

The Atlantic Ocean/Long Island Sound Basin

Basin Description

The Atlantic Ocean/Long Island Sound Basin drains the New York City Metropolitan area and all of Long Island in the southeast corner of New York State. The drainage area encompasses all marine waters in New York Harbor, Long Island Sound, Block Island Sound and along the South Shore of Long Island, and the waters that drain into them. The basin includes about 1,650 square miles of land area within New York State. Significant interstate marine waters such as Long Island Sound (Connecticut) and New York Bay and The Kills (New Jersey) are included in the basin. Within New York State the basin drainage area includes all of Kings (Brooklyn), Nassau, New York (Manhattan), Queens, Richmond (Staten Island) and Suffolk Counties, and most of Bronx County and a portion of southern Westchester County.

The population of the New York State portion of the Atlantic Ocean/Long Island Sound Basin totals 10,376,834 people (1990). Including the area beyond the New York State border, approximately 16 million people reside within the New York metropolitan area. It is the most densely populated region in the United States, and one of the most densely populated places in the world. The western portion of the basin is highly urbanized. Land use gradually shifts to suburban as one moves to the east. Eastern Long Island is more rural with some agricultural activity.

The surface water resources of the Atlantic Ocean/Long Island Sound Basin are dominated by the estuary/marine waters which cover 905,934 acres (or 1,415 square miles). There are also about 552 miles of freshwater rivers and streams and 132 significant * freshwater lakes, ponds and reservoirs (covering 6,728 acres) in the basin. The Atlantic Ocean coastline stretches for 117.5 miles from Rockaway Point at New York Bay to Montauk Point in Eastern Suffolk County.

Water Quality Issues and Problems

Not surprisingly – given the basin’s population density, urban setting, early settlement and resulting aging infrastructure – the waters of the basin experience considerable stress. However, in spite of numerous water quality issues, the waters of the basin also remain a rich and valuable (economic and ecological) resource. The basin supports bathing, boating and other recreational activities, commercial fishing and shellfishing, and world class port operations. These coastal waters also support unique and potentially threatened habitats.

Numerous sources contribute to water quality problems in the basin. These include municipal and industrial discharges, urban storm runoff, combined and separate sewer overflows, contaminated sediments, oil and hazardous material spills, nonpoint source runoff from a variety of activities, landfill leachate, dredge spoil disposal, ground/surface/saltwater intrusion, and thermal discharges.

Low Dissolved Oxygen in Long Island Sound

Seasonal low dissolved oxygen (DO) in Long Island Sound has been the focus of considerable study. Hypoxia in the bottom waters of the western Long Island Sound have caused fish and crustacean kills and induce finfish to avoid the area. The Long Island Sound Study (LISS) has determined the dissolved oxygen problem is primarily due to algal die-off. Excessive algal blooms in the sound have been attributed to nitrogen loads from wastewater treatment plant discharges, combined sewer overflows (CSOs) and stormwater and urban

* *Significant Lakes* are lake of 6.4 acres (0.01 square miles) or larger and are included in the New York State Lakes Gazetteer.

runoff. The most significant pollutant loadings to western Long Island Sound are the New York City treatment plants on the Upper East River. Other significant pollution sources to the Sound include other municipal discharges to the basin, stormwater runoff, combined sewage overflows, and atmospheric deposition. In 1998 New York State and Connecticut agreed to nitrogen reduction targets of nearly 60% and a commitment to enforce the targets through the development of a Total Maximum Daily Load (TMDL) plan. The TMDL was completed in December 2000. In addition to point and nonpoint source controls, the TMDL includes further actions to address the control of nitrogen (and carbon) from outside the immediate LISS area.

Fish Consumption Advisories

Various fish consumption advisories are in place for the waters of the Atlantic Ocean/Long Island Sound Basin. These restrictions are primarily a result of PCB contamination. The more significant waterbody-specific advisories apply to New York Harbor, East River, Harlem River, The Kills and the western half of Long Island Sound. Less severe recommendations regarding the consumption of bluefish, American eel and striped bass affect most other marine waters in the basin. However it is worth noting that these advisories are due primarily to the presence of migratory species and not necessarily the result of contaminants within the marine waters themselves. The general statewide advisory (eat no more than one meal per week) applies to bluefish and American eel, but not most other marine water species. A number of freshwater ponds and streams in this drainage basin have fish consumption advisories, primarily due to PCB and/or pesticide contamination, in particular, chlordane. This is presumably due to the extensive use of chlordane as an insecticide. An advisory in Lake Capri in Suffolk County is in response to elevated cadmium levels.

Shellfishing Restrictions

In addition to advisories due to PCBs, pesticides and other toxics, bacteriological contamination from urban runoff, CSOs, storm sewers and other discharges results in prohibitions against shellfishing in some of the marine waters around New York City and Long Island. The NYSDEC Bureau of Marine Resources conducts a USDA-approved Shellfish Land Certification Program, the objective of which is to safeguard public health by determining those waters that are safe for shellfishing and closing areas deemed unsafe. Certification is based on actual bacteriological sampling results and evaluation of potential pollution sources along the shore.

Public Bathing

Numerous public beaches and marinas in New York City and Nassau, Suffolk and Westchester Counties attract bathers and boaters from throughout the area and beyond. While basin waters generally support these recreational uses throughout the basin, public health warnings and occasional beach closures resulting from raw sewage bypasses, combined sewer, separate sewer and stormwater overflows, municipal discharges and urban runoff do occur. New York City, Nassau, Suffolk and Westchester Counties, New Jersey and Connecticut all conduct beach water quality monitoring programs. The region has also developed a sophisticated water quality model and communication network to monitor and assess impacts and notify resource managers.

Urban/Stormwater Runoff and CSOs

Urban and stormwater runoff from impervious surfaces in this highly urbanized watershed transport significant amounts of various pollutants to the waters of the basin. These pollutants include nutrients, silt/sediment, pathogens, floatables, oil/grease, metals and other substances. In addition, untreated discharges from combined sewer overflows (CSOs) introduce oxygen demanding substances, pathogens, floatables and more to the waters. In an ongoing effort to address the problem of wet-weather sewage discharges the New York City CSO Abatement Program was included in NYC's SPDES permits issued in September 1988 to address CSOs city-wide. Since then the impact of CSOs has been reduced by diverting more flow to the

treatment plants during storm events, booming and skimming efforts at CSOs, and by implementation of the NYCDEP Catch Basin Hooding Program to control floatables. Other efforts include facility and conveyance system upgrades and expanding holding capacity for subsequent treatment.

Estuary Programs

Various major estuary study efforts are underway to evaluate water quality issues and remediation actions within the basin. They include the previously mentioned Long Island Sound Study, the New York-New Jersey Harbor Estuary Program, the South Shore Estuary Reserve and the Peconic Estuary Program. All four of these programs have completed Comprehensive Conservation and Management Plans (CCMPs). The CCMPs describe the major problems facing the estuaries and outline management actions to be taken to preserve and restore the water quality, habitat and living resources of the estuaries.

Atlantic Ocean/Long Island Sound Basin Water Quality Assessment

The series of charts presented below provide an overall assessment of water quality conditions in the entire Atlantic Ocean/Long Island Sound Basin. For each waterbody type (rivers/streams, lakes/reservoirs, estuary waters, ocean coastline) the first pie chart reveals the percentage of the miles/acres/shore miles of waters in the basin that fall into the various *Water Quality Assessment Categories*. The red slice of the pie indicates the percentage of waters characterized as *Water Quality Impacted Segments* or as *Threatened Waterbody Segments*. Taken together, waters in these two categories represent the **Priority Waterbodies** (for that waterbody type) within the basin. The percentage of miles/acres/shore miles for the other Water Quality Assessment Categories – *Waterbody Impacts Needing Verification*, *Waterbodies Having No Known Impacts*, and *UnAssessed Waterbodies* – are shown in green, blue, and light blue, respectively.

The second pie chart shows the severity of the most significant use impact or restriction for *Priority Waterbodies*. The levels of severity are:

- Precluded:* waters do not support appropriate uses,
- Impaired:* waters frequently do not support appropriate uses,
- Stressed:* waters support appropriate uses, but other water quality impacts are apparent, and
- Threatened:* waters support uses and have no impacts, but activities threaten future use support.

More detailed descriptions of these levels of severity are outlined in [Appendix A - Assessment Methodology](#).

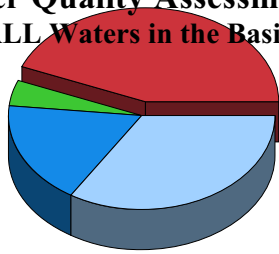
The bar charts indicate the pollutant sources that are most frequently cited as major contributors to the water quality impacts for *Priority Waterbodies* in the Atlantic Ocean/Long Island Sound Basin. The charts reflect the percentage of miles/acres/shore miles of the total waterbody area on the Priority Waterbodies List where the source is listed as a major contributor to the water quality impact. For each source, the color shading of the bar indicates the severity (*Precluded*, *Impaired*, *Stressed*, *Threatened*) of the most significant water use impact to the waterbody.

Basin Water Quality Summary

About 44% of the freshwater river/stream miles in the Atlantic Ocean/Long Island Sound Basin are listed on the Priority Waterbodies List. About one-third of these miles are listed as *Stressed* waters that fully support appropriate uses. However, nearly 30% of river/stream miles in the basin are listed as *Precluded* or *Impaired* and do not support one or more appropriate use or uses.

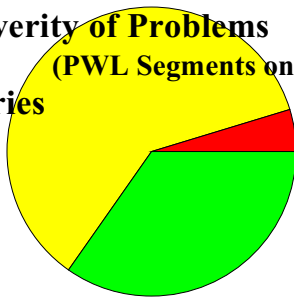
Rivers/Streams

Water Quality Assessment Categories (for ALL Waters in the Basin)



- Priority Waterbody Segments
- Segments Needing Verification
- Waters with No Known Impacts
- UnAssessed Water

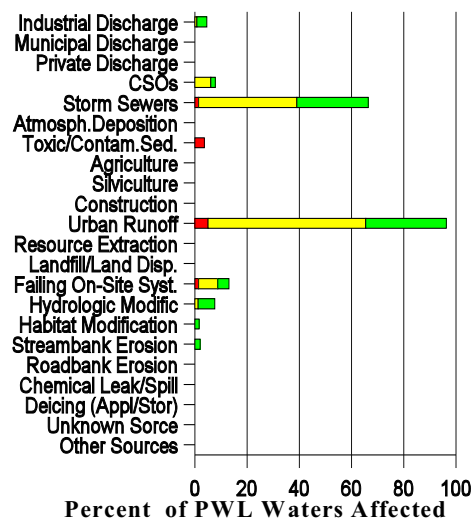
Severity of Problems (PWL Segments only)



- Precluded
- Stressed
- Impaired
- Threatened

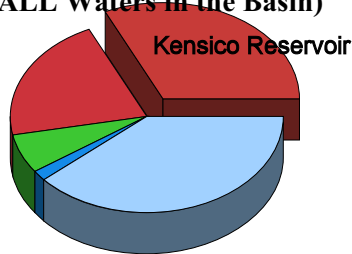
Atlantic/L.I. Sound Basin
 Total River Miles: 552
 Total PWL Miles: 242

Major Sources to Priority Waterbodies



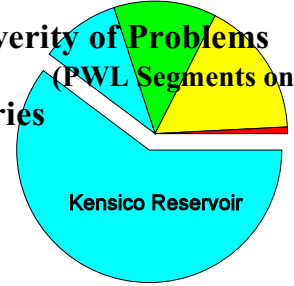
Lakes/Reservoirs

Water Quality Assessment Categories (for ALL Waters in the Basin)



- Priority Waterbody Segments
- Segments Needing Verification
- Waters with No Known Impacts
- UnAssessed Water

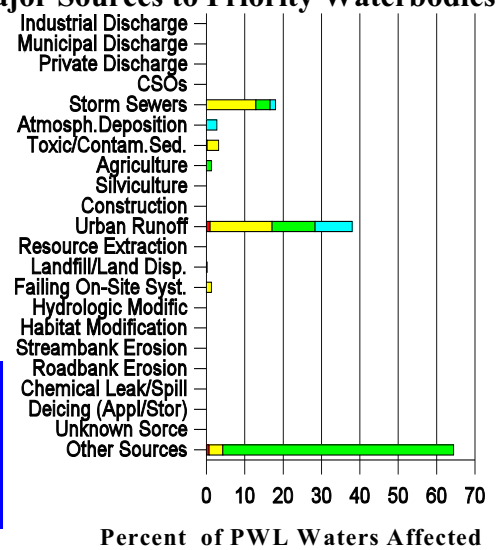
Severity of Problems (PWL Segments only)



- Precluded
- Stressed
- Impaired
- Threatened

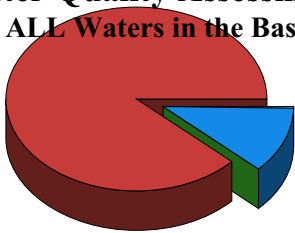
Atlantic/L.I. Sound Basin
 Total Lake Acres: 6728
 Total PWL Acres: 3576

Major Sources to Priority Waterbodies



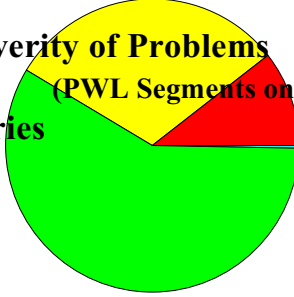
Estuary Waters

Water Quality Assessment Categories (for ALL Waters in the Basin)



- Priority Waterbody Segments
- Segments Needing Verification
- Waters with No Known Impacts
- UnAssessed Water

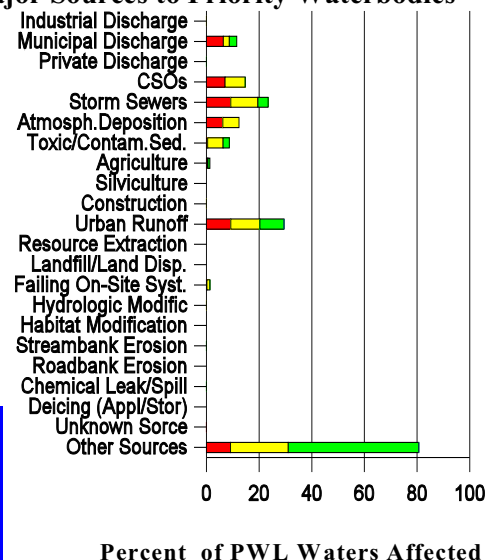
Severity of Problems (PWL Segments only)



- Precluded
- Stressed
- Impaired
- Threatened

Atlantic/L.I. Sound Basin
 Total Estuary Acres: 905,934
 Total PWL Acres: 798,828

Major Sources to Priority Waterbodies

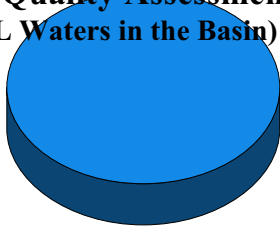


Slightly more than half (about 53%) of lake/reservoir acres in the basin are listed on the PWL. This percentage is due in large part to the listing of water quality in the largest impoundment (Kensico Reservoir) as *Threatened*. This one reservoir accounts for about one-third of the lake/reservoir acres in the basin and 60% of acres listed on the PWL. The other lakes/reservoirs in the basin average about 50 acres in size, with the next largest covering only one-tenth the area of the Kensico Reservoir. Excluding the reservoir, about 21% of lake/reservoir acres in the basin are listed on the PWL. Less than ten percent of the total lake/reservoir waters in the basin do not fully support uses.

A large percentage (88%) of estuary waters in the basin are included on the PWL. These listings are primarily a result of water quality impacts to fish and/or shellfish consumption. Water quality impacts due to fish consumption advisories occur in about 84% of the estuary waters in the basin, with fish consumption uses not supported in 32% of the basin. In 93% of the waters where fish consumption is restricted, the advisory is due to the presence of migratory species (primarily striped bass) and not necessarily the result of contaminants within the waters themselves. Shellfishing uses are listed as being impacted in 56% of the estuary waters in the basin, and not supported in 11% of waters. Excluding impacts due to fish consumption and shellfishing restrictions, about 11% of estuary waters have other uses that are *Precluded* or *Impaired*.

Ocean Coastline

Water Quality Assessment Categories (for ALL Waters in the Basin)



- Priority Waterbody Segments
- Segments Needing Verification
- Waters with No Known Impacts
- UnAssessed Water

Atlantic/L.I. Sound Basin

Total Ocean Coastline:	117.5 mi
Total PWL Miles:	0.0 mi

All (100%) of the Atlantic Ocean Coastline waters in the basin have been assessed and determined to have no known water quality impacts.

The most significant identified source of pollutants causing water quality impacts that result in PWL listings are Urban Runoff, Storm Sewer Discharges and Combined Sewer Overflows (CSOs). Most (93%) of the *Other Sources* that impact lakes/reservoirs in the basin are waterfowl impacts that result in the Kensico Reservoir listing. The *Other Sources* identified as impacting estuary waters are primarily migratory fish species which result in a fish consumption advisory for marine waters (92%); boat pollution resulting in shellfishing and other use restrictions makes up the remaining 8%.

[Page intentionally left blank]

The 2000 Atlantic Ocean/Long Island Sound Basin Waterbody Inventory/Priority Waterbodies List

This inventory of water quality information includes individual waterbody *Data Sheets* describing the water quality conditions in the New York State portion of the Atlantic Ocean/Long Island Sound Basin. Causes (pollutants) and sources of water quality problems for those waterbodies with known or suspected impacts are also outlined.

The *Data Sheets* on the following pages are compiled in hydrological order and grouped by US Geological Survey Hydrologic Unit Code (HUC) basin and smaller watersheds in the Atlantic Ocean/Long Island Sound Basin (see Figure 2). An outline of the specific waterbodies in each watershed is presented at the beginning of each Watershed Section. Data Sheets are included for each waterbody that has been assessed; that is, waterbodies listed as **Impacted**, **Threatened**, or with water quality impacts **Needing Verification**, or waterbodies with **No Known Impact**. **UnAssessed** waterbodies are listed in the hydrologic outline of waterbodies at the front of each Watershed Section; however, separate Data Sheets for these segments are not included.

The information outlined on the Data Sheets includes *Waterbody Location Information*, *Water Quality Problem/Issue Information*, *Resolution/Management Information* and *Further Details*. More explicit explanations of these data fields are outlined in [Appendix B - Waterbody Inventory Data Sheet Background Information](#).

Note also that the inventory reflects the best available water quality information at the time of publication. Water quality information may be added or modified subsequent to the preparation of this edition of the Waterbody Inventory and Priority Waterbodies List. When water quality information is updated, the corresponding waterbody segment data sheet is issued with an appropriate revision date. The information on more recently revised data sheets supercedes the information in this listing.

In addition to the more detailed Data Sheets, a *Segment Summary of Priority Waterbodies* provides a brief overview of all **Priority Waterbodies** (i.e., *Impacted* and/or *Threatened* waterbody segments) in the basin. This listing follows the Data Sheet Section of the report.

A discussion of the *Assessment Methodology* used to determine the level of use support reflected in the Data Sheets is included as [Appendix A](#). As mentioned above, more a detailed outline of the WI/PWL data sheets and the information they contain is presented in [Appendix B](#).

In order to help navigate the information in this document, cross-referenced lists of the waterbodies are included at the end of the report. [Appendix C](#) presents a list of waterbodies ordered by county, and segment name; [Appendix D](#) orders the waterbodies alphabetically by segment name.

Figure 2

Atlantic Ocean/Long Island Sound Drainage Basin Watershed Map

