1.0 INTRODUCTION

1.1 Background

Section 303(d) of the Clean Water Act (CWA) as amended by the Water Quality Act of 1987, Public Law 100-4, and the United States Environmental Protection Agency's (USEPA/EPA) Water Quality Planning and Management Regulations (40 CFR, Part 130) requires each state to identify those waters within its boundaries not meeting water quality standards for any given pollutant applicable to the water's designated uses. Total Maximum Daily Loads (TMDLs) are required to be developed for all pollutants violating or causing violation of applicable water quality standards for each impaired water body. A TMDL determines the maximum amount of pollutant that a water body is capable of assimilating while continuing to meet the existing water quality standards. Such loads are established for all the point and nonpoint sources of pollution that cause the impairment at levels necessary to meet the applicable standards with consideration given to seasonal variations and margin of safety. Therefore, TMDLs provide the framework that allows states to establish and implement pollution control and management plans with the ultimate goal indicated in Section 101(a)(2) of the CWA: "water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, wherever attainable" (USEPA, 1991).

On the state's 2004 303(d) list, the New York State Department of Environmental Conservation (NYSDEC) listed 25 separate embayments and tributaries in the Peconic Bay estuary as candidates for TMDL development based on impairments due to pathogen levels (NYSDEC, 2004). These 25 water bodies are listed in Table 1-1 and their locations within Peconic Bay are shown in Figure 1-1. The shellfish closure areas in each water body are divided into zones which are further described in Section 2. TMDLs are developed for those zones that are either uncertified/conditionally certified or seasonally certified for shellfish harvesting. See below for the definitions of the various types of shellfish area closures/certifications.

The NYSDEC maintains several types of shellfish area closure classifications. Closed shellfish areas can be categorized as *administrative closures* or *water quality closures*. *Administrative closures* are permanently off limits to shellfishing and include areas surrounding known sources of pathogens (e.g., sewage treatment plant outfalls or high density mooring locations). *Water quality closures* include areas that have failed to meet the National Shellfish Sanitation Program's (NSSP) standards for open shellfish areas. Water quality closures can be further divided into three sub-categories:

- **Year-round closures:** These areas do not meet the NSSP standards at any time of the year and are closed to shellfishing.
- **Seasonal closures:** These areas do not meet NSSP standards during a certain time of year (usually during May to October) and therefore are only open to shellfishing during specific times of the year.
- **Conditional closures:** These areas are usually classified as uncertified, but may be certified by NYSDEC generally from mid-December through mid-April when nonpoint source pollution is reduced. Before an uncertified shellfishing area can be designated as conditionally certified, NYSDEC performs water quality evaluations to determine the amount of rainfall and runoff an area can receive and still meet water quality standards for shellfishing. During the operation of a conditional program, rainfall is measured daily in the vicinity of the conditional harvest area. Shellfish harvesters are allowed to work in the area on a day-to-day basis during dry weather and moderate rainfall conditions, when the daily rainfall reading is less than the threshold amount. When the daily threshold amount is exceeded, the area is closed for a period of seven days and re-opened (certified) on the eighth day if the daily rainfalls during the closed period do not exceed

the threshold amount. The fact that the threshold rainfall for many of the Peconic Bay water bodies with conditional certification has typically been around 0.25 inches demonstrates how sensitive water quality in these areas is to the effects of bacteria-laden storm water runoff in combination with other potential sources (e.g., failing on site disposal systems, boater waste, direct waterfowl inputs). Since conditionally certified areas are actually closed areas whose designation can change from year-to-year, any sampling station located within a conditionally certified area at the writing of this report is treated as being in a closed area.

The scope of this study is limited to New York shellfishing waters classified as Class SA that are listed in the 303(d) list as impacted by pathogens in the Peconic Estuary. The Class SA waters included in this study are listed in Table 1-1 and illustrated in Section 2 (Figures 2-1 through 2-23). These figures also includes shellfish closure areas and stormwater conveyance systems. The locations of shellfish closure areas were made available from the NYSDEC Shellfisheries Section. The information illustrated on stormwater conveyance systems was the best information available from Suffolk County at the time of this report, and may be updated as more information becomes available in the future.

Table 1-1. Water Bodies in the 303(d) List Within the Peconic Bay Study Area.

Priority Water Bodies List No.	Water Body
1701-0050	Dering Harbor
1701-0234	Budds Pond
1701-0049	Stirling Creek and Basin
1701-0235	Town/Jockey Creeks and tidal tributaries
1701-0236	Goose Creek
1701-0162	Hashamomuck Pond
1701-0245	Richmond Creek and tidal tributaries
1701-0247	Tidal tributaries, Great Peconic Bay, Northshore, GPB-97 (Downs Creek)
1701-0247	Tidal tributaries, Great Peconic Bay, Northshore, GPB-99 (Deep Hole Creek)
1701-0247	Tidal tributaries, Great Peconic Bay, Northshore, GPB-98 (Halls Creek)
1701-0247	Tidal tributaries, Great Peconic Bay, Northshore, GPB-99-P492 (Unnamed Pond)
1701-0247	Tidal tributaries, Great Peconic Bay, Northshore, GPB-100 (James Creek)
1701-0030	Flanders Bay, east/center and tributaries
1701-0272	Reeves Bay and tidal tributaries
1701-0051	Sebonac Creek/Bullhead Bay and tidal tributaries
1701-0354	Scallop Pond
1701-0037	North Sea Harbor and tributaries
1701-0048	Wooley Pond
1701-0237	Noyac Creek and tidal tributaries
1701-0035	Sag Harbor and Sag Harbor Cove
1701-0046	Northwest Creek and tidal tributaries
1701-0047	Acabonac Harbor
1701-0031	Montauk Lake
1701-0169	Oyster Pond/Lake Munchogue
1701-0253	Little Sebonac Creek

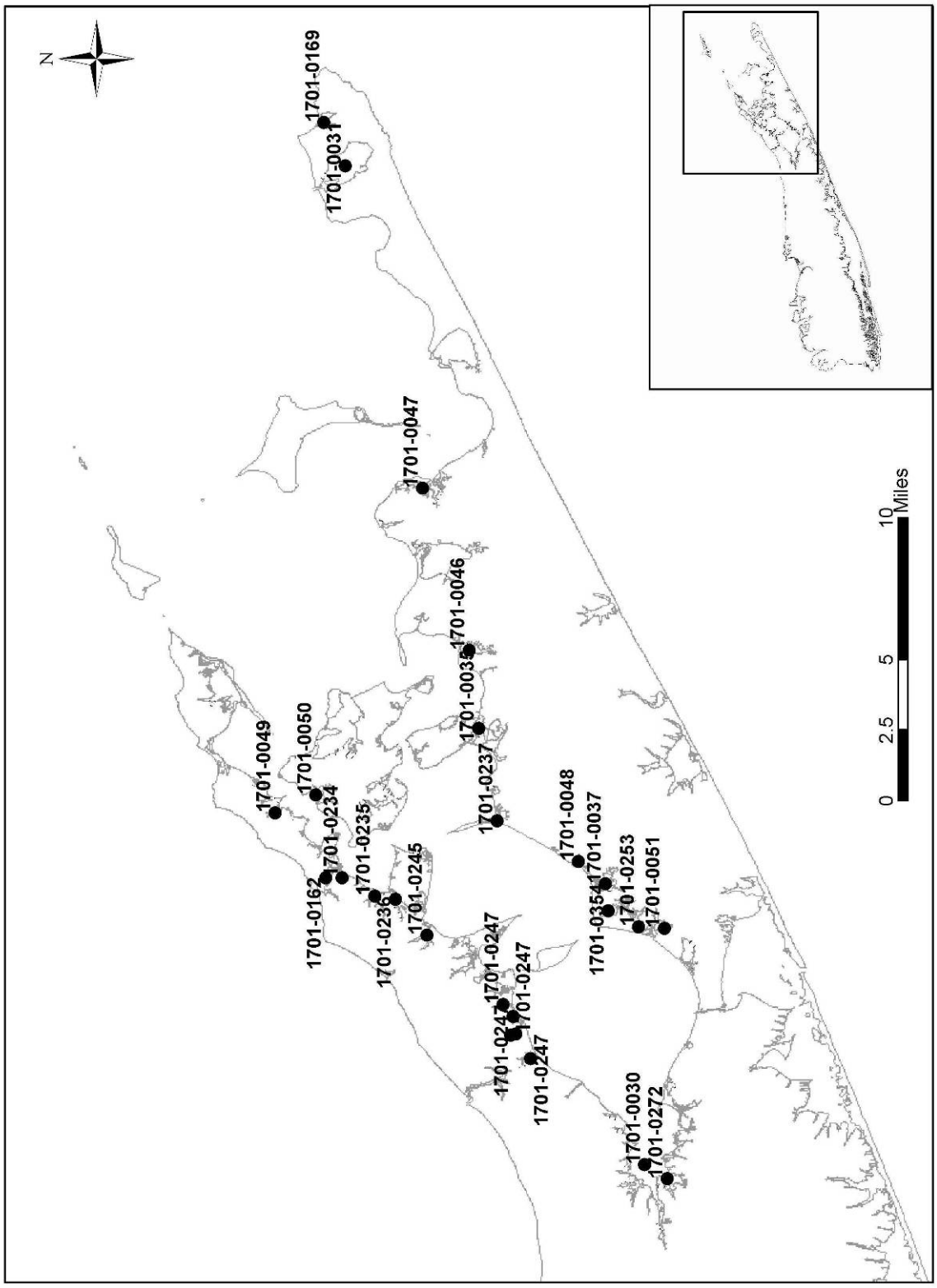

Figure 1-1. Locations of the 25 Peconic Bay Water Bodies (Refer to Table 1-1 for PWL numbers).

The zones that are subjected to administrative closures will continue to be closed as discussed in Section 2.

1.2 Study Area Description

The Peconic Bay estuary is located between the North and South Forks of Long Island and consists of approximately 100 separate embayments and harbors. The towns that surround the estuary have management authority over the shellfish resources within their respective boundaries. Table 1-1 lists the 25 water bodies covered in this TMDL report. Figure 1-1 is a map of the Peconic Bay estuary region, with each of the 25 water bodies indicated. Additional figures that illustrate further details for each individual water body are presented in Section 2.

The Peconic Estuary, as defined by the Peconic Estuary Program (PEP), consists of approximately 158,000 acres of surface water. Of the approximately 126,000 acres of land in the Peconic watershed, roughly half is developed (including agricultural land and golf courses), over 20% is available for development, and over 30% is protected open space (as of 2001). PEP's Comprehensive Conservation and Management Plan (CCMP) (PEP, 2001) indicates that stormwater runoff from roads, open areas, and undeveloped land is the greatest contributor of nonpoint source pathogenic pollutants to Peconic Bay and its embayments. In June 2002, the entire Peconic Estuary (all open waters, harbors, creeks west of an imaginary line from Orient Point to Montauk Point) was approved as a designated Vessel Waste No Discharge Zone (NDZ)[1]. Due to this NDZ designation, boat-derived waste is undoubtedly a less significant nonpoint source than runoff. Sewage treatment plants (STPs) (e.g., Riverhead, Sag Harbor, Brookhaven National Laboratory, Shelter Island Heights, Calverton Enterprise Park), Atlantis Marine World in Riverhead, Corwin Duck Farm located along Meetinghouse Creek[2], and the municipal separate storm sewer systems (MS4s) in Southampton and Riverhead are among the point sources with the potential to contribute pathogens to the estuary. The STPs employ year-round sodium hypochlorite (Shelter Island Heights) or ultraviolet (Riverhead, Sag Harbor, and Brookhaven National Laboratory) disinfection, which kills coliforms, but not necessarily all viruses. While the majority of the Peconic area is unsewered and is serviced by onsite disposal systems, there is limited evidence to suggest that inadequately sited or functioning systems are causing or contributing to water quality problems, though it remains a possibility. Atlantis Marine World only discharges approximately 2,000 gallons per day and pretreats its discharge using ozone or chlorine. The Corwin Duck Farm is currently constructing an anaerobic/aerobic wastewater treatment system to replace a man-made wetland treatment system. Therefore, nonpoint sources, particularly stormwater runoff containing waterfowl, wildlife, domestic pet, and livestock waste, as well as direct deposition of waterfowl waste, are the most significant contributors of pathogens to Peconic Bay and are likely responsible for the closing of any shellfish areas in the 25 water bodies included in this report.

[1] While a vessel is inside a NDZ, the discharge valve of a Type I or Type II marine sanitation device (MSD) (which treats the sewage before discharging it) must be visibly closed, preventing wastes from being discharged into surrounding waters. A padlock or a non-releasable wire tie can be used to secure the valve, or the valve handle can be completely removed. A Type III MSD has a holding tank and is permitted in a NDZ as long as pumpout facilities are used to empty the tank.
[2] Meetinghouse Creek is not one of the water bodies addressed in this report, although it empties into Flanders Bay north.