

SECTION II

Inventory and Analysis

2.1 ORIENTATION AND COMMUNITY PROFILE

2.1.1 GEOGRAPHIC ORIENTATION

The Incorporated Village of Lloyd Harbor is located on the north shore of Long Island, New York, in the extreme northwestern portion of Suffolk County (Figure 2-1). The Village is divided by Lloyd Harbor into two areas, Lloyd Neck to the north of the harbor and West Neck (on the mainland) to the south of the harbor. The two regions of the Village are connected by a narrow isthmus, which carries the West Neck Road causeway and separates Lloyd Harbor from the Oyster Bay/Cold Spring Harbor Complex.

NOTE: in order to avoid confusion, throughout this LWRP the term "Lloyd Harbor" refers to the water body, while the land area is always referred to as "the Village of.." or "the Incorporated Village of..".

The Village is bounded on the north by Long Island Sound, on the south by unincorporated communities in the Town of Huntington, on the west by the Oyster Bay/Cold Spring Harbor Complex (which is situated mostly within the Town of Oyster Bay in Nassau County), and on the east by Huntington Bay and the portion of Huntington Harbor in the Town of Huntington. The inland boundaries of the LWRA enclose approximately 9.3 square miles of land area. The water-side portion of the LWRA comprises Lloyd Harbor, the north westernmost portion of Huntington Harbor (including Lefferts-Van Wyck Mill Tidal Pond), The Sand Hole (in the northwest corner of Lloyd Neck), and small areas along the eastern shore of Cold Spring Harbor. The shoreline of the Local Waterfront Revitalization Area (LWRA) measures roughly 22 miles in length (Figure 2-2).

2.1.2 HISTORIC DEVELOPMENT

The earliest residents of the lands that now encompass the Village of Lloyd Harbor were families of Matinecock Indians. Wigwam settlements were found in proximity to the harbors of Long Island Sound; at Cold Spring Harbor and 'Kantanomocke' (Ketowomoke) at Huntington Harbor. The sea provided the bulk of their nourishment; hunting and farming

supplemented their sustenance. Dugout canoes and foot travel were the sole means of transportation for the area's Native American ancestors. Indian trails became the earliest routes used by white settlers arriving in the region.

By 1626 the Dutch West India Company had purchased Manhattan Island from the Indians, naming it New Amsterdam. Thereafter, Dutch settlements expanded to the western areas of Long Island, with eastern Long Island as an alluring wilderness for English settlers who crossed Long Island Sound from Connecticut, to establish homesteads as early as 1640.

On April 2, 1653, the first land purchase was negotiated with the Matinecock Indians for an area of land that bordered from Cold Spring Harbor in the west, to Northport Harbor in the east, and from Long Island Sound south, to what was later named Old Country Road. From 1653 to 1656, additional purchases were negotiated with the Matinecocks which secured Lloyd's Neck (in 1654) and the Eastern Purchase on July 30, 1656, extending settlers' holdings east from Northport Harbor to the Nissequogue River in Smithtown.

In 1664, British control of Manhattan Island and Long Island found Huntington under the jurisdiction of the Duke of York. A copy of the Duke's Laws, still preserved in the Town's first volume of court records, describes Huntington as part of the 'East Riding of Yorkshire', based upon the division of the County of Yorkshire, England. On November 30, 1666, the Duke of York's representative, Governor Richard Nicolls, issued a patent defining Huntington's territory and boundaries. In November of 1683, Governor Thomas Dongan arrived from England and a representative assembly was convened in New York City. That body repealed some of the Duke's Laws in the 'Charter of Liberties and Privileges' and granted legislative powers to the New York colony. This colony was divided into twelve counties that included the establishment of Kings, Queens, and Suffolk counties on Long Island. Five years later, the Town of Huntington received a new charter from the Governor which established a body of nine trustees, and although their responsibilities would change, this early group of town officials was the predecessor of the current Town Board.

The land and the sea were the foundation of the early settlers livelihoods. This historical development is evident in their labor and industry. Townsfolk made do with a few meager possessions and fashioned simple tools and furniture. Various agricultural crops were sowed, and orchards of apple, pear and peach trees were introduced. Cattle, sheep, horses, pigs, ducks and geese were raised in the early years, with deer still in abundance until the mid-Eighteenth century. Residents were skilled in trades and shared their common knowledge by assisting neighbors with carpentry, smithing, masonry and other assorted crafts. By 1675, Long Island's ports were exporting corn, wheat, fish, timber, horses, and whale oil.

When George Washington visited Huntington in 1790, the Town's census was reported at 2,000 persons, and by 1810, the population stood at 4,424. Huntington's inhabitants found employment in a variety of occupations. From the Seventeenth Century, clay was worked at West Neck and in time, brickyards were established at West Neck. Stoneware was fashioned at Huntington Harbor in pottery works owned and operated by a succession of entrepreneurs; the most renowned were the Brown Brothers.

The Village was formally incorporated on August 16, 1926. The main impetus behind incorporation was the resident's desire to maintain control over future development through the adoption of a zoning plan that would preserve the rural character and protect the community from urban encroachment.

According to the 1990 census, the population of the Village of Lloyd Harbor was 3,343 persons. This is a two percent decrease since 1980, when the total Village population was reported at 3,405 persons. The estimated average household size in 1990 was 3.0 persons per household.

The present day development pattern in the Village can generally be characterized as a well-established, rural residential community situated in a heavily vegetated, rolling landscape. This character will not change significantly in the future, since the inventory of additional, undeveloped land is sparse and the Village zoning requires minimum two-acre lots.

2.2 NATURAL RESOURCES AND FEATURES

2.2.1 SURFACE GEOLOGY AND TOPOGRAPHY

A. GEOLOGICAL AND TOPOGRAPHIC SETTING

The Village of Lloyd Harbor is situated on the Harbor Hill terminal moraine, which is a glacial ridge that marks the southward advance of the Wisconsin ice sheet. In general, the topography of the LWRA is hilly, with the harbors (i.e., Cold Spring, Lloyd, and Huntington Harbors) occupying the low areas between the hills. The landscape also includes headlands, beaches, wetlands, and bluffs.

Land slopes in many portions of the LWRA are very steep, exceeding 50 percent in some locations. The steepest slopes are found immediately adjacent to coastal waters, especially along the bluffs on the Village's westerly shoreline. Maximum elevation in the

LWRA is approximately 180 feet above sea level near the southwest corner of West Neck. Lloyd Neck attains a maximum elevation of approximately 140 feet above sea level in the central portion of Caumsett State Park.

The generally steep slopes that occur throughout the LWRA are prone to erosion when disturbed by development activities. Sediment-laden runoff from eroded slopes causes water quality degradation of receiving waters (freshwater ponds and coastal waters).

No large streams are located in the LWRA. However, a small stream system drains most of the West Neck area and flows into Lefferts-Van Wyck Mill Tidal Pond (also called Lefferts Mill Pond or Mill Tidal Pond), which discharges to upper Huntington Harbor. Another small stream system drains into Lloyd Harbor from the south, through two ponds located on the Friends World College property. Other small streams drain the western portion of Lloyd Neck into a system of ponds and wetlands.

Like most of Long Island's north shore, the LWRA is characterized mainly by bluffs, especially along the western and northern shores of Lloyd Neck. Tidal wetlands predominate in sheltered harbor areas, particularly inner Lloyd Harbor, western Huntington Harbor, and the coves and lowlands along the Village's western shore. Dunes are absent in the LWRA. See Figure 2-1 for the location of these natural shoreline features.

Bluffs are steep-faced cliffs of unconsolidated sediment, which, in general, are subject to ongoing erosion caused mainly by storm waves and also by stormwater runoff. The landward recession of bluffed sections of shoreline often creates problems for land uses located immediately upland and, depending on the rate of shoreline retreat, can threaten structures located on these lands. Importantly, however, sediment that is eroded from bluff faces usually serves as an important source of sand to neighboring beaches. Thus, measures that may be implemented to moderate bluff erosion can have an unintended adverse impact at an adjacent beach.

Surface sediment deposits in the LWRA are mainly unconsolidated sands and gravels of glacial origin, which have developed a thin veneer of soil in most areas. Beneath the glacial formation is the Magothy formation, which consists primarily of undifferentiated till (a heterogeneous mixture of clay, sand, boulders and rock fragments) and outwash (stratified and semi-stratified sand and gravel). Below the Magothy lies the Raritan clay, which consists of clay and silt, with interbedded layers of sand. Along the north shore, the extent of the Raritan clay member varies from zero to 170 feet in thickness. The

Lloyd sand member of the Raritan formation, which lies below the Raritan Clay and sits atop the weathered bedrock surface, consists of fine to coarse sand and gravel interspersed with some thick layers of clay and silt. The bedrock underlying the unconsolidated deposits is composed of crystalline metamorphic and igneous rocks, with a surface slope of about 80 feet per mile dipping to the south. The bedrock surface forms the floor of the groundwater reservoir.

B. SOILS

In general, soils in the LWRA are similar to those found throughout Long Island and are relatively young geologically. Soil associations are landscapes having distinctive general soil properties. Each association is named for the major soils it contains, and normally consists of one or more major soil type and at least one minor soil type.

Based upon information obtained in the Soil Survey of Suffolk County, New York (U.S. Soil Conservation Service, April 1975), the two major soil associations found in the LWRA are:

Carver-Plymouth-Riverhead (C-P-R) Association - These soils are deep, rolling, excessively drained and well-drained, coarse textured and moderately coarse textured soils on moraines.

The C-P-R Association stretches along the entire length of the north shore of Suffolk County and comprises most of the Village of Lloyd Harbor. The surface, subsurface and subsoil layers of the Carver and Plymouth soils are sand, with a sand and gravel substratum; these two soils generally characterize the steeper portions of ridges and in rolling areas. Riverhead soils have their surface and subsoil layers of sandy loam with the substratum of sand and gravel; this soil generally characterizes upland flats or gently rolling areas.

Other soil types of the C-P-R Association include well-drained Haven soils and well-drained to moderately well-drained Montauk, Raynham and Wareham soils. Haven and Montauk soils occupy upland flats while Raynham and Wareham soils are found adjacent to beaches or tidal marshes.

The general trend for soils of the C-P-R Association is for their land use in housing and recreation. The sandy texture and steep slopes makes much of the soils unsuitable for agricultural uses. These soils pose development constraints in areas of steep slopes.

Montauk-Haven-Riverhead (M-H-R) Association - These soils are deep, nearly level to strongly sloping, well-drained to moderately well-drained, moderately coarse textured and medium textured soils on moraines.

The M-H-R Association is found in discontinuous areas in western Suffolk County and between the north and south forks on Long Island's east end. Within the LWRA, the M-H-R Association is found in two northward penetrating lobes: one that runs along the western shore of Huntington Harbor, and a second lobe located just east of Cold Spring Harbor. This association is characterized by rolling hills and soil slopes ranging from nearly level to strongly sloping.

The soils of the M-H-R Association are well-drained to moderately well-drained. The surface layer of Montauk soils is silt loam or fine sandy loam with the subsoil of loam or fine sandy loam. The surface layer of Haven soils is loam, and the subsoil is loam or silt loam. The Riverhead soil's surface layer and subsoil are sandy loam. Minor soil types in the M-H-R Association include well-drained Carver soils; poorly drained Plymouth, Montauk, Walpole, and Atsion soils; and very poorly drained Berryland soils.

Most of the cleared areas in the western portion of the M-H-R Association are used for housing. These soils are well-suited to farming, but the more sloping areas are subject to potentially severe erosion, which is a development constraint. In general, soil types within a soil association having a 15 percent or greater slope will experience moderate to severe erosion hazards and are limited as to their land use capabilities. Other factors which tend to limit land use capability include: shallow depth to seasonal high water table (i.e., areas in which grade elevation is less than four feet above the groundwater table will be prone to basement flooding and/or septic waste disposal problems); flooding (i.e., areas which are subject to flooding by high waters will be less suitable for habitation); and soil permeability (i.e., groundwater pollution problems will tend to occur in areas which have highly permeable soils that are used for subsurface sewage disposal).

2.2.2 SURFACE WATER RESOURCES

A. INTRODUCTION

A variety of surface water resources are found within the LWRA. These range from scattered freshwater ponds, to Lefferts Mill Tidal Pond, to Lloyd, Huntington, and Cold Spring Harbors. Lloyd and Huntington Harbors are components of the

Huntington/Northport Bay Complex, which is connected to Long Island Sound through Huntington Bay. Cold Spring Harbor is part of the Oyster Bay/Cold Spring Harbor Complex, which is connected to Long Island Sound through Oyster Bay.

The marine surface waters within the LWRA are used for numerous, often conflicting activities. Ensuring the appropriate use of these waters is of vital importance to natural resource values and the economic vitality of the waterfront area and, therefore, is a primary focus of this LWRP.

Importantly, the proper management of coastal water uses requires the preparation of a Comprehensive Harbor Management Plan. The Village already has a harbor use plan (Article 12), which regulates anchoring and mooring, vessel speed and operation, and waterskiing and other recreational activities (see Section V). This LWRP addresses the major harbor management issues of concern to the Village, and implements many of the applicable LWRP policies within the Village's coastal waters and adjacent sensitive areas. However, since the Village's coastal waters are components of larger systems (i.e., the Huntington/Northport Bay and Oyster Bay/Cold Spring Harbor Complexes), a more refined and Comprehensive Harbor Management Plan implemented on an inter-municipal level would be desirable, particularly with respect to water quality issues and problems. It should be noted that the Village of Lloyd Harbor had previously been involved in the preparation of a joint LWRP with the Town of Huntington and the Town's other three incorporated villages (Asharoken, Huntington Bay, and Northport), but decided to proceed independently with its own plan (i.e., the present document) due to delays in the advancement of the joint LWRP.

The following sections present an inventory of the surface water resources within the LWRA. Subsection B identifies surface waters within the LWRA. Subsection C discusses general water quality in the LWRA. Water quality and related regulations are described in Subsection D. Surface water conditions within the LWRA are discussed in Subsection E. Issues regarding waterway usage by vessels are discussed in Section 2.3.6. The inventory of land-side facilities that support surface water activities, and related issues, is contained in Sections 2.3.1 through 2.3.5.

B. IDENTIFICATION OF SURFACE WATER BODIES WITHIN THE LWRA

The boundaries of the Village of Lloyd Harbor encompass all of Lloyd Harbor and a portion of northwestern Huntington Harbor. Both of these harbors are part of the greater Huntington/Northport Bay Complex, which is the largest harbor and bay complex on the

north shore of Long Island. The western shoreline of the LWRA lies on the Cold Spring Harbor/Oyster Bay Harbor Complex, and includes a small portion of southeastern Cold Spring Harbor. Long Island Sound is located to the north of the Village. Each of these water bodies is discussed in terms of water quality characteristics in Subsection E.

Small freshwater ponds and streams are scattered throughout the LWRA. Some of these ponds are tributary to marine waters, particularly at the heads of the harbors (e.g., the pond system on the Fiske Bird Sanctuary property outlets via a small stream to Lefferts Mill Tidal Pond and thence to Huntington Harbor). Other ponds have no direct surface connection to coastal waters (e.g., Fresh Pond in Lloyd Neck). Such ponds are typically groundwater exposed in "kettle holes" or other low lying areas.

C. GENERAL WATER QUALITY PROBLEMS IN THE LWRA

The range of activities for which a given body of surface water can be used is dependent on the level of contamination within the water column and the bottom sediments. In particular, the presence of certain contaminants above specified levels will preclude the use of a water body for certain activities that require a high level of water quality (e.g., shellfish harvesting and swimming).

Water quality is measured in terms of a large number of variables, including micro-organisms (e.g., total coliform and fecal coliform bacteria, viruses, etc.), nutrients (e.g., nitrogen, phosphorus, etc.), organic compounds (e.g., polychlorinated biphenals, polyaromatic hydrocarbons, pesticides, herbicides, etc.), and inorganic constituents (e.g., metals). The levels of bacterial contamination are generally the most important water quality factors in estuarine waters. Fecal coliforms originate in the intestinal tracts of warm-blooded animals, which also serve as a primary source of certain pathogenic bacteria and viruses (e.g., hepatitis virus). Although it is these pathogens that are of concern with regard to potential human health consequences, the current methods for the detection of these microbes are time consuming and tedious. In contrast, the measurement of coliform levels is relatively straightforward. Consequently, the presence of elevated fecal coliform levels in surface waters is a widely used indicator of the possible presence of pathogenic micro-organisms.

Nutrient concentrations are also of concern, especially where elevated nutrient loading leads to increased phytoplankton growth. After these microscopic plants die and sink to the bottom, the subsequent decay of accumulated organic matter can cause depressed oxygen concentrations (a condition that is commonly referred to as hypoxia). Long Island

Sound has exhibited hypoxia for a number of years. The Federally funded Long Island Sound study and its resulting Comprehensive Conservation and Management Plan, and the State's Long Island Sound Coastal Management Program, address this issue in detail.

Contamination by metals and organic compounds is a problem in industrialized coastal areas. Agricultural lands contribute elevated loadings of pesticides, herbicides, fertilizers, and related chemicals to surface waters. However, these constituents tend to bind to sediment particles and, therefore, do not generally exist in a free state within the water column. As a result, metals and organic compounds are most likely to be found in elevated concentrations in the bottom sediments of poorly flushed urbanized water bodies.

Contaminants that adversely affect surface water quality originate from many sources. These sources can be grouped into two general categories: non-point sources and point sources. A point source is any input that emanates from a discrete, easily identifiable location, such as a pipe outfall. A non-point source is a diffuse input over a large area, such as direct precipitation or groundwater inflow. The distinction between these two categories is not always obvious. Stormwater runoff, for example, may start as a non-point source derived from a large area. However, if runoff is collected and discharged to receiving waters via an outfall pipe, this is a point source.

The principal sources of bacterial loading to surface waters generally include stormwater runoff, wastes from waterfowl, wastewater treatment plant effluent, and wastewater discharges from boats. According to the Long Island 208 Study (Long Island Regional Planning Board, 1974), stormwater runoff is the principal source of pollution to coastal waters in the LWRA. Other studies indicate that waterfowl wastes are generally the second most important source of coliform bacteria in the greater Huntington/Northport Bay Complex.

The following factors contribute to the relatively high fraction of contaminant loadings to LWRA surface waters from stormwater runoff.

- In many portions of the LWRA and vicinity, runoff flows directly to surface waters (rather than being recharged to groundwater, or passed through settling basins). This stormwater receives little filtering of contaminants prior to discharge.
- Development increases the rate of runoff from a given parcel of land. Essentially 100 percent of the precipitation onto a paved surface becomes runoff (minus a small amount lost through evaporation), which is three to four times higher than

the typical runoff rate for areas covered with native vegetation. The replacement of native vegetation with areas of turf, which often occurs with residential development, also results in a significant increase in the runoff rate.

- Topography is generally very hilly within the LWRA. This steeply sloped landscape, which generally pitches toward coastal waters, produces a higher rate of runoff than in areas that are more gently sloped.

The surface waters within the LWRA, including the freshwater pond systems that drain into Huntington Harbor, are heavily utilized by waterfowl. Fecal wastes from these birds and wildlife populations in the adjacent upland area contribute significantly to the overall coliform levels in the receiving waters. This problem is exacerbated by recreational feeding of waterfowl, resulting in increased year-round population levels and interrupted seasonal migratory patterns.

Waste discharges from vessels are a major concern in harbor areas, such as Lloyd and Huntington Harbors, and The Sand Hole at the northwest corner of Lloyd Neck. These areas are heavily utilized for recreational boating, mooring, and anchoring on a seasonal basis. Elevated coliform levels can result where large congregations of moored or anchored vessels discharge sanitary wastes into the surrounding water. This is of particular concern in The Sand Hole, especially during summer holiday weekends (i.e., Memorial Day, July 4th, and Labor Day). Although boat concentrations in Lloyd Harbor are typically lower than occur in The Sand Hole, potential coliform impacts from vessel waste discharges are still of concern in the former embayment due to the significant shellfish resources located there.

A municipal sewage treatment plant (STP) operated by the Town of Huntington discharges effluent directly into lower Huntington Harbor. A STP that served the Cold Spring Harbor Laboratory and which discharged effluent to lower Cold Spring Harbor has recently discontinued operation, and sanitary wastewater from the Lab is presently conveyed to the Nassau County sewer system for treatment at the Cedar Creek STP in Seaford and effluent discharge to the Atlantic Ocean. Although the Huntington STP is located outside the boundaries of the LWRA, mention is warranted here because of this facility's impact on receiving waters. Further discussion is provided in the Subsection E below.

In addition to the contaminant sources discussed above, unauthorized releases of hazardous materials (e.g., petroleum products) from industrial facilities and vessels will

cause degradation of water quality. These problems are of relatively minor importance in the LWRA because such uses do not occur in the Village, nor are they permitted under the zoning code.

The recently released Comprehensive Conservation and Management Plan (CCMP) for the Long Island Sound Study indicates that the most pressing problem on a Sound-wide basis is hypoxia. Hypoxia, which is a deficiency in the level of dissolved oxygen, particularly in the lower portion of the water column, is triggered primarily by the introduction of nitrogen compounds from human activities in the adjacent coastal area. Nitrogen enrichment spurs algal blooms which, in turn, causes oxygen to be consumed when the algae die. Although the CCMP identifies point sources (especially sewage treatment outfalls) as the main source of nitrogen to the Sound, non-point source inputs derived from land development activities are also important. These issues are also fully discussed in the Long Island Sound regional Coastal Management Program.

In general, the Village of Lloyd Harbor does not contribute significantly to hypoxia in the Sound because:

- 1) The entire Village utilizes subsurface sewage disposal systems and, therefore, does not contribute to the nitrogen load discharged to the Sound in sewage treatment plant effluent.
- 2) The Village is comprised entirely of large tracts of open land and low density residential development. This limits the amount of nitrogen delivered to coastal waters in stormwater runoff, since a larger percentage of the land area is preserved in its natural state. This also limits nitrogen loadings in groundwater underflow derived from subsurface sewage disposal systems and fertilizer application.

D. WATER QUALITY STANDARDS AND RELATED CRITERIA

Water quality is monitored within the LWRA and adjacent waters on a regular basis by the New York State Department of Environmental Conservation (NYSDEC), Bureau of Shellfisheries and the Suffolk County Department of Health Services (SCDHS) Office of Ecology. NYSDEC's monitoring program has been directed at delineating those coastal waters that are suitable for the harvesting of shellfish for human consumption in terms of measured coliform levels and potential coliform releases from certain uses (such as STPs, marinas, anchorages, and mooring areas). The SCDHS has been mostly concerned with ensuring that the waters off public bathing beaches meet public health requirements, again

in terms of coliform bacteria concentrations. NYSDEC has also periodically monitored fresh surface waters.

New York State Shellfish Harvesting Criteria

New York State has classified all of the marine waters within the LWRA "SA". The assigned use standard for these SA waters is shellfish harvesting for direct human consumption.

A SA classification does not always reflect existing water quality conditions. Certain water bodies which have been classified SA consistently fail to meet the SA coliform standards. In these cases, the SA designation is used by the State to set discharge standards aimed at improving water quality, with the ultimate goal being that conformance with the SA criteria will eventually be attained and the area of certified shellfish beds will be expanded.

Waters which cannot consistently meet SA criteria include Huntington Harbor (including the portion of the upper harbor within the LWRA), a small area of Huntington Bay in the vicinity of Huntington Harbor (which extends west of Lighthouse Point, into Lloyd Harbor), and lower Cold Spring Harbor (extending as far north as the Cold Spring Harbor Beach Club, in the southwest corner of the LWRA). All three of these areas are closed to shellfishing, either year-round or seasonally. The closure period depends on a number of factors, including: the overall degree of water quality degradation, as determined by the laboratory analysis of water samples; the frequency at which data can be collected to define seasonal variations in water quality; and the presence of boats, which represent a potential source of concentrated coliforms that is not amenable to standard analytical techniques. Areas of boat congregation are decertified on a seasonal basis as a precautionary measure.

Point Source Discharge Standards

Point source discharges to surface waters are regulated by State Pollution Discharge Elimination System (SPDES) permits, which set specific water quality standards and establish a compliance schedule for each discharge. Although there are no regulated point sources that discharge directly to LWRA waters, there is one such discharge to adjacent waters: the Town of Huntington STP, with outfall in lower Huntington Harbor (as noted previously, the Cold Spring Harbor Laboratory STP, with outfall in Inner Cold Spring Harbor, recently discontinued operation). See Subsection E below for further discussion.

Suffolk County Bathing Beach Criteria

When the fecal coliform level of the waters at any bathing beach exceeds acceptable limits, the beach is closed for swimming. Beaches, as well as shellfish growing areas, are also closed for certain emergency situations, such as an STP malfunction that releases inadequately treated effluent to receiving waters. As discussed in further detail in Subsection E, one of the beaches that has been subject to lengthy closures in recent years is Gold Star Battalion Beach in Huntington Harbor, which is situated just outside the LWRA boundary.

E. SURFACE WATER QUALITY ISSUES AND PROBLEMS

Long Island Sound

All of the LWRA's tidal bays and inlets are flushed by Long Island Sound waters, and approximately four miles of the LWRA's shoreline touches directly on Long Island Sound (between Lloyd Point and East Fort Point). The main source of contamination to Long Island Sound from the LWRA is tidal mixing with the waters of the Huntington/Northport Bay Complex. As previously discussed, the harbors within the bay complex receive a substantial input of pollutants, both from point sources and non-point sources. The ebb tide carries these waters into the Sound, where contaminants are dispersed by mixing.

Land use within the LWRA draining directly to Long Island Sound is primarily very low density residential development and low intensity recreational space. This, combined with the tidal dilution of waters discharged from the bay complex, results in generally high water quality of the portion of the Sound adjacent to the LWRA; these waters are open year-round to permit shellfish harvesting.

Cold Spring Harbor

Cold Spring Harbor covers approximately 1,400 acres between Cove Neck and West Neck, and has typical depths that vary widely between 6 and 20 feet. Although most of this harbor is situated within the Town of Oyster Bay, a small area along the harbor's eastern shore is within the LWRA.

The present shellfishing closure area in Cold Spring Harbor, first established by NYSDEC in 1975, extends as far north as the Village of Lloyd Harbor's southerly boundary. Prior to that date, the closure area had been confined to bottom lands located below Cold Spring

Beach, approximately 3,000 feet to the south of the Village boundary. Although this northward shifting of the closure line reflects a deterioration of water quality, the situation has apparently been stable since the mid 1970s. Furthermore, water quality in Cold Spring Harbor has not progressively deteriorated in the manner that has occurred within Huntington, Centerport, and Northport Harbors.

The majority of contaminants discharged to Cold Spring Harbor are derived from lands at the southern end of the harbor, outside the Village's boundaries. Consequently, the range of opportunities for mitigating these problems is rather limited in this LWRP. However, certain proposed or potential actions involving State agencies could be used to address water quality problems in Cold Spring Harbor. In particular, improvements could be made to the stormwater control system along the east side of Route 25A to provide pre-treatment prior to discharge to the harbor. This work should be tied into any roadway reconstruction that the NYS Department of Transportation undertakes in this area.

The implementation of best management practices to control stormwater runoff (e.g., upgrading stormwater collection facilities to reduce sedimentation prior to discharge) would mitigate water quality impacts to Cold Spring Harbor. However, best management practices must be applied on an inter-municipal basis in order to be effective, especially with regard to necessary actions by the Town of Huntington, and the Town of Oyster Bay and its Incorporated Villages of Laurel Hollow and Cove Neck. The Village of Lloyd Harbor has jurisdiction over only a small portion of the contributing area and, therefore, by itself cannot implement an effective program for maintaining and improving the water quality of Cold Spring Harbor.

"The Sand Hole", which is located at the northwest corner of Lloyd Neck, connects to upper Oyster Bay. This embayment receives excessively high seasonal usage on weekends as an anchorage for recreational water craft, which may cause locally elevated coliform levels during the summer months. It is estimated by the Lloyd Harbor Village Harbor Master that as many as 300 boats are anchored on holiday weekends, with camping on the beach area. An investigation should be conducted to determine if the level of boat usage threatens this area with conditional (or seasonal) decertification for shellfishing. If decertification is imminent, appropriate restrictions should be adopted to ensure that the sanitary quality of the shellfish stock in this area is maintained.

Lloyd Harbor

Lloyd Harbor, which covers approximately 630 acres at an average depth of five feet, is a western arm of Huntington Bay. The harbor's drainage area, which lies entirely within the Village of Lloyd Harbor, covers approximately 2.7-square miles of land that consists almost entirely of very low density residential development and open space. Most of the stormwater flow from the watershed discharges to the narrow, inner portion of the harbor. The sparse development pattern of the harbor's watershed limits the volume of stormwater and associated contaminants entering the harbor.

The West Neck area on the south shore of Lloyd Harbor has recently been developed with homes on two-acre minimum lots. A large percentage of the lot areas consist of steep slopes which have been cleared for lawns. Such extensive clearing of native vegetation in close proximity to the shore increases runoff volume and associated contaminants (e.g., coliform bacteria, lawn chemicals and fertilizers) to Lloyd Harbor. Future development should be contingent upon strict compliance with best management practices.

Soil erosion and sediment control is of particular concern on the private properties of Lloyd Neck. Although much of the area is zoned for large-lot residential use, the Village of Lloyd Harbor has set no restrictions on the maximum percentage of lot clearance or turf area allowed. This can result in moderate to severe erosion, and surface water quality degradation caused by sediment-laden runoff, especially on lots with slopes in excess of six percent. The clearing of two or more adjacent lots compounds the problem, especially when coupled with the fact that most developments lack stormwater control systems. Furthermore, when such systems are present, they are not generally designed to handle larger storms or may not be outfitted with sediment traps or detention ponds to reduce sediment loads to receiving water bodies. To mitigate these conditions, the Village of Lloyd Harbor could: enlist the assistance of the Suffolk County Soil and Water Conservation District to develop construction guidelines; develop a Village Soil Erosion and Sediment Control Law; integrate special standards for erosion and sediment control into their Building Code; and/or develop a local ordinance to cover all of these concerns.

Recreational and commercial shellfish harvesting are important in Lloyd Harbor. The head of the harbor experiences restricted circulation which can lead to depressed oxygen levels, particularly during the summer. However, the entire harbor has generally remained open to shellfish harvesting on a year-round basis (except for areas that are closed for bay management programs).

The Town of Huntington has established a bay management area in the northeastern corner of Lloyd Harbor, in the area between the East Beach sand spit and the main body of Lloyd Neck. These bottom lands are used as a transplant site for shellfish that are removed from various uncertified waters within the bay complex, particularly Huntington and Northport Harbors. Under this program, transplanted shellfish are allowed a period of time to become naturally cleansed of micro-organism contamination before the area is opened to harvesting. The benefits of this location include: relative ease of surveillance to prevent illegal harvesting during the closure period; as well as a benthic environment that is similar (in terms of sediment characteristics) to the areas from which the shellfish are removed, which is conducive to survival. Continued use of this area for the transplant program is dependent upon the maintenance of high water quality. Efforts for water quality preservation should include the implementation of best management practices for all new development in the harbor's watershed, in addition to the recent designation of Lloyd and Huntington Harbors as a Federal no-discharge zone.

A Federal no-discharge zone designation was issued jointly for Lloyd and Huntington Harbors, on the basis of a determination by the EPA that there are sufficient vessel waste facilities to serve boat populations in these waters. In order to advance the management objectives of this action, the State should also officially designate Lloyd and Huntington Harbors as a no-discharge zone.

Due to the protection afforded by the East Beach sand spit extending southward from Lloyd Neck at the harbor's mouth, the eastern end of Lloyd Harbor serves as a popular recreational anchorage during the summer months. Seasonal moorings are scattered throughout the outer portion of the harbor. Since there are no pumpout facilities in Lloyd Harbor, nor are there any current plans for the construction of such facilities in that area, the viability of the Lloyd Harbor portion of the no-discharge zone is integrally tied to the efficacy of the pumpout stations present in Huntington Harbor. In particular, the recently installed pumpout at Castle Cove Marina in the northwest corner of Huntington Harbor will be vital to the success of the no-discharge requirement in Lloyd Harbor. Appropriate boater education (e.g., signs, flyers, etc.) is also needed to ensure maximum use of the pumpout facilities and compliance with the no-discharge zone requirements.

In the past, the maintenance of Town-operated pumpout facilities has sometimes been lacking. However, the Town recently has demonstrated a commitment to ensuring that adequate pumpout capabilities are provided, by means of the recently completed rehabilitation of two existing facilities in Huntington Harbor (at Halesite and Mill Dam Marinas), and the construction of new facilities in Cold Spring Harbor (at Powles Marine)

and upper Huntington Harbor (at Castle Cove Marina). The Town also plans to increase the frequency with which the pumpout holding tanks are emptied, so that shut-downs due to the tanks being full are minimized. In order for the no-discharge program to be effective, this level of commitment must continue, which entails the continued operation and proper maintenance of existing facilities and the construction of new pumpout stations as needed using Clean Vessel Act funding provided by the State.

Other actions that are important to maintaining and improving water quality in Lloyd Harbor include the implementation of best management practices throughout the Village. Measures such as reducing the amount of fertilizers and pesticides applied to lawns and gardens, cleaning up pet wastes, reducing the amount of de-icing salts and sand used on roadways, regulating the disposal of waste motor oil, and other similar practices can result in long-term water quality improvements to both freshwater bodies and tidal waters.

Huntington Harbor

Huntington Harbor covers approximately 340 acres with an average depth of 12 feet. Approximately 75 acres at the western end of the harbor (and an additional area of underwater land covering approximately 16 acres in Lefferts Mill Tidal Pond) lie within the Village of Lloyd Harbor.

Huntington Harbor is the most heavily used water body in the Huntington/ Northport Bay Complex, in terms of both recreational and commercial vessel traffic, and waterfront usage. However, for the most part, these intense land and water uses are located in the unincorporated areas, outside the Village of Lloyd Harbor. As with Cold Spring Harbor, therefore, the majority of issues, problems and opportunities that apply to Huntington Harbor do not pertain directly to this LWRP.

Due to the large input of both point and non-point source contaminants, all of Huntington Harbor (and a small area that extends into Huntington Bay) is closed to shellfish harvesting. However, a valuable standing stock of hard clams remains on the harbor bottom that contributes larvae to the bay complex. This spawner stock should be maintained.

The historical position of the shellfish harvesting closure line in Huntington Harbor indicates a progressive deterioration of water quality, due to coliforms derived from stormwater runoff, waterfowl wastes, malfunctioning sanitary systems, and from seasonal discharges from vessels to a lesser degree. Prior to 1970, the closure area comprised only

the southernmost reach of the harbor. In 1970, the closure line was shifted to a mid-harbor position. In 1975, the remaining portion of the harbor was closed to shellfish harvesting. In 1984, the closure area was further expanded to include a small portion of Huntington Bay and Lloyd Harbor.

The upper half of Huntington Harbor has been used recently for conditional shellfish harvesting during the winter season. Under this program, harvesting is allowed when specific rainfall and coliform conditions are met. Shellfish from Huntington Harbor have also been harvested for transplanting to the Town's bay management area in Lloyd Harbor for subsequent harvesting after purging themselves of pollutants in Lloyd Harbor's clean water.

Water quality degradation that has caused the closure of shellfish beds and beaches is the result of a number of factors, with stormwater runoff being the major source of contamination (boat sewage discharge and the STP effluent are also important contaminant sources). The implementation of area-wide best management practices will decrease stormwater-derived coliform loadings.

Fresh Surface Waters

The fresh surface waters within the LWRA include several small ponds and streams, all of which are exposed portions of the water table. Most of the ponds in the LWRA exhibit nutrient enrichment, particularly those which lack or have inadequate outlets. Pollutants enter the ponds through subsurface inflow, surface runoff, and from waterfowl. Since waterfowl are major contributors of nutrients and fecal coliform in many of the ponds in the LWRA and adjacent areas, public education measures should be implemented to reduce waterfowl feeding.

Leaching from septic systems can also be a source of nutrient loading and contamination. However, there is no evidence that this is a problem within the LWRA.

Pollution loadings resulting from runoff from developed areas are significant after heavy rains, when contaminants that have accumulated on the streets and in other impermeable areas wash into ponds and streams. Regular street sweeping reduces these loadings. The Village engages in street sweeping at a frequency of approximately every two weeks, except during the winter. However, this operation involves only those roadways that are under the Village's jurisdiction. Many roadways in the Village are privately owned, and generally are not swept on a regular basis.

Many of the freshwater ponds and adjacent areas in the LWRA are important habitat for many species of wildlife, particularly waterfowl. Freshwater ponds provide recreation and open space areas, and add to the aesthetic appearance of the area. Some of the LWRA's ponds are located within parks, preserves and wildlife sanctuaries and are thus partly protected from the input of pollutants from nearby residential areas.

A brief description of some of the larger, more significant freshwater ponds in the LWRA follows:

- Several spring-fed ponds are present within the Fiske Bird Sanctuary, which drain into Lefferts Mill Tidal Pond (and eastward to Huntington Harbor). These ponds have experienced siltation since they were first created as the result of the construction of spillways. This natural infilling of the ponds has reduced their stormwater retention capacity and, as a result, has dramatically diminished their capability to act as sediment traps. A study should be undertaken to determine the feasibility and potential environmental impacts/benefits of dredging these ponds.
- Two ponds located on the Friends World College property on the south shore of Lloyd Harbor receive direct overland runoff from adjacent roadways. These ponds, which discharge to the harbor, have experienced reduced sediment removal capacity due to siltation and should be included in the aforementioned study to determine the feasibility of maintenance dredging.
- Fresh Pond is located in Caumsett State Park on Lloyd Neck. Covering approximately six acres with a wooded and fringing marsh shoreline, this is an example of a virtually unpolluted freshwater pond. All reasonable efforts should be taken to ensure that this pond retains its pristine characteristics.
- Mallard Pond is located near Whitewood Point on the south of Mallard Drive. This pond drains a sparsely populated area to the west of Caumsett State Park, and has no overland outlet to coastal waters.

2.2.3 WETLANDS

Wetlands within the LWRA are classified as either tidal or freshwater. The depth of water and the predominance of certain vegetative indicator species distinguish different types and classes of wetlands.

A. TIDAL WETLANDS

Tidal wetlands constitute one of the most biologically productive natural ecosystems. They serve as nurseries for fish and shellfish, are vital to marine food production, and provide valuable wildlife habitat. Tidal wetlands also serve several other functions including flood and storm control, pollutant removal and ecosystem cleansing, and control of sedimentation.

Tidal wetlands have been inventoried and mapped by the New York State Department of Environmental Conservation (NYSDEC). Tidal wetland boundaries were officially adopted in 1977 when the State's Tidal Wetlands Regulations (6 NYCRR Part 606, adopted pursuant to Article 25 of the Environmental Conservation Law) went into effect. Tidal wetlands consist of six major ecological zones, listed below:

- **High marsh or salt meadow:** Designated as HM on NYSDEC inventory maps. This is the uppermost tidal wetland zone usually dominated by salt meadow cordgrass (*Spartina patens*), and saltgrass (*Distichlis spicata*). This zone is periodically flooded by spring and storm tides, and is often vegetated by low vigor smooth cordgrass (*Spartina alterniflora*) and seaside lavender (*Limonium carolinianum*). The upper limits of this zone often include black grass (*Juncus gerardi*), marsh elder (*Iva frutescens*), and groundsel bush (*Baccharis halimifolia*).
- **Intertidal marsh:** Designated as IM on NYSDEC inventory maps. This vegetated zone lies generally between the average high and low tidal elevation, and is usually dominated by smooth cordgrass (*Spartina alterniflora*).
- **Coastal shoals, bars and mudflats:** Designated as SM on NYSDEC inventory maps. This zone includes areas that are exposed at low tide or covered by water to a maximum depth of one foot, and typically are not vegetated.
- **Formerly connected tidal wetlands:** Designated as FC on NYSDEC inventory maps. This zone includes wetlands which have been partially blocked from receiving normal tidal flows due to the construction of man-made facilities such as dikes or roadways. The original vegetative community generally dominates, although this zone may also support a stand of common reed (*Phragmites communis*). In low lying areas where daily tidal exchange has been cut off, some of these zones are experiencing a transition, and support vegetation indicative of freshwater wetlands.

- Coastal fresh marsh: Designated as FM on NYSDEC inventory maps. This zone is found primarily at the tidal/freshwater interface of stream systems where freshwater inflow dominates other tidal zones. Brackish and freshwater species typically dominate this zone including big cordgrass (Spartina cynosuroides), prairie cordgrass (Spartina pectinata) and narrow-leaved cattail (Typha angustifolia). This zone is one of the most highly productive and important for filtration of silt and organic materials from surface waters.
- Littoral Zone: Designated as LZ on NYSDEC inventory maps. This is a zone of open water which includes shallow bay bottoms with a maximum depth of six feet below mean low water. This is a productive zone, valuable to waterfowl, fisheries, and shellfish.

Tidal wetlands in the LWRA are shown on Figure 2-1.

B. FRESHWATER WETLANDS

Freshwater wetlands are not mapped or classified by NYSDEC into different ecological zones. However, vegetative cover types are used to distinguish between freshwater wetlands and other areas. The presence of several vegetative species are fairly good indicators of the occurrence of freshwater wetlands, including: wetland trees such as red maple (Acer rubrum), willows (Salix spp.), swamp white oak (Quercus bicolor), silver maple (Acer saccharinum) and sour-gum (Nyssa sylvatica); wetland shrubs including dogwoods (Cornus spp.), Alder (Alnus spp.), sweet pepperbush (Clethra alnifolia), spicebush (Lindera benzoin), and highbush blueberry (Vaccinium corymbosum); wet meadow species such as rushes (Juncus spp.) and sedges (Carex spp.); and various emergent and submerged plants including cattails (Typha spp.), bulrushes (Scirpus spp.), common reed (Phragmites communis), loosestrife (Lythrum spp.), pondweeds (Potamogeton spp.) and water smartweed (Polygonum amphibium).

Pursuant to the Freshwater Wetlands Act (Article 24 of the Environmental Conservation Law) NYSDEC inventoried freshwater wetlands and developed regulations controlling activities in all designated freshwater wetlands greater than 12.4 acres in size, and those of less than 12.4 acres in size which were determined to be of local importance. The locations of all State-designated freshwater wetlands within the LWRA (as identified on NYSDEC's June 1989 tentative maps) are shown on Figure 2-1. In addition, the United State's Fish and Wildlife Service National Wetlands Inventory map, Lloyd Harbor 7.5 minute quadrangle, depicts all wetlands one acre in size and larger with cover type

information. This map serves as a planning tool in regard to future actions affecting the LWRP area.

2.2.4 UPLANDS

The wooded upland areas within the LWRA consist primarily of a mixed oak-hickory forest cover type. The dominant tree species include: northern red oak, black oak, scarlet oak, white oak, chestnut oak, pignut hickory, mockernot hickory, flowering dogwood, black cherry, and sassafras. On highly mesic, undisturbed sites (such as found at the Coindre Hall property bordering Huntington Harbor) along stream banks and bordering freshwater wetland areas, tulip tree, beech, red maple, yellow birch, sweetgum, and sugar maple appear in greater numbers. Disturbed, sandy locations are dominated by black locust, gray birch, bigtooth aspen, and eastern red cedar.

2.2.5 NEW YORK STATE DESIGNATED SIGNIFICANT COASTAL FISH AND WILDLIFE HABITATS

Three Significant Coastal Fish and Wildlife Habitats wholly or partly within the LWRA have been designated pursuant to Article 42 of the Executive Law and its implementing regulations (19 NYCRR Part 602): Cold Spring Harbor, Lloyd Point, and Lloyd Harbor. The location of each habitat area is depicted on Figure 2-7.

A. COLD SPRING HARBOR

Location and Habitat Description

Cold Spring Harbor is located on the north shore at the border of Nassau and Suffolk Counties, in the Towns of Oyster Bay and Huntington; a small area lies within the boundaries of the Village of Lloyd Harbor. The harbor is approximately 2,500 acres in size. The fish and wildlife habitat consists of the open water and wetland areas in the bay, extending out to Whitewood Point on the east and Centre Island on the west, excluding portions contained in the Oyster Bay National Wildlife Refuge (approximately 1000 acres). Most of Cold Spring Harbor ranges from 6 to 20 feet in depth with some points greater than 70 feet. The southern portion of the harbor is generally less than 6 feet deep, and contains tidal mudflats, salt marsh and sand islands. The tidal range in the harbor averages approximately 7 feet. The area is bordered by residential development, forested

headlands, and extensive recreational boating facilities (especially near Cold Spring Beach). Only a few areas of undeveloped salt marsh remain in the area, including St. John's Marsh, located at the southern end of the harbor.

Fish and Wildlife Values

Cold Spring Harbor is one of several major embayments on Long Island's north shore. This coastal bay is important to fish and wildlife throughout the year. Cold Spring Harbor is one of the five most important waterfowl wintering areas (from November through March) on the north shore. Mid-winter aerial surveys of waterfowl abundance for the ten-year period 1975-1984 indicate average concentrations of over 1,100 birds in the bay each year (3,135 in peak year) including approximately 660 scaup (3,075 in peak year), along with lesser numbers of mallard, Canada goose, common goldeneye, bufflehead, oldsquaw and red-breasted merganser. Waterfowl use of the bay during winter is influenced in part by the extent of ice cover each year. Concentrations of waterfowl also occur in Cold Spring Harbor during spring and fall migrations, occurring from March through April and October through November, respectively.

In addition to waterfowl use, Cold Spring Harbor is a productive area for marine finfish and shellfish. The harbor serves as a nursery and feeding area (generally from April to November) for numerous species of finfish that include in part, striped bass, porgy (scup), bluefish, summer flounder, Atlantic silverside, menhaden, winter flounder and blackfish. This area is also one of the few on Long Island where smelt spawning runs (in mid-March) are known to occur. As a result of the abundant fisheries resources in the bay, and its proximity to the metropolitan New York area, Cold Spring Harbor receives heavy recreational fishing pressure of regional significance. Cold Spring Harbor is also valuable as a hard-shelled clam producing area. The northern portion of the harbor is certified for commercial shellfishing. St. John's Marsh, which is an excellent example of estuarine fish and wildlife habitat, has been used for environmental education and research activities of county-level significance.

B. LLOYD POINT

Location and Habitat Description

Lloyd Point is located at the northwest tip of Lloyd Neck. The northern portion of this habitat includes bluffs and the western end contains wetland vegetation. The habitat also contains a protected bay (locally referred to as "The Sand Hole"), tidal mud-flats and a

narrow sand peninsula. This fish and wildlife habitat encompasses nearly 175 acres, much of which is located within an undeveloped portion of Caumsett State Park. The remainder is bordered by undeveloped land and several private residences.

Fish and Wildlife Values

Lloyd Point is an excellent example of an undeveloped coastal wetland ecosystem, containing a diversity of fish and wildlife habitats. This area includes one of the least disturbed salt marshes on the north shore of Long Island. One pair of osprey (a threatened species in New York) nested nearby at Caumsett State Park in 1983 and 1984, and may utilize the shallow bay for feeding. In the mid to late 1970s, least terns (an endangered species in New York) nested on the sand spit which extends southward from the top of Lloyd Point. Although least terns did not nest there from 1982 to 1984, Lloyd Point is important as a potential nesting site. Least terns and common terns (a threatened species in New York) were observed in the area in late May 1984, but may have been eliminated by human disturbance or predators. Other probable or confirmed breeding bird species in this area include wood duck, Canada goose, mallard, clapper rail, piping plover (an endangered species in New York), horned lark, marsh wren and red-winged blackbird. The protected bay, mud flats and salt marsh areas at Lloyd Point serve as valuable feeding areas throughout the year for many wetland bird species, including waterfowl, herons, egrets, gulls, terns, plovers and sandpipers. In addition to its ecological values, the Lloyd Point marsh is important for estuarine research and education on Long Island. The marsh is used by Caumsett State Park for nature tours and by both the Queens College Center for Environmental Teaching and Research, and the Nassau County Board of Cooperative Educational Services (BOCES) for their residential environmental education programs. Bird watching and recreational fishing are important uses at the local level. Lloyd Point also supports a shore-based sportfishery which is available on a permit basis in Caumsett State Park.

C. LLOYD HARBOR

Location and Habitat Description

Lloyd Harbor is located south of Lloyd Neck, between Cold Spring Harbor and Huntington Bay. Lloyd Harbor is approximately 800 acres in size. This fish and wildlife habitat consists of salt marsh, mud-flats, and open water area in the harbor, extending out to East Beach on the north side and to the mouth of Huntington Harbor on the south. Beach and bluff areas are also found in this habitat. Lloyd Harbor is primarily less than

8 feet deep at mean low water and has a tidal range of approximately 7 feet. The bay is bordered by sparse residential development and developed wooded slopes. The harbor is utilized on a seasonal basis for recreational boating and provides a valuable year-round area for commercial shellfisheries.

Fish and Wildlife Values

Lloyd Harbor is one of several relatively large, shallow, coastal wetland ecosystems on Long Island's north shore. Consequently, the harbor is an important fish and wildlife habitat throughout the year. It is a valuable waterfowl wintering area (from November through March) on the north shore of Suffolk County. Mid-winter aerial surveys of waterfowl abundance for the ten-year period 1975 through 1984, indicated that the average annual concentration of birds in the harbor is approximately 380 (910 in a peak year), including approximately 180 scaup (900 in a peak year) and 160 black ducks (320 in a peak year), along with lesser numbers of mallard, Canada goose, common goldeneye, bufflehead and red-breasted merganser. Waterfowl use of the bay during the winter is partially influenced by the extent of ice cover. Concentrations of waterfowl also occur in Lloyd Harbor during spring and fall migrations, occurring from March through April and October through November, respectively. In addition to waterfowl use, Lloyd Harbor is used extensively as a feeding area by osprey (a threatened species in New York), herons, egrets and other wading birds throughout much of the year. During the mid-1970s, least terns (an endangered species in New York) were reported nesting on East Beach; this area is still a valuable potential nesting site. The harbor serves as a nursery and feeding area (generally from April through November) for various marine finfish, including but not limited to: striped bass, porgy (scup), bluefish, Atlantic silverside, menhaden, winter flounder and blackfish. Concentrations of hard-shelled clams, blue mussels, soft-shelled clams and oysters that occur in the harbor, provide both a commercial as well as a recreational shellfishery for local residents. The Lloyd Harbor habitat may also be an important nesting and feeding habitat for the Kemp's Ridley sea turtle (an endangered species in New York) and terrapin, especially during the late summer or fall. More documentation is needed on the use of this area by Kemp's Ridley, as well as other, sea turtle species.

2.2.6 LOCALLY IMPORTANT COASTAL FISH AND WILDLIFE HABITATS

Lefferts Mill Tidal Pond, a brackish water impoundment located at the northwestern end of Huntington Harbor which is owned and managed by the Nature Conservancy as a preserve,

is a locally important habitat within the LWRA. A stone-reinforced embankment and two sluiceways currently separate this Mill Pond from the harbor waters. The Van Wyck-Lefferts Mill, which was constructed during the 1790s, is a local historic landmark that straddles the dam. The Nature Conservancy (which has owned the Mill Cove Waterfowl Sanctuary since 1972) has recently completed reinforcement work on the Mill Dam.

Nearly the entire perimeter of the Mill Pond is surrounded by private residences. The Nature Conservancy owns the underwater lands of the mill pond to the mean high water line and protects this resource by prohibiting boating on the pond. Public access to the pond via water is presently limited to small boats which may approach the Mill Dam from Huntington Harbor. Land access is limited to a narrow right-of-way that traverses the side and back yard of a private residence.

Lefferts Mill Tidal Pond provides valuable habitat for a large diversity of wading birds and waterfowl. Both resident and migratory bird species use the pond and upland vicinity for roosting, loafing, and feeding areas. The pond and fringing wetland areas also serve as a nursery for finfish.

2.2.7 FLOODING AND EROSION

A. FLOOD ZONE BOUNDARIES

The LWRA contains flood zones designated by the Federal Emergency Management Agency (FEMA). Flood hazards in the LWRA are due almost entirely to the potential for low-lying coastal areas to be inundated by surging seawater during storms. Flooding due to the accumulation of stormwater drainage is a much less significant problem.

FEMA has developed Flood Insurance Rate Maps (FIRMs) that delineate flood-prone areas as flood zones. There are several categories of flood zones, based on the degree of susceptibility to flood damage. Four general flood zones exist within the LWRA, as summarized below:

- V zone (i.e., high velocity zone, also called the coastal high hazard area) - that area of land that would be subject to breaking waves of three feet or greater height, in addition to still water flooding, during the 100-year storm event

- A zone (also called the area of special flood hazard) - that area that would primarily experience still water flooding, without significant wave activity, during the 100-year storm
- B zone - areas between the limits of the 100-year flood and the 500-year flood; or certain areas subject to 100-year flooding with average water depths of less than one foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood
- C zone - areas of minimal flooding

Figure 2-2 depicts the 100-year floodplain (i.e., the V and A zones). V zones are narrow bands along the northern and western shores of Lloyd Neck. A zones are in low-lying areas landward of the V zone and in the inner portions of the harbors. Small areas of B zone are also present within the LWRA, but are not shown in Figure 2-2 due to scale limitations of the map. Most of the upland in the LWRA is designated as C zone.

B. GENERAL ASPECTS OF COASTAL EROSION

The Long Island Sound shoreline is a dynamic environment. The sandy sediment along the shore is constantly moving under the influence of waves, tides, and winds. Beaches are subject to the greatest variability and are dependent upon a supply of sand in order to exist and function as natural protective features. Seasonal cycles in geologic forces alter the beach from a typical broad, gently sloping "summer" profile to a typical steeper, narrower "winter" profile, and back again. Storms generally carry beach material offshore, while periods of calmer weather tend to return sand to the beach.

Deviations from the "typical" conditions described above can alter the cyclic pattern of change along the shoreline. For example, a severe summer storm (e.g., hurricane or tropical storm) can prevent the beach from accumulating sand and forming a wide berm. This situation would make the beach more susceptible to erosion the following winter. Similarly, a series of successive severe winter storms would likely cause the beach width to be reduced beyond its normal winter profile. In these cases, where the extent of erosion exceeds the normal seasonal shifts in the position of the shoreline, the areas that lie landward of the beach (especially the dunes and bluffs) are exposed to erosive forces and can supply sand to adjacent beaches.

Besides the onshore-offshore movement of sand caused by seasonal and episodic forces, beaches are subject to gradual change due to the action of waves and tides. The primary consequence of these daily forces is the net movement of sand in a direction parallel to the shoreline. This long-shore transport of sand (also called littoral drift) is caused by a long-term average direction of wave approach that is not perpendicular to the shoreline. On the north shore of Long Island, long-term littoral drift generally flows in a west-to-east direction. However, many stretches of shoreline are characterized by an east-to-west direction, depending on the orientation of the shoreline and other conditions. For example, the sand spit at East Beach was created by the eastward longshore transport of sediment from the headlands on Lloyd Neck (see Figure 2-1).

In general, bluffs lie upland of the beach zone throughout the LWRA. Bluffs are composed of loose sediment (typically unsorted sands, gravels, and boulders), and are formed as the result of erosion of the seaward edge of glacial deposits. Bluffs are present on the shores of Lloyd Neck that face the Sound and Oyster Bay, with the latter area containing the highest bluffs (see Figure 2-1).

Bluffs are integrally tied to the beach zone in terms of the movement of sediment. A wide beach provides an effective buffer against storm waves and mitigates the erosion of adjacent bluffs. It is important to recognize, however, that actively eroding bluffs are a source of sand nourishment to beaches located in down-drift areas. Structural activities that are undertaken to prevent bluff erosion and to protect structures (such as houses and other buildings) that are situated landward of the bluff, may have significant effects on adjacent beaches. If such structural measures are fully successful in stemming bluff erosion, down-drift beaches may be starved of sand and thus erode over the long term. Jetties and groins, which extend perpendicular to the shoreline and trap sand moving in the littoral drift system, can also cause erosional problems at down-drift beaches due to sand starvation.

Because of the potential for coastal protective structures to have unintended adverse effects on the sediment supply to adjacent beaches, such structures should generally be used only where non-structural measures (e.g., beach nourishment, restoration of bluff vegetation, etc.) are shown to be impractical. Permit applications for shoreline structures should be carefully evaluated by the reviewing agency to ensure that the potential impacts to the beaches are weighed against the benefits derived from the protection of upland development. Furthermore, where shoreline structures are shown to be an appropriate solution to erosional problems, efforts should be made to see that structural protection is

applied uniformly along the shoreline, since intermittent structures can exacerbate erosion at adjacent shoreline segments which lack these devices.

C. COASTAL EROSION HAZARD AREA

V-Zones are often included within Coastal Erosion Hazard Areas (CEHAs). CEHAs have been designated by NYSDEC pursuant to Article 34 of the New York State Environmental Conservation Law. Lands that lie within the CEHA either are subject to an average long-term recession (erosion) rate of at least one foot per year, or are characterized by the presence of natural protective features (i.e., beaches, dunes, shoals, bars, spits, barrier islands, bluffs, wetlands, nearshore areas, and associated natural protective vegetation). Development and the siting of structures, including erosion protection structures, is regulated in CEHAs to preserve natural protective features and their natural protective benefits, and to safeguard adjacent development and human life. Erosion control structures may reduce or destroy the erosion protection afforded natural protective features and adjacent lands, and may decrease the reserves of sand available to replenish storm losses through natural processes.

The CEHA within the Village of Lloyd Harbor has been designated and delineated on maps based on the existence of natural protective features. These maps are identified as the New York State Department of Environmental Conservation Coastal Erosion Hazard Area Maps, Village of Lloyd Harbor, Suffolk County, 1-6. The CEHA includes areas that lie immediately adjacent to the Long Island Sound, Oyster Bay, and Huntington Bay shorelines of Lloyd Neck, as shown in Figure 2-2. The natural protective features along this shoreline consist primarily of bluffs and adjacent beaches and nearshore areas, but also include some sand spits (e.g., the barriers across The Sand Hole at Lloyd Point, and the East Beach spit extending southward from Target Rock).

In 1989, the Village of Lloyd Harbor adopted a local Coastal Erosion Hazard Area Management Law (Article 21 of the Zoning Code), by which the Village assumes the responsibility and authority to implement and administer a coastal erosion management program within its boundaries, pursuant to Article 34 of the New York State Environmental Conservation Law. This local law:

- regulates new construction and the placement of structures in areas subject to coastal erosion and flooding, in order to place them a safe distance from areas of active erosion and the impacts of coastal storms;

- restricts public investment in services, facilities, and activities which are likely to encourage new permanent development in erosion hazard areas; and
- regulates the construction of erosion protection structures in coastal areas subject to serious erosion, so as to assure that when the construction of such devices is justified, their construction and operation will minimize or prevent damage or destruction to man-made property, natural protective features, and other natural resources.

D. FLOODING AND EROSION ISSUES AND CONCERNS WITHIN THE LWRA

Lloyd Neck is connected to the mainland (at West Neck) by a narrow isthmus, which is approximately 2,500 feet long and 200 feet wide. Quarrystone has been placed on the west side of the isthmus, along the Cold Spring Harbor shoreline, as an erosion protection measure. As a result, the causeway of West Neck Road suffers negligible erosion. During severe storms, the causeway is overwashed by waves and has been flooded on occasion, cutting off Lloyd Neck from the mainland.

Serious beach erosion has occurred south of the causeway, resulting in the loss of sand from the Lloyd Neck Bath Club (a private facility), the Town and Village beaches (West Neck Beach and Lloyd Harbor Village Park), and the shoreline segment to the south. This erosion problem has intensified in recent years. Efforts (i.e., the placement of rip rap boulders) have been made to stabilize this area; however, some erosion continues to occur. An evaluation should be made of options for mitigating this erosion problem, including an assessment of the feasibility and efficiency of widening the beach.

The northerly shore of Lloyd Neck is a CEHA. Ongoing erosion in this area is evidenced by the presence of active bluffs, which range in height from 10 to 100 feet. A large portion of the erosion-prone shoreline segments on Lloyd Neck are situated within Caumsett State Park and, therefore do not directly threaten upland development. The erosion of some areas of bluff within the park has been exacerbated by pedestrian traffic, which destroys stabilizing vegetation, creates pathways for the concentrated flow of runoff down the bluff face, and causes gully erosion.

The approximately 50-foot high bluffs that front the development along Seacrest Drive, which lies immediately north of Target Rock National Wildlife Refuge, have experienced continuing erosion. Recent storms, particularly the Halloween 1991 and December 1992 northeasters, have reduced the buffer between the bluff face and the adjacent homes to

approximately 100 feet from the original setback distance of 125 feet. Much of the sediment that is eroded from these bluffs is carried in a southward direction around East Fort Point to the accreting spit at East Beach. Bluff erosion is also prevalent at East Fort Point.

At Lloyd Point, littoral drift is from east to west, rounding the Point and then flowing southward. Accretion occurs to the south of Lloyd Point, where a sand spit creates a small embayment (i.e., The Sand Hole).

Bluffs are also present in the vicinity of Whitewood Point, on the western shore of Lloyd Neck. However, this area is sheltered from the forces of the most erosive storm waves (i.e., those generated by the northeast winds of winter storms) and, consequently, is less susceptible to erosion than the north-facing portion of Lloyd Neck.

2.2.8 SCENIC AND VISUAL RESOURCES

The visual quality of the coastal area is a significant resource which plays a vital part in attracting residents and visitors to the waterfront. The positive scenic qualities and values of coastal resources within the Village enhance the user's experience. Maintaining the visual quality of coastal resources is, therefore, a priority. Although no scenic resources of State-wide importance have been identified in the LWRA, the aesthetic significance of the existing visual resources to the Village can not be understated.

Generally, views of the natural coastline are positive, and evoke feelings of serenity, tranquility, and harmony. Positive visual aspects are uncluttered and congruous with existing natural amenities. Positive elements include lush, vegetated marsh areas, thick tree canopies, thriving fish and wildlife populations, and man-made structures which conform with natural shoreline and coastal features, and do not degrade visual quality by creating contrasting line, texture or mass. Conversely, negative visual aspects appear cluttered or haphazard, obtrusive, and incongruous with the natural coastal setting. Negative elements include visual pollution, overcrowding, neglected or deteriorating structures, and land uses that degrade or create discord with the natural environment, blocking or degrading views of the shoreline from the land or from across the water.

Visual quality is subjective by nature and, therefore, requires a brief description of those elements or features which either enhance or detract from the visual quality of the coastal landscape. The Village of Lloyd Harbor provides vistas which are among the most scenic in

northwest Suffolk County. In West Neck, there are few direct public access areas from which to view Cold Spring Harbor to the west, Lloyd Harbor to the north, or portions of Huntington Harbor to the east. These water areas are, however, viewed by adjacent private property owners. Public access to the shoreline is available at West Neck Beach (a Town facility) adjacent to Cold Spring Harbor. From this vantage point, a commanding view of the harbor, as well as of Cove Neck, Centre Island and Oyster Bay Harbor, is available.

Preservation of greenspace adjoining Lloyd Harbor Village Park would substantially benefit local wildlife, maintain the wooded visual quality of the area, and provide a natural vegetative buffer up-gradient from the two ponds located in this park. Black-crowned night herons roost in the treetops on the east side of these ponds (coincident with the undeveloped right-of-way owned by the State). Although no nesting of this species was reported in the area to date, it is likely that this area provides habitat for a heron rookery. Presently, the Village leases a portion of this ±27.6-acre property from the State, at a cost of one dollar per year for a term of nine years ending in 2002, for use as passive parkland and a nature preserve. The Cold Spring Harbor Laboratory also leases a portion of this property, at a cost of \$2,500 per year for a term ending in 2000, for use in corn breeding studies; this site is considered to be ideal for such investigations due to its isolation from other pollen sources. The Village is presently involved in negotiations for the permanent acquisition of this property from New York State for the continuation of the current uses. These negotiations involve the State Department of Parks, The Long Island State Park Commission, and the State Legislature.

Roadways within West Neck wind through wooded, well-maintained residential areas. West Neck Road traverses the length of West Neck from West Neck Beach to State Route 25A (Main Street) in downtown Huntington hamlet. The southern end of West Neck Road (situated outside the Village) has been designated by the Town as an historic and scenic roadway and is a scenic resource of local importance.

West Neck is connected with Lloyd Neck by a causeway that runs in a north-south direction. This causeway provides an expansive, unobstructed view of both Cold Spring Harbor to the west, and Lloyd Harbor and its associated tidal wetlands to the east. Views in this area are excellent.

The major roadway leading into Lloyd Neck from the causeway is Lloyd Harbor Road. This roadway runs adjacent to Lloyd Harbor and provides picturesque views of the area and the wooded hillside on the south side of this waterway.

Target Rock National Wildlife Refuge and Caumsett State Park are resources of local, regional, state and national importance, providing excellent views of surrounding waters and upland areas. Target Rock National Wildlife Refuge provides panoramic views of Huntington Bay, with Eatons Neck in the distance. Caumsett State Park contains a wide variety of habitats (including bluffs, beaches, tidal wetlands, a freshwater lake, open fields and mature woodlands) which provide pleasing and interesting views. The park and refuge also provide excellent views of Long Island Sound to the north, with the Connecticut shoreline visible (approximately 10 miles distant) on clear days.

Views from the Lefferts-Van Wyck Mill Dam, located at the northwestern end of Huntington Harbor, are particularly scenic. The Mill Pond area offers excellent opportunities for birdwatchers. However, access to this site by land is effectively non-existent. Visual and physical access to this area is restricted to boaters and adjacent homeowners. Land-side visitors would have to park their cars along the street in a private residential area, and walk across private property to reach the Mill Dam. An agreement might be made between the Village of Lloyd Harbor and Suffolk County to dock a small skiff (tour boat) at the Coindre Hall boathouse located to the east or, alternatively, arrangements could be made with the Town of Huntington for a skiff originating at Gold Star Battalion Beach.

Views within and from the Coindre Hall property (a county park), located on the Village's eastern boundary line, include a wide variety of features. The entire waterfront of this property, as well as the boathouse and part of the mansion, are within the Village. Behind the mansion on top of the hill, visitors view acres of open, rolling meadows on the estate. Looking towards the north beyond the meadows, visitors can view the boathouse on the property and Huntington Harbor beyond, framed by mature woodlands to the east and west. Views from the boathouse looking back toward the mansion establish a rather bucolic setting, with the grand mansion perched on top of the hillside over one-quarter mile away, overlooking the estate. The view looking north from the Coindre Hall shorefront encompasses a panorama of northern Huntington Harbor and should be preserved.

From a water-side vantage, particularly scenic views are available in the vicinity of the Lefferts-Van Wyck Mill and Dam. The summertime congestion of boats in lower Huntington Harbor is barely visible at a great distance from this point. A large number and variety of waterfowl congregate on the pond during the fall and winter months. The Mill Dam is a scenic and historic resource of local importance.

2.3 LAND AND WATER USES

2.3.1 PREEXISTING LAND AND WATER USES AND PREEXISTING ZONING

The Village of Lloyd Harbor is characterized by rolling terrain with vast areas of woodlands, a rural landscape, and extensive areas of shoreline containing beaches, bluffs and fringing wetlands. The primary land uses in the Village are low-density residential development (one unit or less per acre), open space and recreation, and some institutional uses (Figure 2-3). With the exception of a large nursery and landscaping business located in the northeast corner of West Neck, on Southdown Road, there are no commercial or industrial uses in the Village. The commercial needs of Village residents are met by goods and services available in the Cold Spring Harbor and Huntington hamlet downtown areas and other areas outside the Village.

Nearly all of the land in the Village of Lloyd Harbor is zoned A-1 Residence, which requires a minimum lot size of two acres (Figure 2-4). Other zoning districts in the Village include the Public Beach District, which encompasses the West Neck Town Beach property; and two Flood Plain Districts, which encompass the lands designated by the Federal Emergency Management Agency (FEMA) as areas subject to flooding (see Section 2.2.7). Development is regulated in these flood zones by requiring buildings to be elevated and floodproofed.

Residential development covers much of the West Neck section of the Village. The northwestern section of West Neck contains two large public park facilities (as noted above), the Lloyd Neck Bath Club (a private recreational facility), a Roman Catholic Seminary (Seminary of the Immaculate Conception), the former Friends World College facility, and vast areas of open space containing both wetlands and woodlands. The southwestern tip of West Neck contains a part of the Cold Spring Harbor Beach Club. In addition to the recreational facilities noted above, there are a small number of private homeowner's association beaches scattered along the shoreline, and a large area of undeveloped open space (Jennings Field) which is utilized as passive parkland by the Village.

Institutional uses in the West Neck area include the Roman Catholic Seminary of the Immaculate Conception, a few school district properties and municipal properties, and an adjunct facility of the Cold Spring Harbor Laboratory (Banbury Center). All of these uses are situated within the A-1 zoning district and require a special use permit from the Village Board of Trustees.

The Seminary of the Immaculate Conception (formerly Rosemary Farms) is located on property in West Neck, near the head of Lloyd Harbor. This land, which is zoned A-1

Residence, has been proposed for subdivision. The entire northern end of this property, within 500 feet of the shoreline, is characterized by wooded, steeply sloped areas. The Village of Lloyd Harbor may wish to prepare a conceptual plan to guide the future development of this property, in an effort to retain the vegetation on steep slopes, control soil erosion during construction, and to preserve as much open space and as many of the historic structures and landforms on the property (e.g. the stone archways and amphitheater area) as possible.

Three parcels of approximately 43.6-acres, of undeveloped open space in a State-owned right-of-way is located directly south and east of Lloyd Harbor Village Park. This property is bounded by West Neck Road to the east, West View Drive to the south, and Cold Spring Harbor to the west. As discussed in Section 2.2.8, the Village has entered into a lease for a portion of this property as a means of preserving the extent of natural woodlands that surrounds the Village Park, and to prevent this area from being developed in the future. The Cold Spring Harbor Laboratory leases a 106.05 acre State owned right-of-way northeast of the Village Park. This land is used for corn breeding investigations. However, since this property is zoned A-1 Residence, and the terms of the current leases expire by 2002, the potential exists for an as-of-right residential development if the State were to sell this property in the future. Though generally, it is policy of the Office of Parks Recreation and Historic Preservation not to dispose of parkland, but to enter into term agreements, to permit specific uses while retaining ownership and control for general public recreation, park and nature purposes.

The Lloyd Neck peninsula contains residential development and open space and recreational uses. Caumsett State Park, which encompasses 1,500 acres, is a State-owned park used for passive recreation and environmental education. The Target Rock National Wildlife Refuge is located at the east end of the peninsula. Other open space areas include a 39-acre property owned by the Nature Conservancy in the southwest corner of Lloyd Neck and areas of fringing wetlands and upland thicket located along the shoreline of Lloyd Harbor.

Extensive tidal marshes are located at the western end of Lloyd Harbor, consisting of a nearly continuous band of wetland vegetation on both the north and south shorelines. The entire harbor is a designated Significant Coastal Fish and Wildlife Habitat, as discussed in Section 2.2.5.C. The Village has made considerable strides in protecting the wetlands and surface water quality of this harbor, by prohibiting the construction of permanent docks, restricting moorings, and establishing and encouraging shorefront properties to establish conservation easements within the Village. The removal of vegetative cover and the topping of trees is prohibited within a conservation easement established along the shoreline of the Friends World College property, on the south side of the harbor.

Water uses in the Village's coastal waters consist of recreational boating, fishing, and commercial and recreational shellfish harvesting, primarily in Lloyd Harbor. Other areas popular for boating include The Sand Hole (located at the northwestern corner of Lloyd Neck) and Cold Spring Harbor. It is important to note that the Village's coastal waters contain no commercial marine facilities.

The Sand Hole is a popular boating spot during the summer season, where boaters "raft-up" (i.e., tie together at anchor for extended periods of time). The lack of nearby pump-out facilities increases the potential for vessel wastes to be discharged into these waters, creating a water quality problem during periods of peak boater activity. In addition to impacting surface water quality, concentrations of human activity can also disrupt wildlife populations utilizing the area, especially waterfowl and beach-nesting shorebirds. As discussed in Section 2.2.5.B, Lloyd Point is a State-designated Significant Coastal Fish and Wildlife Habitat. Two State-listed endangered species (piping plover and least tern) and two State-listed threatened species (osprey and common tern) either nest or feed within this cove and the adjacent area. The Atlantic coast population of piping plover is also federally listed as a threatened species. Stepped-up enforcement by the State of New York, posting, and whenever possible, education on the importance of these resources and the dangers of disturbances are necessary to minimize human impacts, as well as to discourage the discharge of marine toilets within the cove.

Publicly-owned lands represent a vital resource to local residents. These lands range from institutional uses and active recreational facilities, to passive parks and preserves. In all, 3.1 square miles, or approximately one-third of the Village's 9.3-square mile land area, are held in public ownership, including the 2.2 square miles that comprise Caumsett State Park. See Table 2-1 at the end of this section of the LWRP report for a listing of public lands in the LWRA. Figure 2-5 depicts the location of these lands.

2.3.2 WATER-DEPENDENT AND WATER-ENHANCED USES

Water-dependent uses contribute significantly to the long-term economic vitality and public enjoyment of coastal areas. A water-dependent use is a use that requires a location on, in, or directly adjacent to the water in order to function or exist. A water-enhanced use does not require a location on or adjacent to the water in order to function or exist, but derives certain benefit from a waterfront location, such as an increased enjoyment level of the users.

There are several facilities along the shoreline of upper Cold Spring Harbor which serve as sites for water-dependent uses (e.g., swimming, access for sculls and other small boats, etc.): Cold Spring Harbor Beach Club, Lloyd Harbor Village Beach and Park, West Neck Town Beach, and the Lloyd Neck Bath Club. The latter three are clustered together along the harbor shoreline at the northwestern corner of West Neck. Along the south shore of Lloyd Harbor, the Sagamore Rowing Club leases the Boat House on the Friends World College property. There are no water-enhanced uses in this area. The remainder of the area is zoned and developed for residential use.

Private waterfront recreational facilities that permit shoreline access to local residents are the primary sites for water-dependent uses in the Lloyd Neck area. These include many homeowner associations and private docks and beaches.

Caumsett State Park is the site of a number of a water-dependent uses on Lloyd Neck. This facility covers approximately 1,500 acres in central Lloyd Neck, and provides abundant opportunities for the passive enjoyment of scenic coastal resources, as well as certain active recreational pursuits (such as surf fishing).

Coindre Hall contains active docking facilities on Huntington Harbor, which are periodically used for access to the water by the Sagamore Rowing Club; such uses of the shorefront are water-dependent. The upland portion of the property is presently used by the County for cultural arts purposes, which is a water-enhanced use. See Section 2.3.3 for a more detailed discussion of Coindre Hall.

Although the Mobil Oil Terminal on Cold Spring Harbor is situated just south of the Village boundary (and therefore, outside the LWRA), its proximity to the Village merits special attention here. This oil terminal is a water-dependent facility, because site operations depend on the dock-side transfer of petroleum products. However, strictly speaking, oil terminals are not water-dependent uses, since oil deliveries can be made to an offshore platform and piped to inland locations. Recognizing that such siting alternatives exist, and given the potential for environmental impacts to sensitive ecological resources in Cold Spring Harbor which may result from the transfer and storage of petroleum products at this waterfront location, the Long Island Sound Coastal Management Program recommends that the Mobil Oil Terminal be phased out of use.

2.3.3 UNDERUTILIZED, DETERIORATED, AND ABANDONED USES

The land use patterns and character of the Village of Lloyd Harbor have been well-established. There are few deteriorated, underutilized or abandoned properties. Those identified in the waterfront area are described as follows:

A. COINDRE HALL

Coindre Hall is a 12.6-acre property located on the western shoreline of Huntington Harbor. This parcel is bisected by the municipal boundary between the Town of Huntington and the Incorporated Village of Lloyd Harbor. The site is owned by Suffolk County and currently operated as the Harbor Arts Center.

Coindre Hall is the former George McKesson Brown Estate, and still contains the large estate-house and waterfront boathouse and dock facility. These structures are locally designated historic resources. The Sagamore Rowing Club has worked out an arrangement with the County to periodically utilize the boat dock for training purposes.

The facilities at Coindre Hall are presently not utilized to their full potential, and are in need of revitalization. As discussed in Sections 2.2.4 and 2.2.8, this site offers excellent viewsheds (which include panoramas of Huntington Harbor, a woodland area, a pond and freshwater wetland system located adjacent to the shorefront, and a rolling, on-site hillside), and contains areas of unique vegetation. Unfortunately, the estate buildings are in need of costly repairs and maintenance, which has imposed a financial hardship on the County.

Due to its waterfront location, and the natural and structural amenities contained on-site, the Coindre Hall property has the potential for adaptive re-use for a variety of public and quasi-public uses or could be revitalized with appropriate institutional or cultural uses, such as a marine educational facility. A number of proposals have been considered for this site, including an annex to the Heckscher Museum (which has its main facility in downtown Huntington), but no concrete plans have been confirmed. Due to the character of the property, its ecological significance, and its waterfront location, residential development is not considered suitable.

Because of the environmental constraints and important features discussed previously, a cultural and/or institutional facility similar to the present use would be the most appropriate re-use of the Coindre Hall property. However, the current zoning of this land

is R-80 (2-acre) residential. Therefore, the recommended redevelopment would require a special use permit or zone change approval, as well as appropriate public hearings, involving both the Village of Lloyd Harbor and the Town of Huntington.

The Village and Town should work together to ensure that the future utilization of the Coindre Hall site is compatible with surrounding land uses, and is no more intensive than current uses, requiring mostly the restoration of existing facilities and limited new development. Furthermore, the significant ecological characteristics of the site should be preserved and protected to the greatest extent possible.

The waterfront portion of the property should be continued as a marine-related use in any redevelopment scheme. In the event the upland portion of the site is developed with a use that does not involve the continued use of the boathouse and dock, these facilities should be restored and arrangements should be made to lease this portion of the property to a public or private organization who would make full use of the facility as a water-dependent use.

B. LEFFERTS-VAN WYCK MILL DAM

As noted in Section 2.2.8, the Lefferts-Van Wyck Mill Dam, located at the western end of Huntington Harbor, offers scenic views and opportunities for birdwatching. However, visual and physical access to this area (which is owned by the Nature Conservancy) is restricted to private boaters and adjacent homeowners. The Village of Lloyd Harbor and various historical societies have considered alternative improvement plans for this facility. Actions to improve the utilization of this scenic and historic resource might include the establishment of a boat shuttle, originating at Gold Star Battalion Beach or Coindre Hall, which would improve water-side access into this area.

Some work has been undertaken on the restoration of the mill building, using grant money and matching funds from the State. However, additional funds are needed to complete the project. The Nature Conservancy has expressed the desire to transfer this property to other parties.

2.3.4 PUBLIC ACCESS AND RECREATION

The shorefront throughout the LWRA contains a variety of water-dependent and water-related recreational facilities which provide excellent opportunities for public access to the harbors

and bays. Both passive and active recreational facilities have become a primary resource in this area. Many of the facilities were identified in Section 2.3.2.

Parklands in the LWRA fall under the jurisdiction of the U.S. Government, the State, the Incorporated Village of Lloyd Harbor, and the Town of Huntington. In addition, there are a large number of beach and park facilities located throughout the LWRA that are maintained by private homeowner and community associations, providing a means of shoreline access for association members.

A. STATE PARK FACILITIES

Caumsett State Park

Caumsett State Park is the only State park facility located in the Township of Huntington. Caumsett State Park occupies the former Marshall Field estate property, which encompasses approximately 1,500 acres on Lloyd Neck. This facility is utilized for passive recreational activities including walking and hiking, bird watching, nature study, surf fishing, bicycling, and picnicking. The park also contains equestrian facilities, with designated trails for horseback riding. The former estate-house on the property is licensed by Queens College for its Center for Environmental Teaching and Research. The park is open year-round, offering a number of seasonal programs throughout the year. A minimal fee is charged for vehicle parking; pedestrians and bicyclists are admitted free-of-charge.

B. VILLAGE PARK FACILITIES

Lloyd Harbor Village Beach Park

Lloyd Harbor Village Beach Park is located on the western shoreline of the Village, directly south of the West Neck Town beach site. This Village beach fronts on Cold Spring Harbor, offering excellent views. Facilities include a harbor beachfront, a boat ramp and boat storage area, picnic area, tennis courts, restrooms, and parking. The park is open from Memorial Day through Labor Day, and restricted to use by Village residents only. The beach is well-utilized during the summer season.

C. TOWN OF HUNTINGTON PARK FACILITIES

West Neck Beach Park

West Neck Beach is a Town-owned facility located in the Incorporated Village of Lloyd Harbor. This 29.3-acre property fronts on Cold Spring Harbor, directly north of the Lloyd Harbor Village Park. West Neck Park contains a beachfront, a building with restrooms, and a parking area. The property also contains extensive areas of tidal wetlands. West Neck Beach is one of the most actively used beach facilities in the Town.

The Town of Huntington and the Village of Lloyd Harbor have an agreement covering the use of West Neck Beach, which, among other provisions, restricts vehicular access to private vehicles; bus access is expressly prohibited.

D. BOAT RAMPS

The Village of Lloyd Harbor LWRA contains one boat launching ramp, at Lloyd Harbor Village Park. Public boat launching facilities are located in proximity to the Village, as follows: Cold Spring Harbor, west of Harbor Road; and Mill Dam on Huntington Harbor.

E. RECREATIONAL FISHING

Recreational fishing is an important activity along the north shore of Long Island. Within the LWRA, surfcasting and shore-based fishing are popular on the Sound-front at Caumsett State Park. Fishing also occurs extensively throughout local coastal waters from recreational boats launched from local ramps or private docks. Transient boaters also frequent the area for fishing and other activities.

Species of fish typically caught in Long Island Sound, and the Huntington/Northport Bay Complex include: snappers, bluefish, tautog, fluke, flounder, striped bass, weakfish, porgies, Atlantic mackerel, eels, and bait fish. Recreational shellfishing also occurs in LWRA waters. Clams, oysters and mussels are the primary species of shellfish sought by local recreational shellfishermen.

F. PUBLIC TRUST LANDS

Town of Huntington Patent History

In 1664, under English colonial rule, Charles II of England granted to the Duke of York absolute control of lands that stretched from northern Maine to Delaware including all of Long Island. Imposition of English rule over the colonies of the "New World" included the Town of Huntington as it existed at that time.

Colonel Nicolls, the Duke of York's Deputy Governor, demanded that each Town within the Duke's control submit evidence of ownership of their lands both private and public. Such proof of ownership would then constitute the boundary lines of each Town while recognizing them as legitimate entities. Legitimacy was conferred by way of written instruments known as "Patents".

Huntington received its first Patent, the Nicolls Patent, on November 30, 1666. This document "ratified and confirmed the first purchase from the Indians in 1653, the eastern purchase of 1656, and the acquisition of nine necks of Land bordering on the Great South Bay after 1657"; at that time, the Town of Huntington included the land that presently comprises the Town of Babylon. The Nicolls Patent recognized the boundaries of lands both private and public which constituted the Town of Huntington in 1666.

The second Patent issued to Huntington was the Dongan Patent of August 2, 1688. This document created and ratified the governmental powers of all the Towns under the control of the Duke of York. Huntington's Patent, or charter, names nine "freeholders" who represented the Town in the negotiations and granted to them all the land delineated in the Nicolls Patent.

The Dongan Patent first introduced the concept that the lands described in the Nicolls Patent were held in "trust" for the people of the Town of Huntington and that the Trustees had the power "to grant and dispose of lands in the name of the Town".

Huntington's third and final patent, the Fletcher Patent, was given on October 5, 1694. This Patent repeated the terms of the Dongan Patent, reaffirming the Town's ownership of its lands while authorizing the Trustees to purchase additional lands still remaining in the hands of the indigenous peoples.

In 1776, the newly established State of New York chose to retain its colonial past. It retained many of its colonial laws by reaffirming their validity in the first and subsequent state constitutions. The colonial charters, grants and patents were fully preserved. For this reason, those "original" lands, including all of the underwater public lands, remain titled in the name of the Board of Trustees and are held in trust for the people and taxpayers of the Town of Huntington.

As far back as 1894, the courts have held that ownership of the lands described in Huntington's three Patents are in the name of the Board of Trustees and held in trust for

the benefit of the people and taxpayers. Today, this concept is known as "The Public Trust Doctrine".

Discussion of the Public Trust Doctrine

The original concept of the "Public Trust Doctrine", as defined under English common law, dictates that certain lands and waters were vitally important to the public for purposes of fishing and navigation and that private ownership should not be permitted. The State of New York, in recognizing the colonial Patents given to the Town of Huntington, granted to Huntington's Trustees the duty and obligation of enforcing the trust doctrine on lands titled in their name in trust for the people of Huntington. During colonial times, the English view was that lands subject to the ebb and flow of the tide were public trust lands. Throughout New York State and in historic Towns like Huntington, those waters and the lands that lie beneath them are public trust properties with ownership in the name of the Board of Trustees in trust for the people and taxpayers of the respective Town.

As noted above, the public rights that have historically been associated with the Public Trust Doctrine are the rights of the public to navigate upon, fish from and direct commerce through these waters. Subsequently, additional rights became incorporated into the Public Trust Doctrine, including the rights to swim in these waters and to pass along the shoreline for the purpose of enjoying the scenic resources. These public rights are balanced with the littoral rights of private waterfront landowners who may access these waters for recreation and may construct docks and piers to facilitate such access. These public rights (or the "jus publicum") have now been recognized in New York State and many other States as superior to the rights of private individuals (or the "jus privatum"). However, the Public Trust Doctrine does not grant the public the right to utilize private lands along the shore that are above the high water level, nor does the doctrine grant the right for the public to cross private lands to gain access to trust lands.

The Board of Trustees' control of underwater lands titled in its name is subject to the riparian rights of private individuals who own waterfront property and who have the right to access and use the waters adjacent to their private property. In general, the littoral owner has the right to build a dock, or "wharf out" to a point of navigability subject to reasonable regulations to preserve the public's right of passage, use, safety, and scenic views.

If underwater lands were conveyed to private ownership prior to 1777 when New York State became one of thirteen states of the United States, they would not be considered

Public Trust properties. In limited instances, the Incorporated Villages of Lloyd Harbor and Asharoken claim such ownership and, therefore, the Village Trustees may hold those underwater lands for the benefit of the people of the respective Village. But aside from these few exceptions, the Huntington Town Board of Trustees regulates the underwater lands throughout all the harbors and has done so for over 250 years.

The public right of access to Public Trust lands and waters, is one of "lateral access". That is, there is no public right to cross private property to reach public waters or the lands beneath them through "perpendicular access". In New York, as in all States, the public's rights are to lateral access along the foreshore between the mean high water and the low water lines during low tide and access to the surface waters covering such underwater lands. Such access is afforded through the marinas, beaches, and waterfront parkland of the Town and Villages.

In some instances the public is unable to walk along the foreshore simply because there is none. Years ago the shoreline of the harbors in the LWRA was bulkheaded and adjacent waters were dredged to facilitate the growing desire and need for recreational boating. In such cases the development of the foreshore eliminated the ability of the public to walk along the land between the high and low water lines. This is especially evident in lower Huntington Harbor.

2.3.5 COMMERCIAL FISHERIES

There are a number of problems or potential problems that exist with respect to the commercial fisheries industry within the Town of Huntington and its Incorporated Villages. Although a comprehensive harbor management plan is needed to fully analyze these issues, it is useful here to define the problems and summarize potential solutions. This information will serve as a framework for the portion of the harbor management plan that is devoted to commercial fisheries management.

A. IDENTIFICATION OF THE COMMERCIAL FISHERIES RESOURCE

Commercial fishing activity within the Huntington/Northport Bay Complex consists predominantly of shellfish harvesting, including hard clams (*Mercenaria mercenaria*), oysters (*Crassostrea virginica*), blue mussels (*Mytilus edulus*), and soft shell clams (*Mya arenaria*). There is also a significant offshore commercial fishery for lobsters (*Homarus americanus*) which is accessed utilizing shore-based support facilities in the bay complex.

The most important fisheries resources in terms of the dollar value of the catch landed in the bay complex is as follows: 1) hard clams, 2) lobsters, and 3) oysters. Hard clams are the only resource of any real significance in the LWRA.

Most of the coastal waters in the bay complex are productive or potentially productive shellfish growing areas, especially for hard clams. However, water quality degradation and other factors have directly impacted the continued viability of hard clams and other shellfish resources, as well as other marine species. As discussed in Section 2.2.1 (Surface Water Resources), Cold Spring and Huntington Harbors have abundant shellfish fauna. Both of these harbors have areas that are closed to harvesting due to chronically elevated levels of coliform bacteria. Where water quality permits, harbors may be opened on a conditional basis to permit harvesting.

B. COMMERCIAL SHELLFISH STOCK MANAGEMENT

Commercial shellfishing is an important water-dependent activity which directly supports many local residents and businesses. In addition the commercial baymen ply a trade that has historical and current significance to Long Island's economy and identity.

Recent trends indicate that the industry is rebounding in Huntington Township after a period of decline. In 1989, approximately 500 commercial fishermen had Town permits to harvest shellfish. This reflects a steady increase from 64 commercial permits in 1981. During recent years, the number of commercial shellfish permits issued by the Town declined to slightly more than 300. In order to prevent over-harvesting of the shellfish resource, which occurred during the 1960s when there were approximately 1,000 baymen working these waters, the Town will limit the number of commercial permits to 400. In addition, the annual fee for all shellfishing permits will be doubled (regular commercial permits will increase from \$75 to \$150, and junior and senior permits will increase from \$25 to \$50). One-half of the new fee will be set aside in a dedicated fund that will be devoted exclusively to bay management programs (e.g., spawner placement, seeding, etc.).

The Huntington/Northport Bay Complex supplies most of the hard clams harvested on Long Island's north shore, and is second only to Great South Bay in terms of catch on all of Long Island. Overharvesting and the illegal removal of seed clams led to a decline of the hard clam fishery during the 1970s and 1980s. Closures of productive areas due to bacterial contamination also contributed to the decline in numbers of shellfish harvested during that period, and continues to be a problem today.

Commercial shellfish landings from Huntington underwater lands have been documented by NYSDEC. From 1946 to 1964, the total landings for hard clams were 1,686,454 bushels (for an average of 43,242 bushels/year) and from 1966 to 1986 decreased significantly to 436,953 bushels (for an average of 20,807 bushels/year). Total landings of hard clams in 1986 was 45,000 bushels.

In response to the decline in hard clam stocks, the Town continues to focus their efforts developing and implementing effective management projects to help the shellfish industry, through:

- 1) transplants of hard clams from uncertified underwater lands in Hempstead Harbor, Little Neck Bay, and Cold Spring Harbor to certified Town of Huntington underwater lands;
- 2) transplants of hard clams from uncertified areas in the Huntington Bay Complex to management areas located in certified waters within the bay complex (especially in Lloyd Harbor);
- 3) conditional winter openings in Cold Spring, Huntington, Centerport, and Northport Harbors;
- 4) grow-out of hard clam seed and planting on Town-owned underwater lands;
- 5) creation of hard clam management areas in certified areas to provide areas that are closed during the fall and opened in the winter for seasonal harvesting;
- 6) placement of mature spawner clams on Town underwater lands (in 1993, spawners were placed in small bay management areas in Lloyd Harbor and Duck Island Harbor);
- 7) cleansing of uncertified stock (deuration) in Peconic Bay for relay to certified areas in Town underwater lands;
- 8) starfish "mopping" as a means of predator control;
- 9) transplanting certified stock from Long Island Oyster Farms leased grounds to Town management areas; and
- 10) development of spawner stock sanctuaries to foster natural recruitment.

Declining shellfish stocks in certified areas have increased the temptation for the poaching of shellfish populations from uncertified areas, which are generally located in the most accessible portions of the bay complex (i.e., in shallow water close to shore) and comprise the most densely populated shellfish beds (due to the prohibition on harvesting). Although poaching is not a serious problem in the bay complex at the present time, any further depletion of shellfish stock in certified areas or any expansion of uncertified areas could lead to illegal harvesting, resulting in the possibility of shellfish-related illness due

to the marketing of tainted product taken from uncertified beds. If such illness outbreaks do occur, the marketability of shellfish from the bay complex will suffer significantly due to the imposition of sanctions by the Interstate Shellfish Sanitation Commission, which is charged with ensuring that the shellfish sanitation programs in individual states meet uniform minimum standards. These significant consequences provide the impetus for the Village and Town to take actions to ensure that further water quality degradation does not occur in the bay complex (e.g. imposition of best management practices for land development, implementation of programs to minimize boat sewage discharges, and exerting influence to effect improvements to area sewage treatment plants) and actions that reduce the incentive for poaching (especially relay programs to deplete shellfish stock in uncertified areas).

C. COMMERCIAL FISHING ACCESS AND SUPPORT SERVICES/FACILITIES

The provision of sites on the waterfront for baymen to access the commercial fishery resource (i.e., vessel mooring areas, and sites to load equipment and unload product) has become a problem issue for the Town of Huntington. Presently, there are several locations throughout the LWRA from which commercial fishermen can access their vessels. These include: Prices Bend, on the south side of Eatons Neck; West Shore Road, on Huntington Harbor; Halesite Town Dock (south float), in Huntington Harbor; Centershore Road, just north of Mill Dam Road, in Centerport Harbor; Cow Harbor Park, in Northport Harbor (formerly owned by Long Island Oyster Company).

Despite the existence of various locations throughout the bay complex which presently serve as access points to and from the water for commercial fishermen, all of these sites are less than ideal for this purpose. In general, the site-specific deficiencies pertain to: dock space, staging and offloading areas, ice houses and processing facilities, parking, and gear storage space. The Town is investigating the possible expansion of commercial access to alleviate the burden on existing facilities and to site a facility which provides off-loading and staging capabilities. The Town's investigative efforts have focused on the West Shore Road area in mid-Huntington Harbor. No sites within the Village of Lloyd Harbor are currently under consideration for use to supplement commercial fishing access.

2.3.6 VESSEL USAGE OF WATERWAYS WITHIN THE LWRA

As noted in Section 2.2.1, the coastal waters within the LWRA are heavily used by both recreational and commercial watercraft. The high intensity of use has caused conflicts and

problems with respect to waterway usage (including boat dockage, mooring and anchorage, as well as navigation). Many of these issues are discussed below. Issues related to commercial fishing are addressed separately in Section 2.3.5.

A. JURISDICTION

Jurisdiction with respect to over-water vessel uses within the LWRA is divided between the Village of Lloyd Harbor and the Town of Huntington. The Village has the exclusive authority to regulate the over-water use of vessels upon the waters within the Village, and within 1,500 feet of the Village shore (if the Village boundary coincides with the mean high water line). This gives the Villages the capacity to control mooring and anchoring, vessel speed, the use of personal watercraft, and recreational activities such as water skiing and wind surfing.

The Town of Huntington regulates the over-water use of vessels upon waters within its boundaries and up to 1,500 from the Town's shore, but not including areas within the Village or within 1,500 feet of the Village's shoreline. Additionally, since the Town owns the underwater land within its boundaries, the Town has the right to regulate all activities that entail the use of these bottom lands, but has limited authority over the bottom lands it owns which are within the Incorporated Villages.

B. NAVIGATION

Waterway hazards and obstructions within navigable waters include rocks (especially off East Fort Point on Lloyd Neck), and submerged and visible wrecks (including Huntington Harbor). Abandoned vessels are also hazards to navigation, and removal is difficult since they are generally not registered, which makes it difficult to trace the owner so that the costs of removal may be assigned to the responsible party. "Winter staking" by boaters attempting to secure mooring space for the upcoming boating season, particularly in Huntington Harbor, creates navigation hazards in the form of submerged or broken stakes. Floating debris (consisting of timbers, logs, pilings, etc.) is often generated as a result of storms and tides, or ice damage to structures. The Town Division of Harbors and Waterways (in the Department of Environmental Control) is generally responsible for removing navigation hazards within Town waters and usually performs this task in Village waters at the Village's request.

Navigation hazards also include shoals and bars within or in close proximity to navigation channels, particularly within the harbors, and excessively long docks. In the past, the U.S.

Coast Guard maintained channel markings in Huntington Harbor and Huntington Bay. However, the responsibility of placement and maintenance of private navigation aids presently lies with the Town and Village. The Village places and maintains all navigational aids in LWRA waters, except those placed by the U.S. Coast Guard (i.e., at the entrance to Lloyd Harbor and in the Huntington Harbor channel).

C. **DREDGING**

Dredging in the Village and Town is regulated by the U.S. Army Corps of Engineers (ACOE) and NYSDEC. Dredging activity taking place on Town-owned underwater lands, including areas within the 1,500-foot area of Village jurisdiction, is also regulated by the Town pursuant to Chapter 137 of the Town Code (Marine Conservation Law) and by the Village pursuant to Chapter 109 (Excavations) of the Village Code.

Dredging of public channels and mooring areas in Huntington has been performed in the past by the ACOE, the Suffolk County Department of Public Works (SCDPW) and by sand mining concerns under agreement with the Town. The ACOE dredged the Federal channel into the mouth of Huntington Harbor in about 1950. The SCDPW dredged local channels and mooring areas in several harbors under the Town's jurisdiction (i.e., Cold Spring and Huntington Harbor) during the 1960s. Private sand mining concerns dredged sand in portions of Huntington Harbor in the 1960s. Despite the fact that the channels through Huntington Harbor have not been dredged in more than 20 years, and it does not appear that maintenance dredging will be necessary in the short-term, some dredging will eventually be needed (especially in the lower harbor reaches, outside the Village of Lloyd Harbor LWRA).

If a public need for dredging is identified, the Town would request that Suffolk County undertake the work or, if a Federal Channel is involved (such as the channels leading into the mouth of Huntington Harbor), ACOE assistance may be requested. In either case, the Town may be required to assist in the project cost or to provide a suitable upland disposal site for the spoil. The Town may also opt to fund public dredging projects within its jurisdiction if monetary aid from the SCDPW or the ACOE is not forthcoming, although this would often render the project economically prohibitive. County policy dictates that public funds be used for dredging only in those channels which permit access to public facilities or for which some other well-defined public benefit has been demonstrated (e.g., to provide vessel access to shoreside commercial fishing facilities). The County's policy is to not fund dredging projects that serve privately-owned recreational facilities.

A major economic constraint on dredging projects within the Huntington/ Northport Bay Complex is the lack of suitable nearshore upland disposal sites for dredge spoil that may contain a large percentage of organic material, fine-grained particles, or toxic compounds such as petroleum hydrocarbons. The lack of such sites is the result of saturation of shoreline development, as well as the regulatory constraints in sensitive or high value natural resource areas. This situation creates the need to formulate alternatives for spoil disposal, such as trucking or barging to distant disposal sites, which entail greatly increased project costs. However, in cases where the dredge spoil consists of a large fraction of sand, beneficial uses for this material are relatively easy to find. A number of beaches have suffered recent erosion, for which suitable dredge spoil could provide some degree of mitigation (particularly West Neck Beach near the Lloyd Neck causeway, within the LWRA). Dredged sand could be utilized for this purpose with first priority given to public areas closest to the project site that are experiencing shoreline erosion.

Large tidal wetland areas were destroyed by the placement of spoil at the head of Huntington Harbor during dredging operations through the early 1960s. However, with the enactment of the New York State Tidal Wetlands Act, and the Town's Marine Conservation Law, the loss of vegetated tidal wetlands resulting from dredging and spoil disposal has been virtually eliminated.

One of the major components of the Comprehensive Harbor Management Plan for the bay complex should be an analysis of dredging needs and disposal options. Dredging needs should be evaluated not only in terms of the navigability of existing channels, but also with respect to the degree to which each channel serves for access to public or commercial fishing facilities. Disposal options should be prioritized so that spoil is used for beneficial purposes whenever possible. Where beneficial spoil applications are not feasible (due to contamination, logistical problems, or other reasons), the most environmentally sound and economical disposal option should be used. Available disposal sites should also be identified as part of the Harbor Management Plan.

D. VESSEL USE RESTRICTIONS

The Village of Lloyd Harbor regulates vessel activities (i.e., anchoring, moorings, docking, and vessel speed, etc.) within its jurisdiction by means of Article 12 of the Village Code. The Village has recently resumed control over vessel uses within the portion of the Village's jurisdictional area in Huntington Harbor; previously, this authority had been informally ceded to the Town. A Village-issued permit is required to utilize a mooring, dock or anchor within any portion of the LWRA. The Village of Lloyd Harbor

has appointed a Harbor Master to enforce laws in Village jurisdiction. The Town Harbor Master enforces all regulation of shellfishing within Village waters. Village and Town Harbor Masters and Bay Constables may enforce all State and local laws regulating vessel uses. The Suffolk County Police Marine Bureau also enforces State and local laws in Village and Town jurisdiction.

The Village has developed a water use plan for Lloyd Harbor, which is shown in Figure 4-2. The following are the major provisions of that plan:

- A special permit is required to moor or anchor a vessel over 16 feet long, or to operate under power, within the inner harbor.
- Water skiing is allowed in the northwest corner of the outer harbor, where no permit is required.
- Except in areas specifically designated for water skiing, the vessel speed limit is 5 knots.
- Transient anchorage is restricted to an area at the mouth of the harbor, to the south of the channel. No permit is needed for the use of this anchorage area.
- Anchoring and mooring is prohibited within the channel and the water skiing area.
- Overnight rafting is limited to three boats on a mooring or anchor.

The five knot speed limit applies within all of the Village's portion of Huntington Harbor.

In recent years, efforts to control "boating while intoxicated" (BWI) incidents have become increasingly more resolute. Although penalties even for first offenders have been toughened, this problem has become a more significant concern due to the intensified activities of waterfront nightclubs on Huntington Harbor.

2.3.7 HISTORIC RESOURCES

A. IDENTIFICATION OF HISTORIC RESOURCES

The Town of Huntington was established in 1653 and is rich in historic resources, which include numerous buildings, monuments, cemeteries, and other sites and landmarks that have been designated as historically significant. Some of these important historic resources, as described below, are located in the Village of Lloyd Harbor.

A number of the historic resources located in the Village have been listed on the State and National Register of Historic Places. The State and National Registers of Historic Places are the official lists of buildings, structures, districts, objects and sites significant in the history, architecture, archeology and culture of New York and the nation. The same eligibility criteria are used for the State and National Registers. All sites, structures, etc. in New York State that are listed on the National Register are concurrently listed on the State Register.

The National Historic Preservation Act of 1966 (amended in 1980 by Public Law 89-665) and the New York State Historic Preservation Act of 1980 (Chapter 354, Laws of 1980) are the legal basis for the National and State Register programs. In New York, these programs are administered by the Commissioner of Parks, Recreation and Historic Preservation, who is also the State Historic Preservation Officer. At the Federal level, the program is administered by the National Park Service.

State nominations for listing on the National Register are submitted to the National Park Service. Nomination proposals may be submitted by the staff of the State Office of Historic Preservation, a municipal official, an historic preservation board or commission, or a member of the general public (Part 427 - State Register of Historic Places) for review by the State Board for Historic Preservation. Listing of a property on the State Register by the Commissioner of the Office of Parks Recreation and Historic Preservation is usually concurrent with nomination to the National Register. The Commissioner, who is the State Historic Preservation Officer for purposes of the National Historic Preservation Act program submits nominations for the National Register. The State Historic Preservation Office keeps a survey log book of all properties submitted for its review.

The State Board of Historic Preservation will evaluate a nomination to determine if the eligibility criteria are satisfied. If it is determined that said criteria are met, the Board will make a recommendation to the State Historic Preservation Officer for approval of the nomination. Historic designations in the waterfront area that are found on these listings include historic districts (of which there are none in the Village of Lloyd Harbor) and individual structures (of which there are five within the Village). These are listed as follows:

<u>Street Address</u>	<u>Historic Name</u>
Browns Road	George McKeesson Brown Estate (Coindre Hall)
Lloyd Harbor Road	Joseph Lloyd Manor House
Lloyd Harbor Road	Henry Lloyd Manor House (Caumsett State Park)
Fort Hill Drive	Wood Estate (Fort Franklin)
Mill Pond	Lefferts/Van Wyck Mill Dam

Additionally, Friends World College on Plover Lane has been determined to be eligible for listing on both the National and State Registers.

B. PROTECTION AND PRESERVATION OF HISTORIC RESOURCES

As previously discussed, the Village contains a number of historic resources that are listed on the State and National Registers of Historic Places. A number of benefits apply to properties that are listed under the State and National Register Programs. These include:

- registered properties and properties determined eligible for the State and National Registers receive a measure of protection from the effects of Federal and/or State agency sponsored or assisted projects through a notice, review and consultation process;
- owners of depreciable, certified properties may take a 25 percent Federal income tax credit for the costs of certified, substantial rehabilitation as provided for under the Economic Recovery Tax Act of 1981 (P.L. 97-34);
- registered properties also receive priority consideration from Federal and State agencies in space rental or leasing (Public Buildings Cooperative Use Act of 1976 and New York State Historic Preservation Act of 1980, Section 4b); and
- owners of registered properties may apply for 50 percent matching grants-in-aid for preservation work, subject to available funding.

One of the weaknesses of the Federal program is that there are no restrictions placed on private owners of registered properties. Private property owners can sell, alter or dispose of their property as they wish. The only penalty to an owner who demolishes a certified

registered property is that the costs of demolition cannot be deducted from his/her Federal income tax (Economic Recovery Tax Act, 1981).

In addition to the National and State Registers of Historic Places, the Town of Huntington has enacted an Historic Districts, Building, and Landmarks Law (Chapter 198 of the Town Code). This law establishes an Historic Preservation Commission and sets procedures for this Commission to follow in assisting the Town to preserve, protect and perpetuate the character of historic sites and structures. In response to Chapter 198, and based on the recommendations of the Commission, the Town Board has approved the designation of a number of building and structures as locally significant historic landmarks. The Village of Lloyd Harbor does not presently have a similar historic preservation law.

In the absence of a local historic preservation law, the Village does not have the authority to fully prevent the destruction or alteration of historic resources, or adjacent structures that might impact these resources. Therefore, it is recommended that the Village enact historic preservation legislation, modeled on Town Law 198, that will preserve and protect the character of significant historic resources identified within their municipal boundaries.

2.4 SUMMARY OF PRIMARY ISSUES, PROBLEMS, AND OPPORTUNITIES

The following sections are categorized by topic, and subdivided into separate issues/problems and opportunities under each topic.

2.4.1 WATER QUALITY

Issues and Problems

- There are two major water quality impairment categories: point sources and non-point sources. Point sources include stormwater runoff from drainage systems and the Huntington and Northport sewage treatment plants. Non-point sources include street runoff and the pollutants carried therein, such as petroleum, sediment, coliform, etc. Waterfowl wastes and vessel wastes are also considered to be non-point sources. There is a need to improve and protect water quality in the LWRA by enhancing measures to control contaminant loadings.

- This LWRP focuses on measures that the Village can implement to achieve highest use level (i.e., shellfishing and primary contact recreation) in Lloyd, Cold Spring, and Huntington Harbors. However, the sources of water quality impairment, particularly in Cold Spring and Huntington Harbor, extend beyond the Village boundary. Therefore, coordinated, inter-municipal planning efforts are needed to effectively address water quality issues and problems, especially with respect to watershed-wide programs for stormwater management and the implementation of best management practices. The need exists for technical and financial assistance from the State and Federal government to accomplish this objective.
- The Village is generally characterized by a rolling topography. The disturbance of natural vegetation on sloped land during site development can cause erosion, which increases the transport of contaminants to adjacent surface waters. Enhanced sediment control measures are needed to mitigate this problem.
- The replacement of native vegetation with impervious surfaces and areas of turf during site development results in a significant increase in the runoff rate and associated contaminant loadings to receiving waters. This results in water quality impairments and the need for control measures. Wherever practicable, stormwater generated in areas of new development should be recharged to the ground via either individual leaching systems or common off-site facilities (e.g., recharge basins).
- Freshwater ponds which outlet to coastal waters act as natural sediment traps. However, the very nature of the sedimentation process causes these ponds to silt up, which diminishes their sediment removal capabilities and the resulting benefit provided in terms of the water quality of the receiving waters. A study is needed to determine which ponds in the LWRA have experienced excessive siltation, and to assess whether dredging is feasible in light of environmental considerations.
- Waterfowl wastes are a significant source of coliform contamination throughout the LWRA and adjacent areas. This problem is exacerbated by the introduction of artificial food sources, namely the feeding of waterfowl by humans. Therefore, any efforts to enhance public access to areas within the LWRA having waterfowl populations (e.g., at Lefferts Tidal Mill Pond) should include appropriate measures to control the artificial feeding of waterfowl.

2.4.2 WETLANDS AND HABITATS

Issues and Problems

- The coastal waters of the LWRA contain significant habitats and important shellfish and finfisheries. Some habitat areas, including the bird nesting colonies at Lloyd Point, are being adversely affected by human activities. The habitat value of this area, as well as the LWRA's other marine ecological resources, depend on increased public education and enforcement.
- Significant Coastal Fish and Wildlife Habitats of State-wide importance have been identified and their values and benefits as habitats have been measured. All of the shoreline area in the Village has been designated as critical environmental areas (CEAs). A CEA designation would automatically require a Type I classification under the SEQRA, which would require an in-depth environmental review for any action involving these lands. Lefferts Mill Tidal Pond is a resource of local importance which possesses habitat value, and should also be evaluated for potential CEA designation.

2.4.3 HARBOR SILTING

Issues and Problems

- Recent observations have noted a substantial deposit of silt/mud or sand on the bottom of Lloyd Harbor, particularly in the inner harbor. Since 1976 it is estimated that over 450,000 tons of material have been deposited, just in the inner harbor. Many years ago, culverts under Lloyd Harbor Road, at the south end of the causeway, connected the west end of Lloyd Harbor with a drainage way leading to Cold Spring Harbor. These culverts were subsequently filled in after they collapsed. It is not known if the siltation is a result of stagnant or reduced velocity tidal flow resulting from the lack of these culverts, but further study is warranted.

2.4.4 COASTAL EROSION AND FLOODING

Issues and Problems

- Much of the shoreline in the LWRA contains steep bluffs, which are active erosional features. Artificial measures to control the rate of bluff recession reduces the natural supply of sand to down-drift beaches, and can thereby cause accelerated erosion along adjacent shoreline segments, especially segments which lack structural protection. Consequently, erosion control structures should be used only where non-structural measures are shown to be impractical. Where such structures are determined to be appropriate, efforts should be made to apply them uniformly along the shoreline.
- Beach erosion is occurring at certain public facilities, including West Neck Town Beach, Lloyd Harbor Village Park, Caumsett State Park, and Target Rock National Wildlife Refuge. A study should be conducted to assess the seriousness of this coastal erosion problem within the LWRA. A priority list and strategy for mitigation should be formulated. Priorities should be established on the basis of public need and other applicable criteria. Where beach nourishment is the preferred mitigation option, these projects should be coordinated with dredging operations. Clean dredge spoil from the mouth of Huntington Harbor should be used for nourishment, dune rebuilding, etc.
- The erosion of the bluffs at Caumsett State Park has been accelerated by pedestrian traffic. Measures are needed to mitigate this problem.

2.4.5 SCENIC AND VISUAL RESOURCES

Opportunities

- Lefferts-Van Wyck Mill Dam is an important scenic resource that is essentially closed off to land-side access to the general public due to its location among private residences. Water-side access is presently limited to private vessels. The opportunity exists to open public access at this site by arranging to provide water-side access by means of a skiff based at the Coindre Hall property or at Gold Star Battalion Beach.
- The opportunity exists to enhance and preserve visual resources along the Village's shoreline by preventing the installation of docks and other coastal structures that would adversely affect those resources.

2.4.6 LAND USE

Issues and Problems

- The Village of Lloyd Harbor could prepare a conceptual plan for the future subdivision of the Immaculate Conception Seminary property to determine the level of development that would be appropriate for this parcel and to guide this development in an effort to retain vegetation on slopes, control soil erosion during construction, and preserve open space and historic structures and landforms.

Opportunities

- There is an opportunity to preserve the undeveloped State-owned right-of-way located southeast of Lloyd Harbor Village Park. This land is presently used by the Village for passive recreation and a nature preserve under a short-term lease with the State. A portion of the property is used by the Cold Spring Harbor Laboratory for corn breeding investigations under a separate short-term lease. The Village should pursue efforts to acquire this land from the State to continue the current, low intensity uses. Furthermore, the zoning of these parcels is changed from A-1 Residence to Public Open Space, in order to promote the objective of preservation in perpetuity. Similarly, other publicly-owned properties are rezoned for recreation and conservation uses, as listed in Table 5-1 at the end of Section V (see Section 5.2.B).

2.4.7 DETERIORATED, UNDERUTILIZED, AND ABANDONED SITES

Opportunities

- Coindre Hall is a unique facility but is deteriorated, underutilized and in need of revitalization. No other sites of this character and quality in the LWRA present a similar opportunity for revitalization, so efforts are warranted to effectively utilize this property for public benefit. The upland portion of this site should be redeveloped with cultural uses through an adaptive reuse plan. There is also an opportunity to use the waterfront portion of the property for water-dependent purposes, such as a marine education facility or a waterfront park. The significant ecological characteristics of the site should be preserved and protected under any redevelopment plan.

2.4.8 PUBLIC ACCESS, RECREATION AND PUBLIC TRUST

Issues and Problems

- The Town, by colonial grant and patent, owns much underwater land, and, in some cases, there have been limited conveyances of these lands to private interests. The Town has done a study of Trustee lands in the past, and there is a need to update and expand this study by conducting a comprehensive review of formerly Town-owned underwater lands. This study would be used for refinements to an amended, Comprehensive Harbor Management Plan in the future.

Opportunities

- The opportunity exists for expanded public access to be provided at Lefferts Tidal Mill Dam. This objective could be achieved by means of a skiff based at the dock on the Coindre Hall property or at Gold Star Battalion Beach.

2.4.9 COMMERCIAL FISHING AND SHELLFISHING

Issues and Problems

- "The Sand Hole" receives excessively high seasonal usage on weekends as an anchorage for recreational water craft, which may cause locally elevated coliform levels during the summer months. An investigation should be conducted to determine if the level of boat usage threatens this area with conditional (or seasonal) decertification for shellfishing. If decertification is imminent, appropriate restrictions should be adopted to ensure that the sanitary quality of the shellfish stock in this area is maintained.

Opportunities

- Vessel mooring and anchorage areas adversely affect the availability of shellfish beds, due to potential water quality degradation caused by discharges of boat sewage. Efforts are needed to ensure that the Village's coastal waters, particularly Lloyd Harbor, remain available for both shellfishing and recreational use. Effective implementation of the no-discharge zone requirements in Huntington and Lloyd Harbors, scheduled to commence in June 1995 pending State legislative approval, will represent a major opportunity to achieve this objective. Appropriate boater education (e.g., signs, flyers, etc.) is needed to

ensure maximum use of the pumpout facilities and compliance with the no-discharge zone requirements.

2.4.10 VESSEL USAGE OF WATERWAYS

Issues and Problems

- Comprehensive harbor management planning is needed to address a number of issues on an inter-municipal basis, including:

Boat Wastes - A Federal vessel waste no-discharge zone has been established in Lloyd and Huntington Harbors. Adoption of this designation at the State level is needed. The ultimate goal should be to extend the no-discharge zone to the entire Huntington/Northport Bay Complex and the Oyster Bay/Cold Spring Harbor Complex.

Dredging - a comprehensive analysis of the need for dredging, including: the identification of areas that may need dredging in the near future; identification of areas that may need dredging over the longer term; evaluation of dredging priorities, based on established public benefit criteria; and identification of suitable disposal sites, particularly those which involve beneficial use of the spoil

2.4.11 HISTORIC RESOURCES

Opportunities

- There are numerous historic resources found in the Village; however, presently there is no local law that protects these resources. The opportunity exists for the Village to preserve and protect the character of significant historic resources identified within its municipal boundaries, through the enactment of historic preservation legislation.

Table 2-1

Incorporated Village of Lloyd Harbor - District 0403

Publicly-Owned Lands

Listed below are the publicly-owned lands in the Village of Lloyd Harbor LWRA. The number preceding each listing refers to the respective parcel number on Figure 2-5.

Tax Map Description

<u>Ownership</u>	<u>Sec-Block-Lot</u>	<u>Acreage</u>	<u>Description</u>
1) State of New York	001-02-1	10.9	Lloyd Point wetlands
2) State of New York	001-03-1	2.0	Lloyd Point wetlands
2) State of New York	001-03-2	12.4	Lloyd Point wetlands
2) State of New York	001-03-4	2.9	Lloyd Point wetlands
3) State of New York	002-01-1.1	1413.3	Caumsett State Park
4) Town of Huntington	002-01-3	0.08	Cemetery in Caumsett State Park
5) United States	004-02-4	78.00	Target Rock National Wildlife Refuge
5) United States	004-02-7	1.88	Target Rock National Wildlife Refuge
6) Nature Conservancy	006-02-35.1	15.7	Preserve
6) Nature Conservancy	006-03-20.3	23.1	Preserve
6a) U.F. School Dist. #2	007-01-37	20.02	Vacant school property
7) Village of Lloyd Harbor	008-01-22	25.1	Finch Marsh
8) Village of Lloyd Harbor	008-02-24,25	0.3	Vacant land on Lloyd Harbor
9) Village of Lloyd Harbor	008-03-4	43.9	East Beach

Table 2-1 (continued)
Incorporated Village of Lloyd Harbor
Publicly-Owned Lands

<u>Ownership</u>	<u>Sec-Block-Lot</u>	<u>Acreage</u>	<u>Description</u>
11) Village. of Lloyd Harbor	009-02-2.1	2.9	Vacant land on west side of West Neck Road causeway
12) Village of Lloyd Harbor	009-02-6.1	20.3	Wetland at head of Lloyd Harbor
13) State of New York	010-01-1	106.05	Right-of-way
14) Town of Huntington	012-02-1	29.3	West Neck Beach Town Park
15) Village of Lloyd Harbor	012-02-14	37.2	Lloyd Harbor Village Park
16) State of New York	012-02-15	27.6	Right-of-way
16) State of New York	012-02-17	9.6	Right-of-way
17) Village of Lloyd Harbor	012-02-16	2.0	Pistol range site
18) S.C.W.A.	013-02-1	5.8	Pump-Station
19) State of New York	013-02-8	6.37	Right-of-way
20) U.F. School Dist. #2	013-03-28	12.2	School property
21) Village of Lloyd Harbor	013-04-22	2.02	Fiske Bird Sanctuary
21) Village of Lloyd Harbor	013-04-29	5.22	Fiske Bird Sanctuary
22) Village of Lloyd Harbor	013-04-35	2.15	Police Station
23) Nature Conservancy	014-02-16	15.79	Lefferts Mill Pond Preserve
24) County of Suffolk	014-02-73	18.1	Coindre Hall
25) Village of Lloyd Harbor	016-01-66	2.0	Village Hall
26) Village of Lloyd Harbor	017-03-2	27.05	Jennings Field
TOTAL ACREAGE		----- 1984.03	

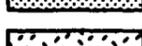
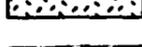
VILLA OF LLOYD HARBOR LOCAL WATER REVITALIZATION PROGRAM



NOTE: THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. REFER TO THE OFFICIAL NEW YORK STATE MAPS FOR A PRECISE DELINEATION OF TIDAL AND FRESHWATER WETLAND BOUNDARIES

OYSTER BAY NATIONAL WILDLIFE REFUGE

SCALE 1:24,000 (1" = 2,000)
0 2,000 4,000 6,000
1,000

- LEGEND**
-  FORMERLY CONNECTED TIDAL WETLANDS
 -  HIGH MARSH OR SALT MEADOW
 -  INTERTIDAL MARSH
 -  COASTAL SHOALS, BARS & MUDFLATS
 -  FRESHWATER WETLANDS, PONDS & WATERCOURSES
 -  BLUFFS

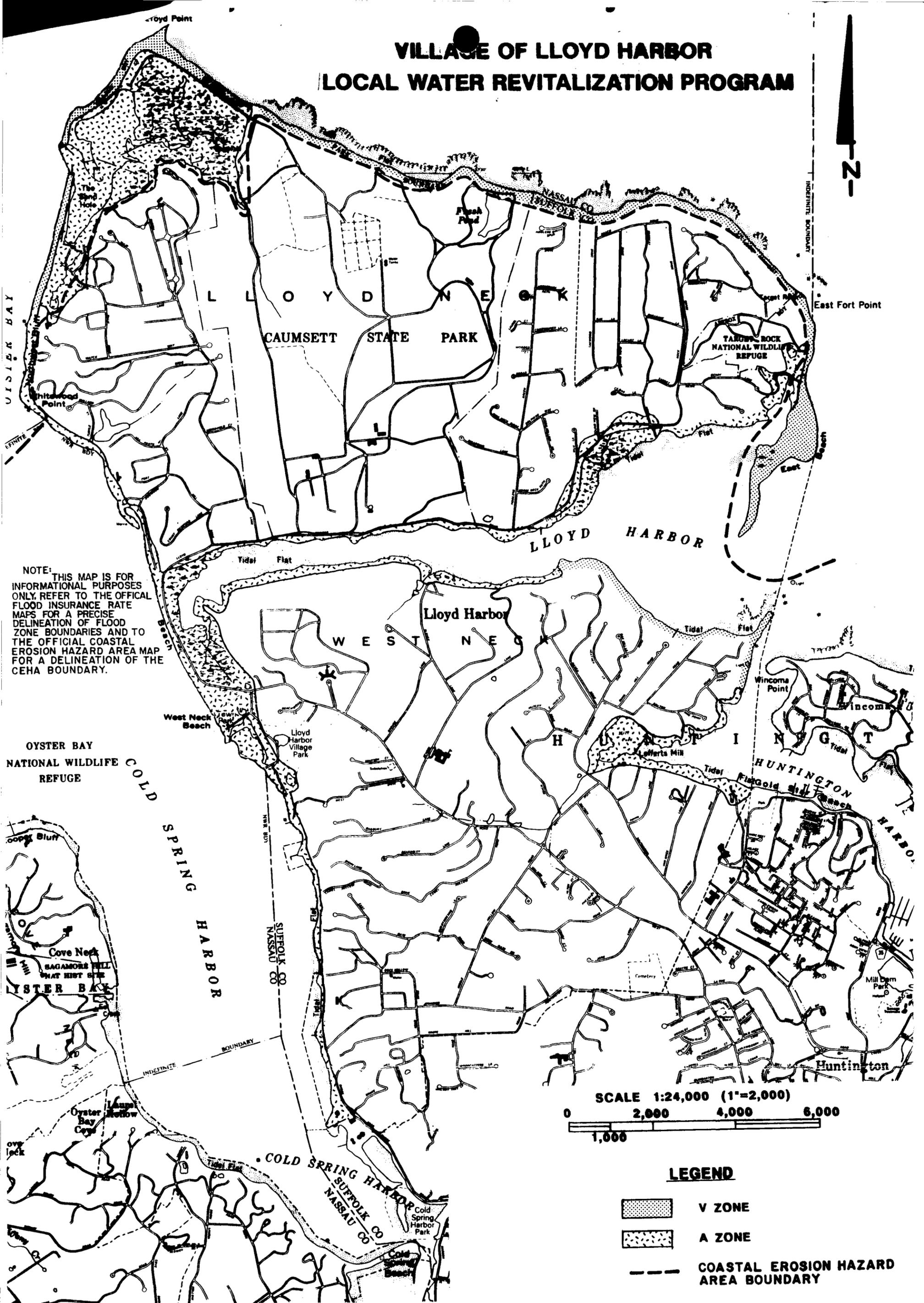
MAP SOURCE: NEW YORK STATE DEPARTMENT TRANSPORTATION, URBAN AREA SERIES, 1991

CASHIN ASSOCIATES, P.C.

FIGURE 2-1

NATURAL FEATURES

VILLAGE OF LLOYD HARBOR LOCAL WATER REVITALIZATION PROGRAM



NOTE: THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY. REFER TO THE OFFICIAL FLOOD INSURANCE RATE MAPS FOR A PRECISE DELINEATION OF FLOOD ZONE BOUNDARIES AND TO THE OFFICIAL COASTAL EROSION HAZARD AREA MAP FOR A DELINEATION OF THE CEHA BOUNDARY.

OYSTER BAY NATIONAL WILDLIFE REFUGE

SCALE 1:24,000 (1"=2,000)
0 2,000 4,000 6,000
1,000

LEGEND

- V ZONE
- A ZONE
- COASTAL EROSION HAZARD AREA BOUNDARY

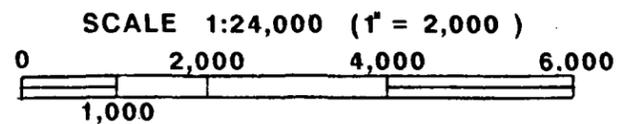
MAP SOURCE: NEW YORK STATE DEPARTMENT TRANSPORTATION, URBAN AREA SERIES, 1991

CASHIN ASSOCIATES, P.C.

FIGURE 2-2

FLOOD ZONE BOUNDARIES

VILLAGE OF LLOYD HARBOR LOCAL WATER REVITALIZATION PROGRAM



LEGEND

- RESIDENTIAL
- RECREATIONAL
- INSTITUTIONAL
- OPEN SPACE
- COMMERCIAL

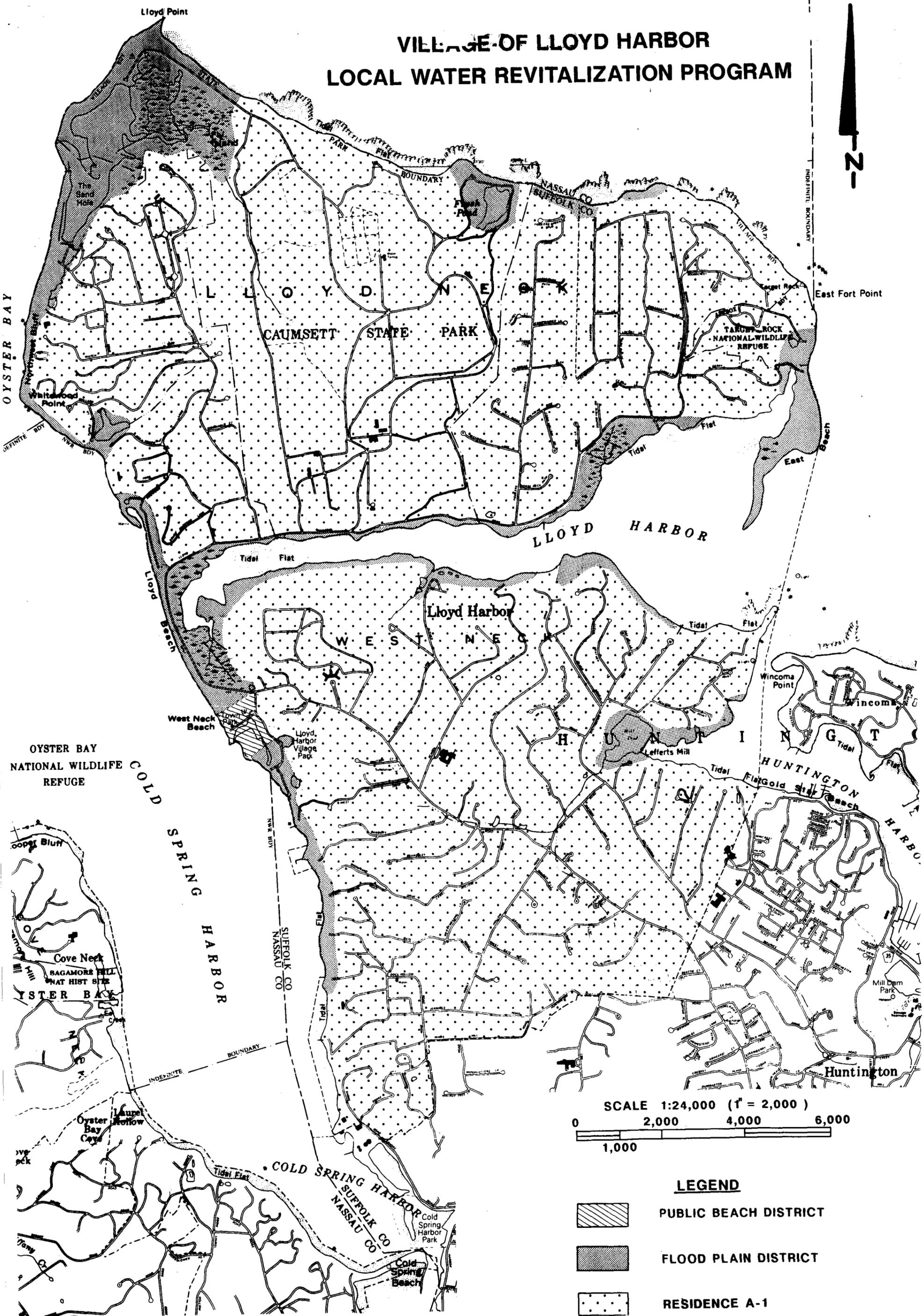
MAP SOURCE: NEW YORK STATE DEPARTMENT
TRANSPORTATION, URBAN AREA SERIES, 1991

CASHIN ASSOCIATES, P.C.

FIGURE 2-3

PREEXISTING LAND USE

VILLAGE OF LLOYD HARBOR LOCAL WATER REVITALIZATION PROGRAM



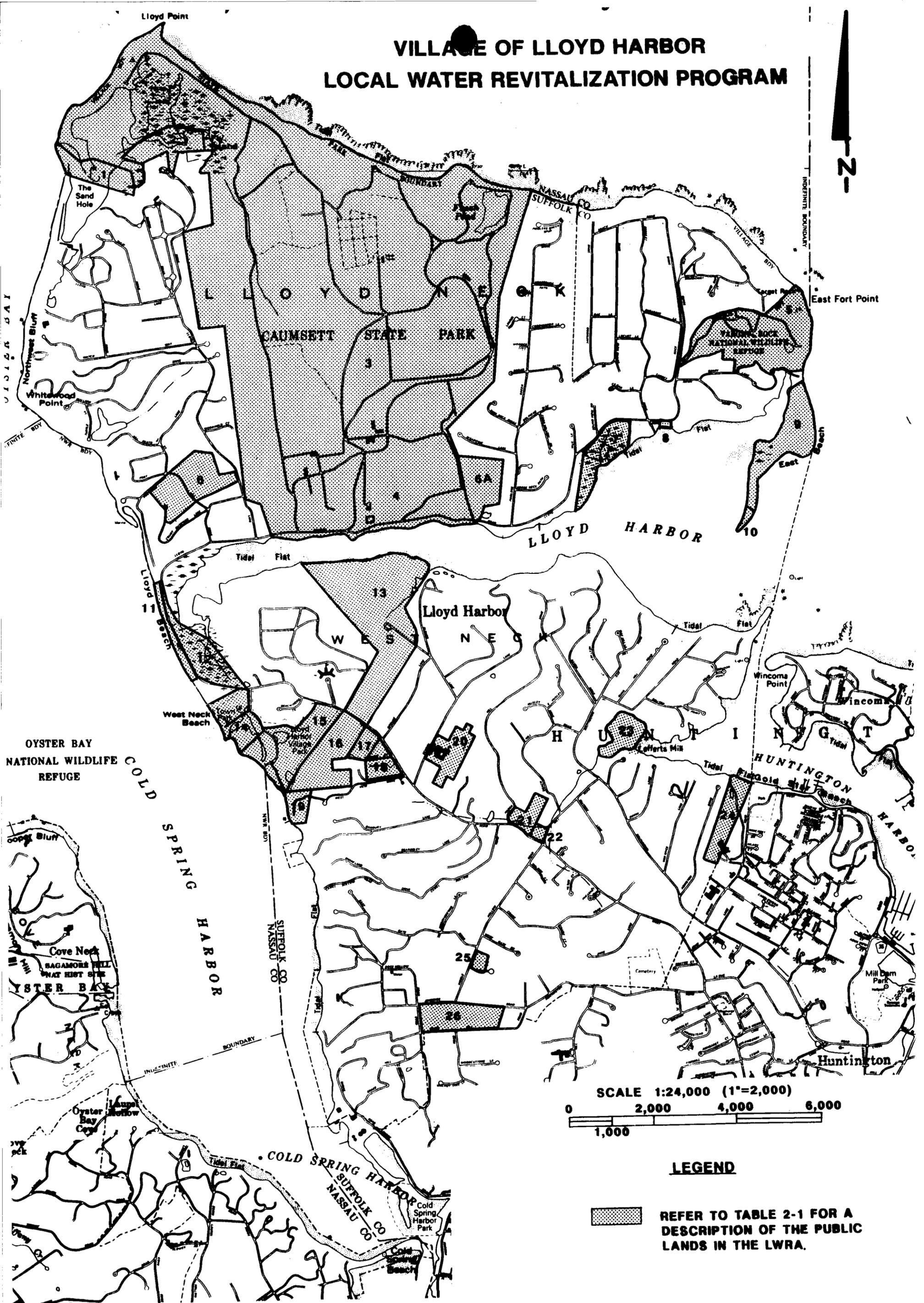
MAP SOURCE: NEW YORK STATE DEPARTMENT
TRANSPORTATION, URBAN AREA SERIES, 1991

CASHIN ASSOCIATES, P.C.

FIGURE 2-4

PREEXISTING ZONING

VILLAGE OF LLOYD HARBOR LOCAL WATER REVITALIZATION PROGRAM



SCALE 1:24,000 (1"=2,000)
0 2,000 4,000 6,000
1,000

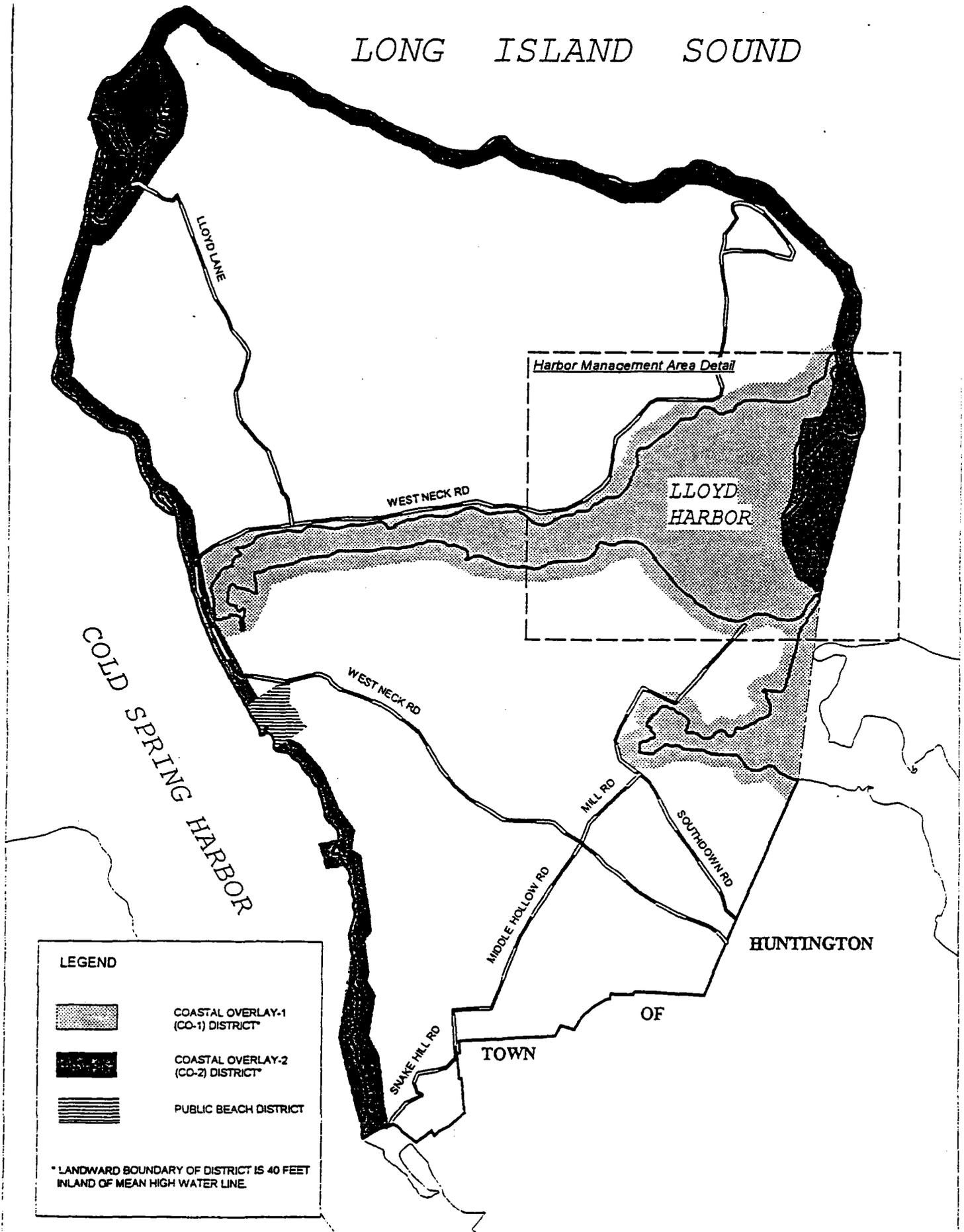
LEGEND
 REFER TO TABLE 2-1 FOR A DESCRIPTION OF THE PUBLIC LANDS IN THE LWRA.

MAP SOURCE: NEW YORK STATE DEPARTMENT
TRANSPORTATION, URBAN AREA SERIES, 1991
TOWN OF HUNTINGTON TAX MAPS, 1993
CASHIN ASSOCIATES, P.C.

FIGURE 2-5

PUBLIC LANDS

LONG ISLAND SOUND



Village of Lloyd Harbor Local Waterfront Revitalization Program
 Harbor Management Area Boundary Map

Figure 2.6



Significant Coastal Fish and Wildlife Habitats Village of Lloyd Harbor Local Water Revitalization Program



FIGURE 2-7