Beach	Sea Cliff Beach	Bar Beach	Hempstead Harbor Beach	Sands Point Gulf Cl;ub
April	Total	265	161	36	76	57
	Fecal	**66**	**25**	**29**	**71**	**4**
May	Total	851	22029	1910	1137	140
	Fecal	**210**	**3859**	**822**	**141**	**46**
June	Total	701	864	560	1179	168
	Fecal	**557**	**298**	**167**	**615**	**44**
July	Total	790	624	571	2353	146
	Fecal	**301**	**222**	**341**	**460**	**43**
August	Total	414	727	445	993	634
	Fecal	**313**	**442**	**383**	**905**	**375**
September	Total	*80*	*230*	*17*	*22*	*700*
	Fecal	***80***	***130***	***11***	***17***	***500***
Season Averages	*Total*	*682*	*3574*	*701*	*1582*	*268*
	Fecal	***337***	***761***	***359***	***505***	***126***

Comparison of Indicator Bacteria MPN Averages

2005

	Average MPN	Tappen Beach	Sea Cliff Beach	Bar Beach	Hempstead Harbor Beach	Sands Point Gulf Cl;ub
April	Enterococci	12	1	33	5	1
	Fecal	**19**	**43**	**289**	**60**	**12**
May	Enterococci	19	13	33	29	8
	Fecal	**21**	**18**	**120.23**	**89**	**15**
June	Enterococci	5	3	9	20	9
	Fecal	**87**	**86**	**118**	**330**	**77**
July	Enterococci	15	39	6	26	17
	Fecal	**472**	**596**	**159**	**561**	**176**
August	Enterococci	20	18	79	50	186
	Fecal	**346**	**239**	**256**	**166**	**265**
Season Averages	Enterococci	*14.2*	*14.8*	*32*	*26*	*44.2*
	Fecal	***189***	***196***	***188***	***241***	***109***

CSHH #1- Beacon 11

2005 / 2004

	2005 Avg. Water Temp. (°C) (Bottom)	2005 Avg. DO (ppm) (Bottom)	2005 Avg. Salinity (ppt) (Bottom)	2005 Avg. Air Temp. (°C)	2004 Avg. Water Temp. (°C) (Bottom)	2004 Avg. DO (ppm) (Bottom)	2004 Avg. Salinity (ppt) (Bottom)	2004 Avg. Air Temp. (°C)
June	17.19	4.50	22.94	20.22	18.30	5.38	25.00	23.6
July	23.19	4.22	24.52	24.3	20.87	4.28	25.90	24.0
August	23.73	1.85	25.36	24.4	22.33	3.86	26.31	24.0
September	22.54	4.85	26.49	23.6	22.14	3.67	26.15	20.4
October	16.30	7.36	25.09	13.3	16.53	7.66	25.21	12.9
Averages	20.59	4.56	24.88	21.16	20.10	4.94	25.73	20.8

2003 / 2002

	2003 Avg. Water Temp. (°C) (Bottom)	2003 Avg. DO (ppm) (Bottom)	2003 Avg. Salinity (ppt) (Bottom)	2003 Avg. Air Temp. (°C)	2002 Avg. Water Temp. (°C) (Bottom)	2002 Avg. DO (ppm) (Bottom)	2002 Avg. Salinity (ppt) (Bottom)	2002 Avg. Air Temp. (°C)
June	17.00	5.82	23.67	24.6	18.85	4.82	26.42	24.1
July	18.74	3.60	24.97	21.9	21.28	2.31	26.55	25.0
August	21.75	2.10	25.79	23.6	24.02	2.91	26.89	25.0
September	21.60	4.32	26.40	22.2	21.98	5.70	26.50	20.3
October	16.49	6.73	25.23	12.8	17.12	7.13	26.38	13.5
Averages	18.94	4.63	25.25	20.4	20.67	4.64	26.56	21.1

2001 / 2000

	2001 Avg. Water Temp. (°C) (Bottom)	2001 Avg. DO (ppm) (Bottom)	2001 Avg. Salinity (ppt) (Bottom)	2001 Avg. Air Temp. (°C)	2000 Avg. Water Temp. (°C) (Bottom)	2000 Avg. DO (ppm) (Bottom)	2000 Avg. Salinity (ppt) (Bottom)	2000 Avg. Air Temp. (°C)
June	20.31	6.62	24.78	24.1	17.10	5.63	24.43	22.2
July	19.40	3.80	25.68	25.2	21.80	5.27	25.03	22.2
August	23.25	2.96	26.19	25.4	22.53	6.41	24.70	24.2
September	22.56	5.45	26.70	20.5	20.99	4.90	25.07	20.9
October	17.05	7.86	26.79	15.8	16.78	6.02	25.24	13.2
Averages	20.90	5.16	26.02	22.5	19.49	5.64	24.87	20.4

CSHH #1- Beacon 11

1999 / 1998

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	19.66	7.07	24.89	23	17.24	6.24	24.18	21.33
July	21.72	3.42	25.78	30	21.23	4.89	24.66	24.6
August	24.35	4.60	25.99	25	23.95	3.66	24.84	24.5
September	21.90	5.57	25.72	22	22.02	4.57	25.48	20.5
October	17.76	8.29	24.70	12	17.19	6.84	25.27	13.75
Averages	21.01	5.85	24.15	22.22	20.52	5.17	24.88	21.1

1997 / 1996

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	18.10	7.01	23.71	24.33	19.00	8.35	N/A	23.25
July	20.83	4.34	24.78	23.50	20.04	3.74	24.66	22.75
August	21.85	1.96	25.96	21.5	21.75	2.88	25.13	22.25
September	22.13	3.26	25.81	19.5	21.70	5.14	25.48	19.83
October	17.45	5.83	26.06	13.67	17.34	9.21	24.97	15.25
Averages	20.10	4.39	25.20	20.81	19.87	5.90	25.03	20.71

1995

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	17.78	5.30	26.27	19.67
July	20.77	2.66	26.53	25.25
August	23.78	4.56	27.56	24.70
September	21.72	4.34	28.05	20.50
October	17.71	6.90	27.34	16.50
Averages	20.80	4.60	27.21	21.84

CSHH #2 – Bell Buoy 6

2005 / 2004

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	16.80	5.22	23.21	21.9	16.38	5.92	25.41	22.5
July	21.78	4.59	23.03	24.4	19.82	5.11	26.24	24.8
August	23.13	2.07	25.58	26.6	21.47	3.04	26.62	24.1
September	22.80	2.98	27.01	24.2	21.96	6.17	26.33	20.7
October	17.01	6.84	25.91	13.9	17.37	8.16	25.63	14.3
Averages	20.30	4.34	25.35	22.22	19.49	5.57	26.06	21.5

2003 / 2002

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	15.58	6.35	24.26	22.4	18.06	6.13	26.55	23.4
July	17.16	2.93	25.35	22.9	19.91	1.81	26.87	27.4
August	21.01	1.74	26.14	23.6	22.85	3.08	27.23	25.4
September	21.20	5.38	26.55	22.0	21.97	5.84	26.89	21.4
October	17.19	6.47	26.03	15.0	17.74	7.68	27.25	13.9
Averages	18.37	4.55	25.70	21.1	20.13	5.11	26.99	21.5

2001 / 2000

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	16.67	4.97	25.36	23.2	16.45	6.29	24.77	22.4
July	18.45	5.32	26.00	26.2	20.19	4.80	25.38	22.7
August	22.33	3.83	26.46	26.0	22.08	6.46	24.95	24.7
September	21.88	5.80	27.07	21.1	20.89	6.08	25.54	22.3
October	16.94	8.55	27.24	15.9	16.86	7.18	26.07	16.3
Averages	19.58	5.46	26.41	22.8	19.03	6.10	25.28	21.8

CSHH #2 – Bell Buoy 6

1999 **1998**	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	17.13	6.41	25.42	23	16.39	6.90	24.45	21.33
July	19.62	2.87	26.23	27	19.88	4.78	25.13	24.6
August	22.88	4.29	26.80	25	22.88	3.30	25.27	24.5
September	22.15	5.75	26.84	26	21.62	6.03	25.82	20.5
October	17.18	8.46	26.30	13	17.18	6.9	26.27	13.75
Averages	19.67	5.44	26.21	22.73	19.66	5.45	25.40	21.1

1997 1996

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	16.7	9.12	24.14	24.5	17.5	7.8	N/A	22
July	18.32	3.12	25.33	23.25	19.15	5.17	24.92	24.5
August	21.12	2.86	26.41	21.37	21.1	4.29	24.99	23.17
September	21.33	3.18	26.79	19.75	22.05	8.0	25.73	20.17
October	18.02	5.22	26.59	14.5	16.95	9.11	25.34	15.75
Averages	19.12	4.54	25.69	21.37	19.20	7.14	25.28	20.53

1995

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C) (Bottom)
June	17.61	7.78	26.5	21.25
July	20.09	4.19	26.93	24.87
August	22.9	4.87	27.77	25.12
September	21.73	5.27	28.44	21.5
October	17.48	7.72	27.80	15.83
Averages	20.30	5.67	27.53	22.16

CSHH #3 – Glen Cove Creek, Red Channel Marker

2005 / 2004

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	17.46	5.46	23.08	22.32	17.67	7.36	25.23	23.4
July	22.32	4.29	24.82	24.8	20.39	4.96	26.15	25.1
August	23.53	2.16	25.67	25.3	22.00	4.30	26.48	22.8
September	22.76	5.23	26.80	24.8	22.02	4.66	26.34	21.3
October	16.66	8.14	25.58	14.3	16.86	7.62	25.97	13.1
Averages	20.54	5.05	25.19	22.29	19.87	5.76	26.04	20.9

2003 / 2002

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	16.47	7.02	23.97	23.9	19.05	6.36	26.48	23.7
July	18.41	4.25	25.08	22.8	20.71	2.61	26.69	25.4
August	21.26	3.74	25.92	23.6	23.36	2.49	27.10	26.9
September	21.48	4.81	26.49	22.4	21.78	6.49	26.71	22.0
October	16.97	6.58	25.61	15.6	17.70	7.98	27.05	14.7
Averages	18.90	5.21	25.45	21.8	20.53	5.20	26.83	22.1

2001 / 2000

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	18.45	7.63	25.23	24.4	17.69	6.60	24.35	21.6
July	18.55	4.53	25.92	26.0	21.16	5.87	25.26	23.0
August	23.09	4.83	26.34	27.7	22.66	6.44	24.68	23.5
September	22.10	6.92	26.88	21.3	21.45	6.13	24.99	20.5
October	17.02	9.01	27.12	16.3	16.69	7.50	25.52	16.7
Averages	20.23	6.47	26.27	23.6	19.59	6.54	24.94	20.9

CSHH #3 – Glen Cove Creek, Red Channel Marker

1999

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	18.43	6.32	25.09	23
July	21.57	5.02	25.89	30
August	23.82	4.87	26.44	26
September	21.80	6.16	26.25	23
October	16.74	8.70	25.81	14
Averages	20.20	6.32	25.74	23.04

1998

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	17.23	7.25	24.27	21.33
July	21.03	6.34	24.76	24.6
August	23.39	3.87	25.14	24.5
September	21.88	5.76	25.75	20.5
October	16.9	7.79	25.88	13.75
Averages	20.28	6.16	25.16	21.1

1997

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	17.36	8.32	24.11	26.5
July	20.2	6.21	25.07	23.37
August	21.34	2.29	26.29	21.5
September	21.61	3.12	26.67	20
October	17.12	5.69	26.69	13.67
Averages	19.55	5.14	25.66	21.25

1996

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	18.25	9.35	N/A	22.12
July	20.32	7.10	24.46	23.67
August	21.45	3.20	25.29	22.87
September	22.09	6.85	25.69	20.83
October	16.61	9.88	25.12	15.4
Averages	19.43	7.44	25.15	20.55

1995

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C) (Bottom)
June	17.82	5.4	26.58	21.5
July	20.74	4.50	26.87	25
August	23.24	4.79	27.94	24.7
September	21.61	4.78	28.22	21
October	17.4	7.54	27.57	16.5
Averages	20.59	5.26	27.55	22.18

CSHH #8 – Glen Cove Creek, STP Outflow

2005 / 2004

	2005 Avg. Water Temp. (°C) (Bottom)	2005 Avg. DO (ppm) (Bottom)	2005 Avg. Salinity (ppt) (Bottom)	2005 Avg. Air Temp. (°C)	2004 Avg. Water Temp. (°C) (Bottom)	2004 Avg. DO (ppm) (Bottom)	2004 Avg. Salinity (ppt) (Bottom)	2004 Avg. Air Temp. (°C)
June	18.90	7.1	22.25	23.72	19.38	8.14	24.80	26.3
July	23.07	5.48	24.50	25.5	21.26	4.52	25.39	27.0
August	24.32	3.45	25.32	27.2	22.78	5.98	25.89	24.4
September	23.24	5.07	26.42	25.2	22.22	4.66	25.62	22.1
October	16.98	7.31	25.28	14.0	16.60	7.79	25.72	13.4
Averages	21.30	5.68	24.75	23.10	20.49	6.22	25.50	22.2

2003 / 2002

	2003 Avg. Water Temp. (°C) (Bottom)	2003 Avg. DO (ppm) (Bottom)	2003 Avg. Salinity (ppt) (Bottom)	2003 Avg. Air Temp. (°C)	2002 Avg. Water Temp. (°C) (Bottom)	2002 Avg. DO (ppm) (Bottom)	2002 Avg. Salinity (ppt) (Bottom)	2002 Avg. Air Temp. (°C)
June	17.01	5.92	23.70	25.7	19.89	7.65	26.12	25.5
July	18.94	4.03	24.94	24.4	22.13	4.33	26.27	26.8
August	22.51	5.23	25.51	26.1	24.64	4.85	26.67	27.7
September	21.58	4.87	25.99	23.5	21.91	6.01	26.41	23.0
October	16.49	6.49	25.10	14.6	17.67	7.69	26.77	16.4
Averages	19.10	5.28	25.09	22.1	21.29	6.11	26.47	23.4

2001 / 2000

	2001 Avg. Water Temp. (°C) (Bottom)	2001 Avg. DO (ppm) (Bottom)	2001 Avg. Salinity (ppt) (Bottom)	2001 Avg. Air Temp. (°C)	2000 Avg. Water Temp. (°C) (Bottom)	2000 Avg. DO (ppm) (Bottom)	2000 Avg. Salinity (ppt) (Bottom)	2000 Avg. Air Temp. (°C)
June	20.11	7.61	24.57	26.6	18.66	7.13	23.59	23.8
July	20.18	5.56	25.31	27.1	21.99	6.51	24.93	24.1
August	23.82	6.16	25.86	29.2	23.58	7.75	24.18	24.5
September	22.45	5.74	26.58	22.1	21.17	8.63	24.81	23.6
October	16.67	9.56	26.54	16.7	17.25	7.17	24.87	15.3
Averages	21.05	6.82	25.76	24.8	20.40	7.35	24.40	21.9

CSHH #8 – Glen Cove Creek, STP Outflow

1999

	Avg. Water Temp. (°C) (Bottom)	Avg. DO (ppm) (Bottom)	Avg. Salinity (ppt) (Bottom)	Avg. Air Temp. (°C)
June	19.99	9.11	24.71	23
July	22.70	6.03	25.53	30
August	24.28	5.32	26.19	26
September	21.78	6.14	25.84	24
October	16.63	8.63	25.53	15
Averages	21.02	7.14	25.49	23.70

APPENDIX D

TABLES OF SEASONAL AVERAGES, 1997-2005, CSHH #1-3, 8

Salinity Averages

	Beacon 11 CSHH #1	**Bell 6 CSHH #2**	**Red Channel Marker, Near Glen Cove Creek CSHH #3**	**Glen Cove STP Outfall CSHH #8**
2005	24.60 ppt	24.95 ppt	24.71 ppt	23.66 ppt
2004	25.73	26.06	26.04	25.50
2003	25.25	25.70	25.45	25.09
2002	26.56	26.99	26.83	26.47
2001	26.02	26.41	26.27	25.76
2000	24.87	25.28	24.94	24.40
1999	24.15	26.21	25.49	25.49
1998	24.88	25.40	25.16	N/A
1997	25.20	25.69	25.66	N/A

Precipitation Averages

	June	**July**	**August**	**September**	**October**
2005	45 mm	81 mm	41 mm	28.5 mm	460.5 mm
2004	95	214	91	310.5	40
2003	291.5	87	88	194.5	134
2002	180.5	22.5	175.5	116.5 (9/15-9/30)	180
2001	167	70.5	165	94	19.5
2000	146	159	158	125	6
1999	31	21	135	323	92
1998	191	59	145	90	97
1997	47	232	141	84	27 (10/1-15)

Bottom Dissolved Oxygen Averages

Averages for Bottom DO	***2000***	***1999***	***1998***	***1997***	***1996***
Beacon 11, CSHH #1	5.64 ppm	5.85 ppm	5.17 ppm	4.39 ppm	5.90 ppm
Bell Buoy 6, CSHH #2	6.10	5.44	5.45	4.54	7.11
Glen Cove Creek, Red Channel Marker, CSHH #3	6.54	6.32	6.48	5.15	7.45
Glen Cove STP Outfall, CSHH #4	7.35	7.14	N/A	N/A	N/A

Averages for Bottom DO	***2005***	***2004***	***2003***	***2002***	***2001***
Beacon 11, CSHH #1	4.59 ppm	4.94 ppm	4.63 ppm	4.64 ppm	5.16 ppm
Bell Buoy 6, CSHH #2	4.63	5.57	4.55	5.11	5.46
Glen Cove Creek, Red Channel Marker, CSHH #3	5.09	5.76	5.21	5.20	6.47
Glen Cove STP Outfall, CSHH #4	5.76	6.22	5.28	6.11	6.82