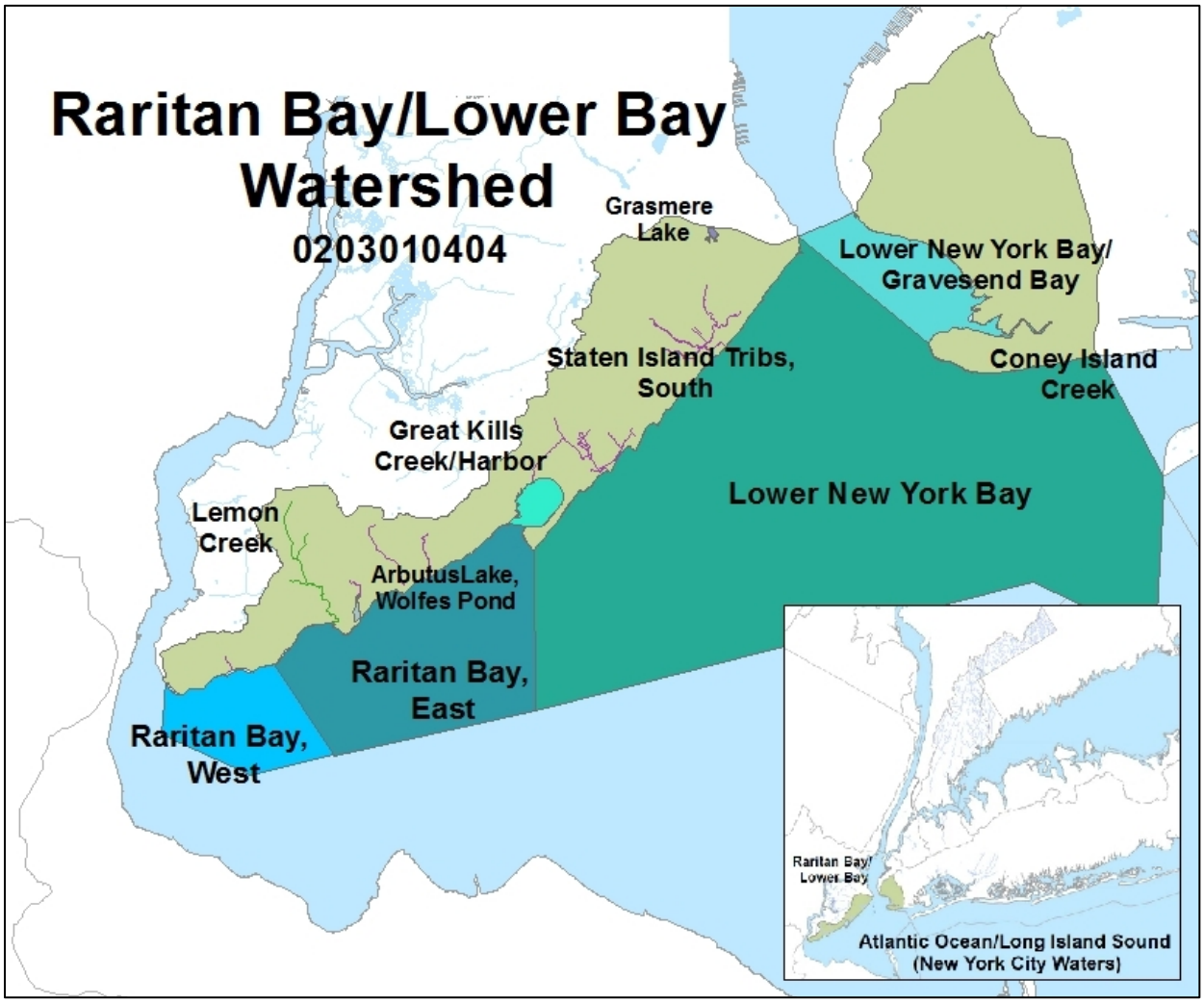

Raritan Bay/Lower Bay Watershed
(0203010404)

Water Index Number	Waterbody Segment	Category
(MW1.1) LB	Lower New York Bay (1701-0004)	Impaired
(MW1.1) LB/GB	Lower New York Bay/Gravesend Bay (1701-0179)	Impaired
(MW1.1) LB/GB-253	Coney Island Creek (1701-0008)	Impaired
(MW1.2) RB (portion 1)	Raritan Bay, East (1701-0002)	Impaired
(MW1.2) RB (portion 2)	Raritan Bay, West (1701-0180)	Impaired
(MW1.2) SI- 1 thru 5 (selected)	Staten Island Tribs, South (1701-0188)	Unassessed
(MW1.2) SI- 2	Great Kill Creek/Harbor (1701-0187)	Unassessed
(MW1.2) SI- 4	Lemon Creek and tribs (1701-0149)	Minor Impacts
(MW1.2) SI..P1039	Grasmere Lake/Bradys Pond (1701-0357)	Impaired
(MW1.2) SI..P1051,P1053	Arbutus Lake, Wolfes Pond (1701-0404)	Unassessed

Lower New York Bay (1701-0004) Impaired

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.1) LB
Hydro Unit Code: Raritan Bay-Lower Bay (0203010404)
Water Type/Size: Estuary Waters 1964.3 Acres
Description: portion of bay, Class SB

Water Class: SB
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Kings (24)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Shellfishing	N/A	-
Public Bathing	Stressed	Suspected
Recreation	Stressed	Suspected
Aquatic Life	Fully Supported	Suspected
Fish Consumption	Impaired	Known
Conditions Evaluated		
Habitat/Hydrology	Good	
Aesthetics	Fair	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)

Known: PRIORITY ORGANICS (PCBs), Pathogens, Other Pollutant (floatable debris)
Suspected: Oil and Grease
Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: TOXIC/CONTAMINATED SEDIMENT, Combined Sewer Overflow (CSOs), Other/Non-Permitted Sanitary Discharge Urban/Storm Runoff
Suspected: Other Source (migratory species), Municipal Discharges
Unconfirmed: - - -

Management Information

Management Status: Strategy Implementation Scheduled or Underway
Lead Agency/Office: other/NYCDEP
IR/305(b) Code: Impaired Water Requiring a TMDL (IR Category 5)

Further Details

Overview
Lower New York Bay is assessed as an impaired waterbody due to fish consumption that is impaired by PCBs and dioxin in contaminated sediment, resulting in a health advisory for some species. Public bathing and other recreational uses are thought to experience minor impacts to from pathogens, floatable debris and various other pollutants from urban/storm runoff, CSOs, and other such sources. Lesser fish consumption impacts for additional species are due to contaminated sediment, but also the result of the migratory range of these fish species.

Use Assessment
Lower New York Bay is a Class SB waterbody, assessed for public bathing and general recreation use, and support of aquatic life, but not for shellfishing.

Recreational uses including public bathing are considered to be supported but stressed due to urban stormwater runoff of pathogens that result in periodic precautionary bathing beach closures during heavy rain storm events. Beach monitoring revealed infrequent elevated bacteriological levels at beaches and the sampling resulted in few water quality-driven closures. Occasional beach closures that do occur are typically pre-emptive closures during heavier rainstorms

that are known to wash pollutants into the harbor. Beaches within this reach include Midland and South Beaches on Staten Island, and Seagate Beaches, Coney Island Beaches, Manhattan Beach and Kingsborough CC Beach in Brooklyn. (NYSDOH BEACH Act monitoring results, 2013 and DEC/DFWMR, July 2015)

Aquatic life is considered to be fully supported. The harbor supports a healthy abundance and diversity of resident and migratory marine species, including striped bass, bluefish, winter flounder, fluke and weakfish. (DEC/DFW and Region 2, 2016)

Fish consumption is considered to be impaired due to NYS DOH a health advisory that recommends eating no more than one meal per month of larger (over 25 inches) weakfish because of elevated PCB levels. Additional advisories are also in place regarding consumption of American eel, bluefish, striped bass and smaller weakfish from these waters due to PCBs. However, these advisories recommend limiting consumption to no more than one meal per week which is no more stringent than the general statewide advisory for all New York waters and does not result in significant impact to uses. The source of this contamination is considered to be contaminated sediment, the result of past industrial activity/discharges. For some species the advisories are related to the habits and characteristics of these species, specifically the wide migratory range, predatory nature and high lipid/fat content that make them more likely to accumulate contaminants. Health advisories regarding the consumption of fish are revised regularly; for the most current advisories, go to www.nyhealth.gov/environmental/outdoors/fish/fish.htm. (NYS DOH Health Advisories and DEC/FWMR, Habitat, January 2014)

Water Quality Information

Water quality evaluations have been conducted through the NYCDEP City-Wide Long-Term CSO Control Planning Program as well as the long-standing NYCDEP Harbor Survey Sampling Program. The NYCDEP Harbor Survey Program uses primarily four indicators of water quality: fecal coliform bacteria, dissolved oxygen, chlorophyll a and water clarity. Significant improvements have been noted in all of these parameters since the 1970s and 80s. These improvements have coincided with considerable upgrades to the City's wastewater treatment facilities. In the Lower New York Bay-Raritan Bay portion of the harbor, standards for bacteria and dissolved oxygen are typically met. Results show somewhat high levels of chlorophyll and acceptable but lower water clarity. (NYCDEP, Harbor Survey, 2014)

An extensive effort to monitoring toxic substances in New York Harbor waters was undertaken in the late 1990s. The Contaminant Assessment and Reduction Program (CARP) effort was a response to the implementation of more restrictive guidelines for the disposal of dredged materials from New York Harbor. These guidelines eliminated ocean disposal as a viable option for much of the dredged material related to port maintenance. As a result, the assessment and reduction of contaminated sediments became a critical priority for the Harbor. Strong regional multi-agency support and a $30 million commitment – primarily from the NYNJ Port Authority – led to the formation of CARP in 1997. The objectives of the effort were to identify sources of contaminants to the harbor/estuary, establish baseline levels of contaminants in waters, fish tissue and sediments, and evaluate future conditions under various contaminant reduction scenarios. The monitoring component which began in 1999 and continued through 2001 provided input to contaminant fate and transport models and guided trackdown and remediation and restoration efforts. (DEC/DOW, BWAM/Sediment Assessment, February 2010)

Source Assessment

Urban stormwater runoff, combined sewer overflows (CSOs), sanitary sewer overflows and illegal (unpermitted) sanitary discharges are sources of pollutants. NYC municipal wastewater discharges also contribute to overall nutrient load in the harbor waters. Impacts to fish consumption are due to elevated PCBs from contaminated sediment, primarily the result of historic (past) discharges. For some fish species with a wide migratory range some contamination is picked up in other waters.

Management Actions

Combined sewer overflows (CSOs) represent a significant source of pollutants to New York Harbor waters and tributaries. In 2005 NYSDEC issued a Consent Order requiring New York City to address the over 400 CSOs of the

NYCDEP municipal wastewater system. In 2012, the CSO Order was modified to including the integration of green infrastructure, the substitution of more cost-effective grey infrastructure, and agreed to fixed dates for submittal of the Long-Term Control Plans. Under the 2005/2012 Orders, NYCDEP developed 11 Waterbody/Watershed Facility Plans (WWFPs) and is currently developing Long Term Control Plans (LTCPs) to bring CSO-impacted waters into compliance with water quality standards. Lower New York Bay is included within the Open Waters waterbody, for which a LTCP is being developed. The Order requires post-construction monitoring to verify modeling projections and actual water quality compliance, inform decisions regarding SPDES permit renewal at five-year intervals, and evaluate future management actions, including additional CSOs controls if necessary. (DEC/DOW, BWC/NYCC, August 2016)

These waters are included within the core area of the New York/New Jersey Harbor Estuary Program (HEP). The HEP is a National Estuary Program authorized in 1987 by the U.S. Environmental Protection Agency. The program is a continuing multi–agency effort to develop and implement a plan to protect, conserve, and restore the estuary. Participants in the program include representatives from local, state, and federal environmental agencies, scientists, citizens, business interests, environmentalists, and others. (DEC/DOW, BWAM, December 2010)

Section 303(d) Listing

Lower New York Bay is included on the current (2016) NYS Section 303(d) List of Impaired Waters. The waterbody is included on Part 2b of the List as a fish consumption restricted water due to PCBs and other toxics. This waterbody was first listed on the 2002 Section 303(d) List. (DEC/DOW, BWAM/WQAS, December 2015)

Segment Description

This segment includes the estuary waters of Lower New York Bay bounded on the north and east by a line from the southern end of Fort Wadsworth Military Reservation at the western end of the Verrazano Narrows Bridge to the western tip of Coney Island near Seagate, along the southern shore of Coney Island to its southeasterly tip, and south through Rockaway Point to the New York-New Jersey line; on the south by the New York–New Jersey line; and on the west by a line from the New York-New Jersey line north to Crookes Point, and along the Staten Island shore to the Verrazano Narrow Bridge.

Lower New York Bay/Gravesend Bay (1701-0179) Impaired

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.1) LB/GB
Hydro Unit Code: Raritan Bay-Lower Bay (0203010404)
Water Type/Size: Estuary Waters 29842.9 Acres
Description: portion of bay, Class I

Water Class: I
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Kings (24)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Shellfishing	N/A	-
Public Bathing	N/A	-
Recreation	Stressed	Suspected
Aquatic Life	Fully Supported	Suspected
Fish Consumption	Impaired	Known
Conditions Evaluated		
Habitat/Hydrology	Good	
Aesthetics	Fair	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)

Known: PRIORITY ORGANICS (PCBs), Pathogens, Other Pollutant (floatable debris),
Suspected: Oil and Grease
Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: Combined Sewer Overflow (CSOs), Other/Non-Permitted Sanitary Discharge Urban/Storm Runoff
Suspected: TOXIC/CONTAMINATED SEDIMENT, Other Source (migratory species), Municipal Discharges
Unconfirmed: - - -

Management Information

Management Status: Strategy Implementation Scheduled or Underway
Lead Agency/Office: Other/NYCDEP
IR/305(b) Code: Impaired Water Requiring a TMDL (IR Category 5)

Further Details

Overview

Lower New York Bay is assessed as an impaired waterbody due to fish consumption that is impaired by PCBs in contaminated sediment, resulting in a health advisory for some species. Public bathing and other recreational uses are thought to experience minor impacts to from pathogens, floatable debris and various other pollutants from urban/storm runoff, CSOs, and other such sources. Lesser fish consumption impacts for additional species are due to contaminated sediment, but also the result of the migratory range of these fish species.

Use Assessment

This portion of Lower New York Bay/Gravesend Bay is a Class I waterbody, assessed for general recreation use, and support of aquatic life, but not for shellfishing or public bathing.

Recreational uses are considered to be supported but stressed due to urban stormwater runoff of pathogens that result in periodic precautionary bathing beach closures in adjacent waters during heavy rain storm events. Beach monitoring revealed infrequent elevated bacteriological levels at beaches and the sampling resulted in few water quality-driven

closures. Occasional beach closures that do occur are typically pre-emptive closures during heavier rainstorms that are known to wash pollutants into the harbor. (NYSDOH BEACH Act monitoring results, 2013 and DEC/DFWMR, July 2015)

Aquatic life is considered to be fully supported. The harbor supports a healthy abundance and diversity of resident and migratory marine species, including striped bass, bluefish, winter flounder, fluke and weakfish. (DEC/DFW and Region 2, 2016)

Fish consumption is considered to be impaired due to NYS DOH a health advisory that recommends eating no more than one meal per month of larger (over 25 inches) weakfish because of elevated PCB levels. Additional advisories are also in place regarding consumption of American eel, bluefish, striped bass and smaller weakfish from these waters due to PCBs. However, these advisories recommend limiting consumption to no more than one meal per week which is no more stringent than the general statewide advisory for all New York waters and does not result in significant impact to uses. The source of this contamination is considered to be contaminated sediment, the result of past industrial activity/discharges. For some species the advisories are related to the habits and characteristics of these species, specifically the wide migratory range, predatory nature and high lipid/fat content that make them more likely to accumulate contaminants. Health advisories regarding the consumption of fish are revised regularly; for the most current advisories, go to www.nyhealth.gov/environmental/outdoors/fish/fish.htm. (NYS DOH Health Advisories and DEC/FWMR, Habitat, January 2014)

Water Quality Information

Water quality evaluations have been conducted through the NYCDEP City-Wide Long-Term CSO Control Planning Program as well as the long-standing NYCDEP Harbor Survey Sampling Program. The NYCDEP Harbor Survey Program uses primarily four indicators of water quality: fecal coliform bacteria, dissolved oxygen, chlorophyll a and water clarity. Significant improvements have been noted in all of these parameters since the 1970s and 80s. These improvements have coincided with considerable upgrades to the City's wastewater treatment facilities. In the Lower New York Bay-Raritan Bay portion of the harbor, standards for bacteria and dissolved oxygen are typically met. Results show somewhat high levels of chlorophyll and acceptable but lower water clarity. (NYCDEP, Harbor Survey, 2014)

An extensive effort to monitoring toxic substances in New York Harbor waters was undertaken in the late 1990s. The Contaminant Assessment and Reduction Program (CARP) effort was a response to the implementation of more restrictive guidelines for the disposal of dredged materials from New York Harbor. These guidelines eliminated ocean disposal as a viable option for much of the dredged material related to port maintenance. As a result, the assessment and reduction of contaminated sediments became a critical priority for the Harbor. Strong regional multi-agency support and a $30 million commitment – primarily from the NYNJ Port Authority – led to the formation of CARP in 1997. The objectives of the effort were to identify sources of contaminants to the harbor/estuary, establish baseline levels of contaminants in waters, fish tissue and sediments, and evaluate future conditions under various contaminant reduction scenarios. The monitoring component which began in 1999 and continued through 2001 provided input to contaminant fate and transport models and guided trackdown and remediation and restoration efforts. (DEC/DOW, BWAM/Sediment Assessment, February 2010)

Source Assessment

Urban stormwater runoff, combined sewer overflows (CSOs), sanitary sewer overflows and illegal (unpermitted) sanitary discharges are sources of pollutants. NYC municipal wastewater discharges also contribute to overall nutrient load in the harbor waters. Impacts to fish consumption are due to elevated PCBs and dioxin from contaminated sediment, primarily the result of historic (past) discharges. For some fish species with a wide migratory range some contamination is picked up in other waters.

Management Actions

Combined sewer overflows (CSOs) represent a significant source of pollutants to New York Harbor waters and tributaries. In 2005 NYSDEC issued a Consent Order requiring New York City to address the over 400 CSOs of the

NYCDEP municipal wastewater system. In 2012, the CSO Order was modified to including the integration of green infrastructure, the substitution of more cost-effective grey infrastructure, and agreed to fixed dates for submittal of the Long-Term Control Plans. Under the 2005/2012 Orders, NYCDEP developed 11 Waterbody/Watershed Facility Plans (WWFPs) and is currently developing Long Term Control Plans (LTCPs) to bring CSO-impacted waters into compliance with water quality standards. Lower New York Bay is included within the Open Waters waterbody, for which a LTCP is being developed. The Order requires post-construction monitoring to verify modeling projections and actual water quality compliance, inform decisions regarding SPDES permit renewal at five-year intervals, and evaluate future management actions, including additional CSOs controls if necessary. (DEC/DOW, BWC/NYCC, August 2016)

These waters are included within the core area of the New York/New Jersey Harbor Estuary Program (HEP). The HEP is a National Estuary Program authorized in 1987 by the U.S. Environmental Protection Agency. The program is a continuing multi–agency effort to develop and implement a plan to protect, conserve, and restore the estuary. Participants in the program include representatives from local, state, and federal environmental agencies, scientists, citizens, business interests, environmentalists, and others. (DEC/DOW, BWAM, December 2010)

Section 303(d) Listing
Lower New York Bay/Gravesend Bay is included on the current (2016) NYS Section 303(d) List of Impaired Waters. The waterbody is included on Part 2b of the List as a fish consumption restricted water due to PCBs and other toxics. This waterbody was first listed on the 2002 Section 303(d) List. (DEC/DOW, BWAM/WQAS, December 2015)

Segment Description
This segment includes the estuary waters bounded to the east and south by the Brooklyn shore from Verrazano Narrows Bridge to the western tip of Coney Island near Seagate, and to the south and west by a line from the western tip of Coney Island near Seagate to the sothern end of Fort Wadsworth Military Reservation at the western end of the Verrazano Narrows Bridge.

Coney Island Creek (1701-0008) Impaired

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.1) LB/GB-253
Hydro Unit Code: Jamaica Bay-Rockaway Inlet (0203020201)
Water Type/Size: Estuary Waters 23.4 Acres
Description: entire estuary/stream

Water Class: I
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Kings (24)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Shellfishing	N/A	-
Public Bathing	N/A	-
Recreation	Impaired	Known
Aquatic Life	Impaired	Known
Fish Consumption	Stressed	Suspected
Conditions Evaluated		
Habitat/Hydrology	Fair	
Aesthetics	Fair	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)

Known: PATHOGENS, LOW D.O./OXYGEN DEMAND, OTHER POLLUTANT (floatable debris), Silt/Sediment (sludge banks)
Suspected: Priority Organics (PCBs)
Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: COMBINED SEWER OVERFLOW (CSOS), OTHER/NON-PERMITTED SANITARY DISCHARGE, OTHER SOURCE (sediment mounds), URBAN/STORM RUNOFF
Suspected: - - -
Unconfirmed: - - -

Management Information

Management Status: Strategy Implementation Scheduled or Underway
Lead Agency/Office: Other/NYCDEP
IR/305(b) Code: Impaired Water Requiring a TMDL (IR Category 5)

Further Details

Overview

Coney Island Creek is assessed as an impaired waterbody due to recreation uses and aquatic life that are known to be impaired by low dissolved oxygen, pathogens, nutrients, floatable debris and other pollutants from CSOs, urban stormwater discharges and illegal sanitary connections to storm sewers. These sources have caused sludge banks to build up which create anoxic conditions, affecting the fishery and recreational uses. Coliform levels not meeting water quality standards have been recorded throughout the creek. Periodic low dissolved oxygen are generally worse in the upper creek. Fish consumption impacts are due to health advisories in adjacent waters limiting the consumption of certain species due to elevated PCB levels. These advisories are the primarily result of the contaminanted sediment; the migratory range of some fish species is also a factor.

Use Assessment

Coney Island Creek is a Class I waterbody, assessed for general recreation use, and support of aquatic life, but not for shellfishing or public bathing.

Recreational uses in Coney Island Creek are considered to be impaired by elevated pathogen levels from CSOs and other discharges of sanitary wastewater from illegal connections. Urban stormwater runoff also contributes pollutants to the waterway. Recreational uses are also considered to be impacted by poor aesthetics due to floatable debris and the presence of sediment mounds in the creek. (DEC/DOW, BWC/NYCC, July 2013)

Aquatic life in the waterbody is considered to be impaired due to periodic low dissolved oxygen, the result of elevated nitrogen and other oxygen-demand loads from CSOs and urban stormwater runoff. These sources promote algal growth, die-off, and create an oxygen demand which results in low dissolved oxygen and hypoxia that limits the fishery. (DFW, Region 1, August 2014 and DEC/DOW, NYCC, July 2014)

Fish consumption is considered to be stressed due to NYS DOH issued health advisories recommending limiting consumption of some species in adjacent waters. This waterbody is not included among the waterbody-specific health advisories for fish consumption, but since fish can migrate to this waterbody from other waters where such advisories are in place fish consumption is evaluated as stressed. Health advisories regarding the consumption of fish are revised regularly; for the most current advisories, go to www.nyhealth.gov/environmental/outdoors/fish/fish.htm. (NYS DOH Health Advisories and DEC/FWMR, Habitat, January 2014)

Water Quality Information

Water quality evaluations have been conducted through the NYCDEP City-Wide Long-Term CSO Control Planning Project, including the Coney Island Creek Waterbody/Watershed Facility Plan Report. The results of sampling conducted in 1993, 2004 and 2014 indicate that the impact of CSOs, stormwater discharges and dry weather sanitary flows cause periodic low dissolved oxygen in the middle and upper portions of the creek during wet-weather. Model projections developed under the Long-Term Control Plan program indicate that Coney Island Creek attains the DO standard on an annual basis between 90 to 99% of the time depending on the location in the waterbody, with the lower DO attainment at the head end. These values include both wet and dry weather conditions. Pathogen levels in the creek also typically exceed applicable criteria during both wet and dry weather. Some dry weather sources were identified in 2016 and NYSDEC is working to address these illicit discharges. (NYCDEP, City-Wide Long-Term CSO Control Planning Program, December 2016)

In addition, New York City Department of Environmental Protection (NYCDEP) has operated a water quality monitoring program since 1909. The NYCDEP Harbor Survey Program uses primarily four indicators of water quality: fecal coliform bacteria, dissolved oxygen, chlorophyll a and water clarity. Significant improvements have been noted in all of these parameters since the 1970s and 80s. These improvements have coincided with considerable upgrades to the City's wastewater treatment facilities. (NYCDEP, Harbor Survey, 2009)

Source Assessment

Urban stormwater runoff, combined sewer overflows (CSOs), sanitary sewer overflows and illegal (unpermitted) sanitary discharges are sources of pollutants. NYC municipal wastewater discharges also contribute to overall nutrient load in the harbor waters. Impacts to fish consumption are due to elevated PCBs from contaminated sediment, primarily the result of historic (past) discharges. For some fish species with a wide migratory range some contamination is picked up in other waters.

Management Actions

Combined sewer overflows (CSOs) represent a significant source of pollutants to New York Harbor waters and tributaries. In 2005 NYSDEC issued a Consent Order requiring New York City to address the over 400 CSOs of the NYCDEP municipal wastewater system. In 2012, the CSO Order was modified to including the integration of green infrastructure, the substitution of more cost-effective grey infrastructure, and agreed to fixed dates for submittal of the Long-Term Control Plans. Under the 2005/2012 Orders, NYCDEP developed 11 Waterbody/Watershed Facility Plans (WWFPs) and is currently developing Long Term Control Plans (LTCPs) to bring CSO-impacted waters into compliance with water quality standards. Coney Island Creek is included among the watebodies for which a LTCP is being developed. The Order requires post-construction monitoring to verify modeling projections and actual water quality

compliance, inform decisions regarding SPDES permit renewal at five-year intervals, and evaluate future management actions, including additional CSOs controls if necessary. (DEC/DOW, BWC/NYCC, August 2016)

Efforts by NYCDEP to address CSO discharges to Coney Island Creek include the rehabilitation and upgrade of the Avenue V pump station to increase capacity from 30 MGD to 80 MGD and construction of two new force mains, one for dry weather flow and one for wet weather flow, to redirect flow to the Red Hook WWTP. These upgrades are expected to capture a significant volume of CSO discharge and increase attainment with water quality standards. The remaining exceedences of water quality standards will be addressed with additional attention to stormwater runoff and dry weather flows believed to be from illicit sanitary discharges to the creek. (NYCDEP, December 2016)

These waters are included within the core area of the New York/New Jersey Harbor Estuary Program (HEP). The HEP is a National Estuary Program authorized in 1987 by the U.S. Environmental Protection Agency. The program is a continuing multi–agency effort to develop and implement a plan to protect, conserve, and restore the estuary. Participants in the program include representatives from local, state, and federal environmental agencies, scientists, citizens, business interests, environmentalists, and others. (DEC/DOW, BWAM, December 2010)

Section 303(d) Listing:
Coney Island Creek is included on the current (2016) NYS Section 303(d) List of Impaired Waters. The waterbody is listed due to low dissolved oxygen and pathogens. The waterbody is included on Part 3c of the List as an impaired water for which TMDL development may be deferred pending the implementation/evaluation of other restoration measures. These measures are outlined in CSO plans and other strategies contained within the NYC CSO Order on Consent. This waterbody was first listed on the 1998 Section 303(d) List. (DEC/DOW, BWAM/WQAS, December 2016)

Segment Description:
This segment includes the entire tidal stream.

Raritan Bay, East (1701-0002) Impaired

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.2) RB (portion 1)
Hydro Unit Code: Raritan Bay-Lower Bay (0203010404)
Water Type/Size: Estuary Waters 6236 Acres
Description: portion of bay, Class SA

Water Class: SA
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Richmond (43)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Shellfishing	Impaired	Known
Public Bathing	Stressed	Suspected
Recreation	Stressed	Suspected
Aquatic Life	Fully Supported	Suspected
Fish Consumption	Impaired	Known
Conditions Evaluated		
Habitat/Hydrology	Good	
Aesthetics	Good	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)

Known: PATHOGENS, PRIORITY ORGANICS (PCBs), Aesthetics (floatable debris)
Suspected: - - -
Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: URBAN/STORM RUNOFF, TOXIC/CONTAMINATED SEDIMENT,
Suspected: Onsite/Septic Syst, Other Non-Permitted Sanitary Discharges, Other Source (migratory species)
Unconfirmed: Combined Sewer Overflows (CSOs)

Management Information

Management Status: Strategy Implementation Scheduled or Underway
Lead Agency/Office: Other/NYCDEP
IR/305(b) Code: Impaired Water Requiring a TMDL (IR Category 5)

Further Details

Overview
This portion of Raritan Bay is assessed as an impaired waterbody due to shellfishing and fish consumption that is known to be impaired by health advisories and restrictions, the result of elevated pathogens and PCB levels. Sources of pathogens include urban/storm runoff, CSOs, failing and/or inadequate onsite wastewater (septic) systems, illegal connections to storm sewers, boat pollution and other sources. Fish consumption advisories are the result of PCBs from contaminated sediment, but also the result of the migratory range of these fish species. Other recreational uses, including public bathing, are generally supported with only minor impacts.

Use Assessment
This portion of Raritan Bay is a Class SA waterbody, assessed for shellfishing, public bathing and general recreation use, and support of aquatic life.

Shellfishing Assessment:
Shellfish harvesting for consumption is considered to be impaired in these waters. All of this waterbody (included within Shellfish Growing Area #57) has been designated uncertified for the taking of shellfish for use as food. However,

shellfish are harvested from the area and transferred to clean waters for cleansing prior to going to market. As a result, the shellfishing use is considered to be impaired rather than precluded. Shellfish that grow in contaminated waters can accumulate disease-causing microorganisms (bacteria, viruses) that can be eaten with the shellfish. These shellfishing designations are based on results of water quality sampling and evaluation of data against New York State and National Shellfish Sanitation Program monitoring criteria and/or shoreline surveys of actual or potential sources of contamination. Certified/uncertified shellfish area designations are revised regularly; for the most up to date and detailed descriptions of current designations, go to www.dec.ny.gov/regs/4014.html. (DEC/DFWMR, Region 1, July 2015)

The NYSDEC managed shellfish transplant program involves the harvest of shellfish from the designated uncertified waters of Raritan Bay and relocation or relay to certified waters for bacteriological cleansing (21 day cleansing period in NY). The program operates on a seasonal basis (May through October 10) for hand harvesters working under direct supervision of the DEC staff. Only those uncertified areas that are classified as Special Restricted for relay can be used as a source area for shellfish transplanting. New Jersey operates a depuration program from parts of Raritan Bay. Depuration is a cleansing process in which shellfish are harvested from uncertified waters and then undergo a 48–hour purification process on land. (DEC/DMR,

Recreational uses including public bathing are considered to be supported but stressed based on monitoring at beaches in the segment. Recreational uses in general are considered to experience minor impacts due to the shellfish restrictions in the segment. Beach monitoring revealed infrequent elevated bacteriological levels at beaches and the sampling resulted in few water quality-driven closures. Occasional beach closures that do occur are typically pre-emptive closures during heavier rainstorms that are known to wash pollutants into the harbor. This segment is open water, with little shoreline; but nearby Wolfes Pond Beach is considered to be representative of bathing use in the segment. (NYSDOH BEACH Act monitoring results, 2013 and DEC/DFWMR, July 2015)

Aquatic life is considered to be fully supported. The harbor supports a healthy abundance and diversity of resident and migratory marine species, including striped bass, bluefish, winter flounder, fluke and weakfish. (DEC/DFW and Region 2, 2016)

Fish consumption is considered to be impaired due to NYS DOH a health advisory that recommends eating no more than one meal per month of larger (over 25 inches) weakfish because of elevated PCB levels. Additional advisories are also in place regarding consumption of American eel, bluefish, striped bass and smaller weakfish from these waters due to PCBs. However, these advisories recommend limiting consumption to no more than one meal per week which is no more stringent than the general statewide advisory for all New York waters and does not result in significant impact to uses. The source of this contamination is considered to be contaminated sediment, the result of past industrial activity/discharges. For some species the advisories are related to the habits and characteristics of these species, specifically the wide migratory range, predatory nature and high lipid/fat content that make them more likely to accumulate contaminants. Health advisories regarding the consumption of fish are revised regularly; for the most current advisories, go to www.nyhealth.gov/environmental/outdoors/fish/fish.htm. (NYS DOH Health Advisories and DEC/FWMR, Habitat, January 2014)

Water Quality Information

Water quality evaluations have been conducted through the NYCDEP City-Wide Long-Term CSO Control Planning Program as well as the long-standing NYCDEP Harbor Survey Sampling Program. The NYCDEP Harbor Survey Program uses primarily four indicators of water quality: fecal coliform bacteria, dissolved oxygen, chlorophyll a and water clarity. Significant improvements have been noted in all of these parameters since the 1970s and 80s. These improvements have coincided with considerable upgrades to the City's wastewater treatment facilities. In the Lower New York Bay–Raritan Bay portion of the harbor, standards for bacteria and dissolved oxygen are typically met. Results show somewhat high levels of chlorophyll and acceptable but lower water clarity. Summer algal blooms are fairly common in Raritan Bay. (NYCDEP, Harbor Survey, 2014)

An extensive effort to monitoring toxic substances in New York Harbor waters was undertaken in the late 1990s. The

Contaminant Assessment and Reduction Program (CARP) effort was a response to the implementation of more restrictive guidelines for the disposal of dredged materials from New York Harbor. These guidelines eliminated ocean disposal as a viable option for much of the dredged material related to port maintenance. As a result, the assessment and reduction of contaminated sediments became a critical priority for the Harbor. Strong regional multi–agency support and a $30 million commitment – primarily from the NYNJ Port Authority – led to the formation of CARP in 1997. The objectives of the effort were to identify sources of contaminants to the harbor/estuary, establish baseline levels of contaminants in waters, fish tissue and sediments, and evaluate future conditions under various contaminant reduction scenarios. The monitoring component which began in 1999 and continued through 2001 provided input to contaminant fate and transport models and guided trackdown and remediation and restoration efforts. (DEC/DOW, BWAM/Sediment Assessment, February 2010)

Source Assessment

Urban stormwater runoff, combined sewer overflows (CSOs), sanitary sewer overflows and illegal (unpermitted) sanitary discharges are sources of pollutants. NYC municipal wastewater discharges also contribute to overall nutrient load in the harbor waters. Impacts to fish consumption are the result of elevated PCBs and dioxin in fish species due to contaminated sediment, and to some degree are the result of the wide migratory range of some species.

Management Actions

Combined sewer overflows (CSOs) represent a significant source of pollutants to New York Harbor waters and tributaries. In 2005 NYSDEC issued a Consent Order requiring New York City to address the over 400 CSOs of the NYCDEP municipal wastewater system. In 2012, the CSO Order was modified to including the integration of green infrastructure, the substitution of more cost-effective grey infrastructure, and agreed to fixed dates for submittal of the Long-Term Control Plans. Under the 2005/2012 Orders, NYCDEP developed 11 Waterbody/Watershed Facility Plans (WWFPs) and is currently developing Long Term Control Plans (LTCPs) to bring CSO-impacted waters into compliance with water quality standards. Raritan Bay is included within the Open Waters waterbody, for which a LTCP is being developed. The Order requires post-construction monitoring to verify modeling projections and actual water quality compliance, inform decisions regarding SPDES permit renewal at five-year intervals, and evaluate future management actions, including additional CSOs controls if necessary. (DEC/DOW, BWC/NYCC, August 2016)

Much of the historic issues and impacts from failing and/or inadequate residential onsite wastewater (septic) systems have been addressed through sewering projects along the southern shore portion of Staten Island. The sewer systems improvements include a number of interceptor projects (Tottenville/West Branch, Oakwood Beach, Hylan Blvd) that now serve previously unsewered areas. Additional infrastructure improvements to address stormwater runoff control have been undertaken through the Staten Island Bluebelt program. This effort preserves natural drainage corridors, called Bluebelts, including streams, ponds, and other wetland areas and allows them to perform their functions of conveying, storing, and filtering stormwater, while providing an alternative to more costly traditional storm sewer infrastructure. In addition, the Bluebelts provide important community open spaces and diverse wildlife habitats. Along the south shore, the Bluebelt program is substanitally complete. (NYCDEP, December 2016)

These waters are included within the core area of the New York/New Jersey Harbor Estuary Program (HEP). The HEP is a National Estuary Program authorized in 1987 by the U.S. Environmental Protection Agency. The program is a continuing multi–agency effort to develop and implement a plan to protect, conserve, and restore the estuary. Participants in the program include representatives from local, state, and federal environmental agencies, scientists, citizens, business interests, environmentalists, and others. (DEC/DOW, BWAM, December 2010)

In 2015 the HEP convened a bi-state conference to discuss Raritan Bay issues and areas of cooperation to restore and protect the Bay. The conference examined the key topic areas of water quality, habitat conservation and restoration, fish and shellfish management, public access, and climate resiliency. A conference report, Two States – One Bay: A Bi-state Conversation about the Future of Raritan Bay identifies insights, opportunities, and possible strategies to address challenges to ensure the stewardship and vitality of Raritan Bay. (NY-NJ HEP, June 2015)

Section 303(d) Listing:
This portion of Raritan Bay is included on the current (2016) NYS Section 303(d) List of Impaired Waters. The waterbody is included on Part 2b of the List as a fish consumption restricted water due to PCBs and other toxics, and on Part 2c of the List as a shellfishing restricted water due to pathogens. This waterbody was first listed on the 1998 Section 303(d) List. (DEC/DOW, BWAM/WQAS, December 2015)

Segment Description:
This segment includes the estuary waters of Raritan Bay bounded on the east by a line from the Crookes Point south to Point Comfort in New Jersey; on the south by the New York–New Jersey line, on the west by a line from Cupola at Mount Loretto Girls Home near Red Bank to Conaskonk Point in New Jersey; and on the north by a line from Black Buoy 39 (about 0.25 miles off shore) to south tip of Crookes Point. This segment includes all Class SA waters of the Bay.

Raritan Bay, West (1701-0180) Impaired

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.2) RB (portion 2)
Hydro Unit Code: Raritan Bay-Lower Bay (0203010404)
Water Type/Size: Estuary Waters 2061.9 Acres
Description: portion of bay, Class SB

Water Class: SB
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Richmond (43)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Shellfishing	N/A	-
Public Bathing	Stressed	Suspected
Recreation	Stressed	Suspected
Aquatic Life	Fully Supported	Suspected
Fish Consumption	Impaired	Known
Conditions Evaluated		
Habitat/Hydrology	Good	
Aesthetics	Good	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)

Known: PRIORITY ORGANICS (PCBs, dioxin), Aesthetics (floatable debris), Pathogens
Suspected: - - -
Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: TOXIC/CONTAMINATED SEDIMENT, Combined Sewer Overflows (CSOs), Urban/Storm Runoff
Suspected: Onsite/Septic Systems, Other Source (migratory species)
Unconfirmed: - - -

Management Information

Management Status: Strategy Implementation Scheduled or Underway
Lead Agency/Office: Other/NYCDEP
IR/305(b) Code: Impaired Water Requiring a TMDL (IR Category 5)

Further Details

Overview

This portion of Raritan Bay is assessed as an impaired waterbody due to fish consumption that is known to be impaired by health advisories for certain species due to various pollutants in sediments, largely the result of past historic discharges. Other recreational uses, including public bathing, are generally supported, but pathogens from urban/storm runoff, CSOs, failing and/or inadequate onsite/septic systems, illegal connections to storm sewers, boat pollution and other sources cause some stress to these uses.

Use Assessment

This portion of Raritan Bay is a Class SB waterbody, assessed for public bathing and general recreation use, and support of aquatic life, but not for shellfishing.

All of this waterbody (included within Shellfish Growing Area #57) has been designated as uncertified for the taking of shellfish for use as food. Although this waterbody is monitored through the shellfish program and designated as uncertified, its Class SB designation does not include shellfishing as an appropriate use and this assessment does not include an evaluation for the support of shellfishing use. (DEC/DFWMR, Region 1, July 2015)

Recreational uses including public bathing are considered to be supported but stressed based on monitoring at beaches in the segment. Recreational uses in general are considered to experience minor impacts due to the shellfish restrictions in the segment. Beach monitoring revealed infrequent elevated bacteriological levels at beaches and the sampling resulted in few water quality-driven closures. Occasional beach closures that do occur are typically pre-emptive closures during heavier rainstorms that are known to wash pollutants into the harbor. Beaches within this reach include Wolfes Pond Beach. (NYSDOH BEACH Act monitoring results, 2013 and DEC/DFWMR, July 2015)

Aquatic life is considered to be fully supported. The harbor supports a healthy abundance and diversity of resident and migratory marine species, including striped bass, bluefish, winter flounder, fluke and weakfish. (DEC/DFW and Region 2, 2016)

Fish consumption is considered to be impaired due to NYS DOH a health advisory that recommends eating no American eel, gizzard shad, or white perch, and no more than one meal per month of Atlantic needlefish, bluefish, rainbow smelt or stiped bass taken west of Wolfe's Pond Park because of elevated PCB and dioxin levels. Additional advisories are also in place regarding consumption of all other fish and blue crab meat due to PCBs and dioxin. However, these advisories recommend limiting consumption to no more than one meal per week which is no more stringent than the general statewide advisory for all New York waters and does not result in significant impact to uses. The source of this contamination is considered to be contaminated sediment, the result of past industrial activity/discharges. For some species the advisories are related to the habits and characteristics of these species, specifically the wide migratory range, predatory nature and high lipid/fat content that make them more likely to accumulate contaminants. Health advisories regarding the consumption of fish are revised regularly; for the most current advisories, go to www.nyhealth.gov/environmental/outdoors/fish/fish.htm. (NYS DOH Health Advisories and DEC/FWMR, Habitat, January 2014)

Water Quality Information

Water quality evaluations have been conducted through the NYCDEP City-Wide Long-Term CSO Control Planning Program as well as the long-standing NYCDEP Harbor Survey Sampling Program. The NYCDEP Harbor Survey Program uses primarily four indicators of water quality: fecal coliform bacteria, dissolved oxygen, chlorophyll a and water clarity. Significant improvements have been noted in all of these parameters since the 1970s and 80s. These improvements have coincided with considerable upgrades to the City's wastewater treatment facilities. In the Lower New York Bay–Raritan Bay portion of the harbor, standards for bacteria and dissolved oxygen are typically met. Results show somewhat high levels of chlorophyll and acceptable but lower water clarity. Summer algal blooms are fairly common in Raritan Bay. (NYCDEP, Harbor Survey, 2014)

An extensive effort to monitoring toxic substances in New York Harbor waters was undertaken in the late 1990s. The Contaminant Assessment and Reduction Program (CARP) effort was a response to the implementation of more restrictive guidelines for the disposal of dredged materials from New York Harbor. These guidelines eliminated ocean disposal as a viable option for much of the dredged material related to port maintenance. As a result, the assessment and reduction of contaminated sediments became a critical priority for the Harbor. Strong regional multi–agency support and a $30 million commitment – primarily from the NYNJ Port Authority – led to the formation of CARP in 1997. The objectives of the effort were to identify sources of contaminants to the harbor/estuary, establish baseline levels of contaminants in waters, fish tissue and sediments, and evaluate future conditions under various contaminant reduction scenarios. The monitoring component which began in 1999 and continued through 2001 provided input to contaminant fate and transport models and guided trackdown and remediation and restoration efforts. (DEC/DOW, BWAM/Sediment Assessment, February 2010)

Source Assessment

Impacts to fish consumption are the result of elevated PCBs and dioxin in fish species due to contaminated sediment, and to some degree are the result of the wide migratory range of some species. Urban stormwater runoff, combined

sewer overflows (CSOs), sanitary sewer overflows and illegal (unpermitted) sanitary discharges are sources of pollutants causing other lesser impacts. NYC municipal wastewater discharges also contribute to overall nutrient load in the harbor waters.

Management Actions

Combined sewer overflows (CSOs) represent a significant source of pollutants to New York Harbor waters and tributaries. In 2005 NYSDEC issued a Consent Order requiring New York City to address the over 400 CSOs of the NYCDEP municipal wastewater system. In 2012, the CSO Order was modified to including the integration of green infrastructure, the substitution of more cost-effective grey infrastructure, and agreed to fixed dates for submittal of the Long-Term Control Plans. Under the 2005/2012 Orders, NYCDEP developed 11 Waterbody/Watershed Facility Plans (WWFPs) and is currently developing Long Term Control Plans (LTCPs) to bring CSO-impacted waters into compliance with water quality standards. Raritan Bay is included within the Open Waters waterbody, for which a LTCP is being developed. The Order requires post-construction monitoring to verify modeling projections and actual water quality compliance, inform decisions regarding SPDES permit renewal at five-year intervals, and evaluate future management actions, including additional CSOs controls if necessary. (DEC/DOW, BWC/NYCC, August 2016)

Much of the historic issues and impacts from failing and/or inadequate residential onsite wastewater (septic) systems have been addressed through sewering projects along the southern shore portion of Staten Island. The sewer systems improvements include a number of interceptor projects (Tottenville/West Branch, Oakwood Beach, Hylan Blvd) that now serve previously unsewered areas. Additional infrastructure improvements to address stormwater runoff control have been undertaken through the Staten Island Bluebelt program. This effort preserves natural drainage corridors, called Bluebelts, including streams, ponds, and other wetland areas and allows them to perform their functions of conveying, storing, and filtering stormwater, while providing an alternative to more costly traditional storm sewer infrastructure. In addition, the Bluebelts provide important community open spaces and diverse wildlife habitats. Along the south shore, the Bluebelt program is substanitally complete. (NYCDEP, December 2016)

These waters are included within the core area of the New York/New Jersey Harbor Estuary Program (HEP). The HEP is a National Estuary Program authorized in 1987 by the U.S. Environmental Protection Agency. The program is a continuing multi–agency effort to develop and implement a plan to protect, conserve, and restore the estuary. Participants in the program include representatives from local, state, and federal environmental agencies, scientists, citizens, business interests, environmentalists, and others. (DEC/DOW, BWAM, December 2010)

In 2015 the HEP convened a bi-state conference to discuss Raritan Bay issues and areas of cooperation to restore and protect the Bay. The conference examined the key topic areas of water quality, habitat conservation and restoration, fish and shellfish management, public access, and climate resiliency. A conference report, Two States – One Bay: A Bi-state Conversation about the Future of Raritan Bay identifies insights, opportunities, and possible strategies to address challenges to ensure the stewardship and vitality of Raritan Bay. (NY-NJ HEP, June 2015)

Section 303(d) Listing

This portion of Raritan Bay is included on the current (2016) NYS Section 303(d) List of Impaired Waters. The waterbody is included on Part 2b of the List as a fish consumption restricted water due to PCBs and other toxics. This waterbody was first listed on the 2002 Section 303(d) List. (DEC/DOW, BWAM/WQAS, December 2010)

Segment Description

This segment includes the estuary waters of Raritan Bay west of Crookes Point and north of a line from Crookes Point to Buoy 39; and those waters bounded on the east by a line from Cupola at Mount Loretto Girls Home near Red Bank to Conaskonk Point in New Jersey; on the south by the New York–New Jersey line; on the west by line from Great Beds Lighthouse to Ward Point on Staten Island; and on the north by Staten Island Shoreline. This segment includes Great Kills Harbor. This segment includes all Class SB waters of the Bay.

Staten Island Tribs, South (1701-0188) Unassessed

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.2) SI- 1 thru 5 (selected)
Hydro Unit Code: Raritan Bay-Lower Bay (0203010404)
Water Type/Size: River/Stream 8.9 Miles
Description: total length of selected tribs

Water Class: C (see Seg Description)
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Richmond (43)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Water Supply	Unassessed	-
Shellfishing	Unassessed	-
Public Bathing	Unassessed	-
Recreation	Unassessed	-
Aquatic Life	Unassessed	-
Fish Consumption	Unassessed	-
Conditions Evaluated		
Habitat/Hydrology	Unknown	
Aesthetics	Fair	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)

Known: - - -
Suspected: - - -
Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: - - -
Unconfirmed: - - -

Management Information

Management Status: Unassessed
Lead Agency/Office: DOW/BWAM
IR/305(b) Code: Water with Insufficient Data (IR Category 3)

Further Details

Overview
Currently there is inadequate data/information to evaluate uses and determine a water quality assessment for this waterbody.

Use Assessment
This waterbody segment is a Class C waterbody, assessed for general recreation use and support of aquatic life, but not as a water supply or for public bathing.

Water Quality Information
There is currently no water quality information available upon which to base an assessment.

Source Assessment
Specific sources of pollutants to the waterbody have not been identified.

Management Actions

No specific management actions have been identified for the waterbody. Baseline sampling to evaluate conditions in this waterbody segment is needed.

Much of the historic issues and impacts from failing and/or inadequate residential onsite wastewater (septic) systems have been addressed through sewering projects along the southern shore portion of Staten Island. The sewer systems improvements include a number of interceptor projects (Tottenville/West Branch, Oakwood Beach, Hylan Blvd) that now serve previously unsewered areas. Additional infrastructure improvements to address stormwater runoff control have been undertaken through the Staten Island Bluebelt program. This effort preserves natural drainage corridors, called Bluebelts, including streams, ponds, and other wetland areas and allows them to perform their functions of conveying, storing, and filtering stormwater, while providing an alternative to more costly traditional storm sewer infrastructure. In addition, the Bluebelts provide important community open spaces and diverse wildlife habitats. Along the south shore, the Bluebelt program is substanitally complete. (NYCDEP, December 2016)

Section 303(d) Listing
This trib waterbody is not included on the current (2016) NYS Section 303(d) List of Impaired/TMDL Waters. There is insufficient information to make a listing decision. (DEC/DOW, BWAM/WQAS, January 2016)

Segment Description
This segment includes the total length of selected/smaller Staten Island tribs to Raritan Bay. Tribs within this segment, including New Creek (-1), Oakwood Creek (-2a), Lipsett Avenue Stream (-3), and Bedell Avenue Creek (-5) are primarily Class C, with tidal reaches of these tribs designated Class I and Lipsett Avenue Stream designated Class B. Great Kills Creek (-2) and Lemon Creek (-4) are listed separately.

Great Kills Creek/Harbor (1701-0187) Unassessed

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.2) SI- 2
Hydro Unit Code: Raritan Bay-Lower Bay (0203010404)
Water Type/Size: Estuary Waters 309.8 Acres
Description: total area of tidal trib/harbor

Water Class: I
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Richmond (43)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Water Supply	Unassessed	-
Shellfishing	Unassessed	-
Public Bathing	Unassessed	-
Recreation	Unassessed	-
Aquatic Life	Unassessed	-
Fish Consumption	Unassessed	-
Conditions Evaluated		
Habitat/Hydrology	Unknown	
Aesthetics	Unknown	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)

Known: - - -
Suspected: - - -
Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: - - -
Unconfirmed: - - -

Management Information

Management Status: Unassessed
Lead Agency/Office: DOW/BWAM
IR/305(b) Code: Water with Insufficient Data (IR Category 3)

Further Details

Overview
Currently there is inadequate data/information to evaluate uses and determine a water quality assessment for this waterbody.

Use Assessment
This waterbody segment is a Class I waterbody, assessed for general recreation use and support of aquatic life, but not as a water supply or for public bathing.

Water Quality Information
There is currently no water quality information available upon which to base an assessment.

Source Assessment
Specific sources of pollutants to the waterbody have not been identified.

Management Actions

No specific management actions have been identified for the waterbody. Baseline sampling to evaluate conditions in this waterbody segment is needed.

Section 303(d) Listing
This trib waterbody is not included on the current (2016) NYS Section 303(d) List of Impaired/TMDL Waters. There is insufficient information to make a listing decision. (DEC/DOW, BWAM/WQAS, January 2016)

Segment Description
This segment includes the total area of Great Kills Creek (–2) and Harbor. The creek and Harbor are designated Class I.

Lemon Creek and tribs (1701-0149) Minor Impacts

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.2) SI- 4
Hydro Unit Code: Raritan Bay-Lower Bay (0203010404)
Water Type/Size: River/Stream 1.7 Miles
Description: entire stream and tribs

Water Class: B
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Richmond (43)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Water Supply	Unassessed	-
Shellfishing	Unassessed	-
Public Bathing	Precluded	Known
Recreation	Impaired	Known
Aquatic Life	Impaired	Known
Fish Consumption	Stressed	Suspected
Conditions Evaluated		
Habitat/Hydrology	Fair	
Aesthetics	Fair	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)
Known: LOW D.O./OXYGEN DEMAND, Aesthetics (floatables, odors), Nutrients
Suspected: PATHOGENS, Ammonia
Unconfirmed:

Source(s) of Pollutant(s)
Known: ON-SITE/SEPTIC SYSTEMS, OTHER NON-PERMITTED SANITARY DISCH, Private/Comm/Inst Discharges, URBAN/STORM RUNOFF
Suspected:
Unconfirmed:

Management Information

Management Status: Strategy Implementation Scheduled or Underway
Lead Agency/Office: Other/NYCDEP
IR/305(b) Code: Water with Insufficient Data (IR Category 3)

Further Details

Overview
Lemon Creek is assessed as having minor impacts – that may rise to the level of impairment – due to public bathing and other recreational uses, as well as aquatic life that is thought to be impaired by nutrient enrichment and low dissolved oxygen. Sewage and other pollutants from failing and/or inadequate residential wastewater (septic) systems and possible illegal sanitary discharges are likely sources. However the sampling results may be influenced by wetland and tidal conditions.

Use Assessment
Lemon Creek is a Class B waterbody, assessed for public bathing, general recreation use and support of aquatic life, but not as a water supply.

Recreational uses and public bathing are thoght to be impaired due to high levels of nutrient enrichment and likely sewage and other pollutant impacts. Similar impairment to aquatic life is also suspected. However sampling results showing moderate impacts may be influenced by habitat (tidal, wetland) conditions.

Fish consumption is considered to be stressed due to NYS DOH issued health advisories recommending limiting consumption of some species in adjacent waters. This waterbody is not included among the waterbody-specific health advisories for fish consumption, but since fish can migrate to this waterbody from other waters where such advisories are in place fish consumption is evaluated as stressed. Health advisories regarding the consumption of fish are revised regularly; for the most current advisories, go to www.nyhealth.gov/environmental/outdoors/fish/fish.htm. (NYS DOH Health Advisories and DEC/FWMR, Habitat, January 2014

Water Quality Sampling

A biological (macroinvertebrate) assessment of Lemon Creek in Pleasant Plains (at Amboy Road/Maquire Avenue) was conducted as part of the RIBS biological screening effort in 2013 and 2008. Sampling results from both years indicated moderately impacted conditions, with sensitive taxa reduced, and the distribution of major taxonomic groups significantly different from what is naturally expected. Aquatic life is considered to be impaired, however this evaluation is noted as suspected because the sampling results may be influenced by tidal, wetland conditions. Additional sampling is needed to confirm the level of impact/impairment. (DEC/DOW, BWAM/SBU, January 2015).

Source Assessment

The nutrient biotic index suggests highly elevated enrichment and impact source determination reveals the fauna to be most similar to communities influenced by organic loads and low dissolved oxygen from sewage and point and nonpoint municipal, industrial sources.

Management Actions

Much of the historic issues and impacts from failing and/or inadequate residential onsite wastewater (septic) systems have been addressed through sewering projects along the southern shore portion of Staten Island. The sewer systems improvements include a number of interceptor projects (Tottenville/West Branch, Oakwood Beach, Hylan Blvd) that now serve previously unsewered areas. Additional infrastructure improvements to address stormwater runoff control have been undertaken through the Staten Island Bluebelt program. This effort preserves natural drainage corridors, called Bluebelts, including streams, ponds, and other wetland areas and allows them to perform their functions of conveying, storing, and filtering stormwater, while providing an alternative to more costly traditional storm sewer infrastructure. In addition, the Bluebelts provide important community open spaces and diverse wildlife habitats. Along the south shore, the Bluebelt program is substanitally complete. (NYCDEP, December 2016)

Section 303(d) Listing

Lemon Creek is not included on the current (2016) NYS Section 303(d) List of Impaired/TMDL Waters. However this updated assessment suggests it may be appropriate to include this waterbody on the next List, pending additional sampling to verify an impairment. (DEC/DOW, BWAM/WQAS, January 2015)

Segment Description:

This segment includes the stream and all tribs in the freshwater portion of the stream.

Grassmere Lake/Bradys Pond (1701-0357) Impaired

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.2) SI..P1039
Hydro Unit Code: Raritan Bay-Lower Bay (0203010404)
Water Type/Size: Lake/Reservoir 17.2 Acres
Description: entire lake

Water Class: B
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Richmond (43)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Shellfishing	N/A	-
Public Bathing	Impaired	Known
Recreation	Impaired	Known
Aquatic Life	Stressed	Suspected
Fish Consumption	Unassessed	-
Conditions Evaluated		
Habitat/Hydrology	Fair	
Aesthetics	Fair	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)

Known: NUTRIENTS (phosphorus), ALGAL/PLANT GROWTH (algal blooms)
Suspected: - - -
Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: ONSITE/SEPTIC SYSTEMS, URBAN/STORM RUNOFF
Unconfirmed: - - -

Management Information

Management Status: Verification of Pollutants/Causes Needed
Lead Agency/Office: Other/NYCDEP
IR/305(b) Code: Impaired Water Requiring a TMDL (IR Category 5)

Further Details

Overview
Grasmere Lake/Bradys Pond is assessed as an impaired waterbody due to high nutrient levels that result in algal blooms and poor water clarity. Urban stormwater runoff is the most likely source of the nutrient loads, though residential wastewater from onsite/septic systems and/or illegal sanitary disharges could also be contributing.

Use Assessment
Grassmere Lake/Bradys Pond is a Class B waterbody, assessed for public bathing, general recreation use and support of aquatic life, but not as a water supply.

Recreational uses and public bathing are considered to be precluded/impaired due to elevated nutrients (phosphorus), excessive algal growth, and poor water clarity. The recreational suitability of the lake is considered to be unfavorable. The Lake is described most frequently as being impacted for most uses and as "having a definite algal greenness," an assessment that is consistent with measured water quality characteristics. The surface of the lake is often covered with dense floating and emergent macrophytes; aquatic herbicides have been used previously to control the macrophytes. Additional bacteriological sampling is needed to more fully evaluate the impact of pathogen levels on public bathing (swimming) use. Aesthetic conditions of the lake are considered to be poor due to excessive algae, shoreline algal blooms

and excessive aquatic vegetation. (DEC/DOW, BWAM/CSLAP, January 2000 and DEC/DOW, BWAM/LMAS, July 2013)

Fish Consumption use is considered to be unassessed. There are no health advisories limiting the consumption of fish from this waterbody (beyond the general advice for all waters). However due to the presence of impacts/contaminants in the stream and the uncertainty as to whether the lack of a waterbody-specific health advisory is based on actual sampling, fish consumption use is noted as unassessed, rather than fully supported but unconfirmed. (NYS DOH Health Advisories and DEC/DOW, BWAM, December 2014)

Water Quality Sampling

Grassmere/Bradys Pond Lake has been sampled as part of the NYSDEC Citizen Statewide Lake Assessment Program (CSLAP) beginning in 1997 and continuing through 1999. An Interpretive Summary report of the findings of this sampling was published in 2000. These data indicate that the lake is best characterized as eutrophic, or highly productive. Phosphorus levels in the lake were found to typically exceed the state guidance values indicating impacted/stressed recreational uses. Corresponding transparency measurements rarely met the recommended minimum for swimming beaches. Measurements of pH typically fall within the state water quality range of 6.5 to 8.5. Conductivity levels in the lake are also extremely high (frequently exceeding 1200 umho/cm). The lake is located in a highly urbanized area adjacent to heavily used roadways. (DEC/DOW, BWAM/CSLAP, January 2000)

Source Assessment

Based on surrounding land use and other knowledge of the waterbody, urban stormwater runoff, residential onsite septic systems and possible illegal (non-permitted) sewage discharges are the most likely source(s) of nutrient loading to the waterbody.

Management Action

This sampling for this assessment is more than 10 years old and more recent sampling is necessary to confirm current conditions. However lakes that are completely surround by privately held land with no clear public access nor other broader public use are typically lower priority for NYSDEC Lake sampling efforts. Lake Associations and/or residents are encouraged to learn more about how to engage in citizen monitoring and general lake management. The Citizen Statewide Lake Assessment Program (CSLAP) is a volunteer lake monitoring program of both public and private lakes. The CSLAP program is managed in partnership with the New York State Federation of Lake Associations (FOLA). A range of general best management practices and other recommendations to restore and protect water quality in all lakes is outlined in the NYSDEC manual Diet for a Small Lake (NYSDEC/FOLA, 2009).

Section 303(d) Listing

Grasmere Lake/Bradys Pond is included on the current (2016) NYS Section 303(d) List of Impaired/TMDL Waters. The waterbody is included on Part 1 of the List as an impaired waterbody requiring development of a TMDL to address phosphorus. The listing actually appears as Grasmere, Arbutus and Wolfes Lakes, but the segment has been separated, and will be changed in the 2018 List. This waterbody was first included on the 20xx List. (DEC/DOW, BWAM/WQAS, January 2010)

Segment Description:

This segment includes the total area of Grassmere Lake/Bradys Pond (P1039). The Lake is designated Class B. This waterbody segment had included Arbutus Lake (P1051) and Wolfes Pond (P1053), but these two lakes were separated into a new segment in 2016.

Arbutus Lake, Wolfes Pond (1701-0404) Unassessed

Waterbody Location Information

Revised: 12/10/2016

Water Index No: (MW1.2) SI..P1051,P1053
Hydro Unit Code: Raritan Bay-Lower Bay (0203010404)
Water Type/Size: Lake/Reservoir 15.4 Acres
Description: total area of both lakes

Water Class: B
Drainage Basin: Atlantic-Long Island Sound
Reg/County: 2/Richmond (43)

Water Quality Problem/Issue Information

Uses Evaluated	Severity	Confidence
Shellfishing	N/A	-
Public Bathing	Unassessed	-
Recreation	Unassessed	-
Aquatic Life	Unassessed	-
Fish Consumption	Unassessed	-
Conditions Evaluated		
Habitat/Hydrology	Unknown	
Aesthetics	Unknown	

Type of Pollutant(s) (CAPS indicate Major Pollutants/Sources that contribute to an Impaired/Precluded Uses)

Known: - - -
Suspected: - - -
Unconfirmed: - - -

Source(s) of Pollutant(s)

Known: - - -
Suspected: - - -
Unconfirmed: - - -

Management Information

Management Status: Unassessed
Lead Agency/Office: DOW/BWAM
IR/305(b) Code: Water with Insufficient Data (IR Category 3)

Further Details

Overview
Currently there is inadequate data/information to evaluate uses and determine a water quality assessment for this waterbody.

Use Assessment
This waterbody segment is a Class B waterbody, assessed for public bathing, general recreation use and support of aquatic life, but not as a water supply.

Water Quality Information
There is currently no water quality information available upon which to base an assessment.

Source Assessment
Specific sources of pollutants to the waterbody have not been identified.

Management Actions
No specific management actions have been identified for the waterbody. Baseline sampling to evaluate conditions in this

waterbody segment is needed.

Section 303(d) Listing
This trib waterbody is not included on the current (2016) NYS Section 303(d) List of Impaired/TMDL Waters. There is insufficient information to make a listing decision. (DEC/DOW, BWAM/WQAS, January 2016)

Segment Description
This segment includes the total area of Arbutus Lake (P1051) and Wolfes Pond (P1053). These Lakes are designated Class B. These lakes had been grouped into a single segment with Grassmere Lake/Bradys Pond (P1039), but were separated into a new segment in 2016.