

APPENDIX A

HARBOR MANAGEMENT PLAN

VILLAGE OF HAVERSTRAW HARBOR MANAGEMENT PLAN

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I. HARBOR MANAGEMENT AREA

The Coastal Area Boundary follows the Village of Haverstraw's western municipal boundary. Thus, the entire incorporated Village of Haverstraw lies within the State designated Coastal Management Area.

The boundary of the Village of Haverstraw Local Waterfront Revitalization Area (the "Waterfront Revitalization Area") is intended to include land and other features of the village which may have a direct and significant impact on the coastal waters of the Hudson River. As shown on Map 1A in the LWRP, the northern and southern and western limits of the Waterfront Revitalization Area follow the respective boundaries of the Village of Haverstraw. The eastern waterside boundary extends 1,500 feet of the mean low water line of the Hudson River. Similarly, the Harbor Management Area includes the shoreline uses and all lands underwater extending 1,500 feet of the mean high water line.

II. DESCRIPTION AND HARBOR MANAGEMENT ISSUES

A. VILLAGE AND HARBOR DESCRIPTION

As shown on Map 1 in the LWRP, the Village of Haverstraw is located along the west bank of the Hudson River, approximately 35 miles north of New York City and about 15 miles south of Bear Mountain State Park.

The Village of Haverstraw is located in the east-central portion of Rockland County. Rockland County is separated from Westchester County by the two largest bays of the Hudson River's course: Haverstraw Bay and the Tappan Zee. The length of the Village's shoreline along the Hudson River is 3.2 miles.

A portion of the Palisades Interstate Park is located along the Village's western border. This portion of the Park is called High Tor State Park, and is largely undeveloped. The Long Path runs through High Tor, with hiking as a major activity.

B. HARBOR NAVIGATION AND SAFETY

Depths in the Hudson River adjacent to the Village of Haverstraw range from 0 feet at the water's edge to between 10 and 17 feet just west of the river's deeper middle channel. As shown on the attached Harbor Chart, a 32-foot deep federal shipping channel is located approximately 3,000 east of the Village in the Hudson River.

C. HISTORIC MARITIME RESOURCES

Brickworks fueled the growth of the village's economy. By 1883, there were 42 brick yards in operation along the Hudson, which employed 2,400 workers and produced more than 300 million bricks annually. Thanks to the area's natural yellow and blue clay deposits, the industry flourished for more than 100 years while Haverstraw became known as "the brick making center of the world." Haverstraw's proximity to the Hudson River enabled it to fuel the growth of industrial activity into the 20th century.

Two piers - Emeline and Christine - have historically been associated with the Village's waterfront. The Village hopes to develop a permanent ferry service at the foot of Main Street, and develop a pier for fishing and other recreational uses on a new pier located at the foot of South Street.

D. MARITIME ECONOMY / COMMERCIAL USERS

The economy of the Village has always depended on the economic activity generated by the waterfront. As the Village's waterfront declined so too did the economy of the Village, particularly its Main Street business district. The Village's maritime economy is not extensive. The predominant land uses within the Waterfront Revitalization Area are commercial, industrial and residential. In the center of Haverstraw's waterfront are two local marinas: Rockland-Bergen Boat Club with 40 boat slips and a boat launch/ramp; and Haverstraw Elks Lodge with approximately 35 slips. A former vacant industrial site south of the marinas, known locally as the Keahon property, was recently improved and is now the temporary site of the Haverstraw Ferry landing. It consists of approximately 256 parking spaces for commuters taking the trans-Hudson ferry service to Ossining.

The MIRANT Power Plant is a water dependent use because it requires large amounts of water for its operation. A portion of the facility containing fuel tanks is located in the northerly portion of the waterfront area. The power plant is generally a negative aesthetic and environmental factor in the Village. Intakes in Bowline Pond may be causing accelerated shoreline deterioration.

The Tilcon Industries rock quarry is also a water dependent use because it utilizes shipping facilities on the Hudson River. The facility is served by one dock situated parallel to the shore. Barges are anchored at buoys several hundred feet offshore and are towed into the dock for loading. They are loaded with aggregate and then moored offshore for pick up with tugboats. Machinery on the dock includes equipment for loading and conveying aggregate onto the barges.

E. UNDERWATER LANDS

The ownership of underwater lands adjacent to the Haverstraw shoreline has been researched at the NYS Office of General Services in Albany. As shown on the maps included in the Appendix, ownership is divided among a variety of individual and industrial users. It is clear that few of these users continue to assert an interest in these underwater lands. Underwater lands from a point approximately 1,500 feet east of the Village in the Hudson were granted to the United States in 1937.

F. WATERFRONT INFRASTRUCTURE

Waterfront infrastructure includes the local streets which provide pedestrian and vehicular access to the waterfront, the ferry landing pier, and the two marina facilities noted earlier. The Rockland-Bergen Boat Club also has a boat launch/ramp. Neither of the two marinas has fueling capabilities or pump-out facilities. Neither are other boater services available at each marina.

Depending on location, the shoreline is stabilized with concrete debris, and/or riprap, concrete walls / bulkhead, and timber piling. In a few locations, the shoreline slopes gradually to the water line.

Revitalization of the waterfront will necessitate additional investments in the shoreline stabilization, to allow construction of public pedestrian access, pavilions, and seating areas along the waterfront, installation of new docks and marina facilities, and a floating restaurant / learning center, and construction of a pedestrian bridge. Map 5A, included with the LWRP, illustrates the needed shoreline improvements

G. WINDS AND WAVES

Historically, the Village's shoreline has generally been adequately protected by the stabilization measures noted in item F above.

As needed, consideration should be given to non-structural measures to control erosion from wind and wave action. Measures to reduce wave energy could include wave fencing, and floating breakwaters.

H. FLOODING

According to maps produced by FEMA, there are several 100-year floodplains in the Village. The largest coincides with the Minisceongo Creek basin, located east of Samsondale Avenue and west of Bowline Point Park. An additional 100-year floodplain includes a significant portion of Bowline Point Park. Another significant area is located in the vicinity of the former Rockland Fuel Company site. The remaining 100-year floodplains are narrow strips of land adjacent to the Hudson River.

The only wetland area within the Village lies in the northeast section, along the Hudson River to the west of Bowline Point Park adjacent to the facilities of the MIRANT Power Plant. This wetland is part of a larger tidal marsh which extends into the Towns of Haverstraw and Stony Point, and corresponds to the 100-year floodplain. The wetland is permanently saturated and is flooded for most or all of the year and therefore acts as a natural retention basin for the storage of floodwaters. The wetland area generally abounds with wildlife, being a natural habitat for many species of bird life, insect, amphibians, and reptiles. Generally, wetland areas are considered unsuitable for development as any alteration can damage the sensitive ecology of the area. This wetland area is surrounded by an undeveloped strip of land owned by MIRANT. The narrow width of this property precludes any future development within this area.

I. RECREATIONAL BOATING & PERSONAL WATERCRAFT USE

As noted earlier, Rockland-Bergen Boat Club with 40 boat slips and a boat launch/ramp; and Haverstraw Elks Lodge with approximately 35 slips are located along the waterfront in Haverstraw.

With the growth of kayaking on the Hudson River, kayaking opportunities have been included in the Village of Haverstraw's redevelopment program, as shown on Map 5A in the LWRP.

Currently waterfront access for kayakers is located at Emeline Village Park.

Personal water craft (PWC) use has been noted to be increasing in the Hudson River adjacent to the Village of Haverstraw. Such use has the potential for adverse effects on marine life and vegetation in shallow areas. Adverse effects have been observed from

the noise generated by personal water craft, as well as by oil leaking from the engines powering these types of craft. The Village's LWRP includes a recommendation to consider promulgating a local law regulating PWC use within the Village's jurisdiction.

J. PUBLIC ACCESS AND MARITIME RECREATION

Public access to the Hudson River waterfront in the Village consists of three different types: Village parkland, the local marinas, and the commuter ferry service. See Map 9 in the LWRP, Waterfront Access Sites for locations. Each type of facility offers a different range of facilities.

1. Bowline Point Park - This park is owned and maintained by the Town of Haverstraw. The Bowline Pond Trailway allows the general public to come right up to the Hudson River's course.
2. Jefferson Street Park - also known as Landslide Memorial Park. One-half acre recreation area located at the end of Jefferson Street.
3. Emeline Village Park - includes a small floating dock used by transient boaters. Occasionally, visiting tall ships and larger vessels moor offshore and use small boats to bring people to shore at this location.
4. Local marinas - The two marinas are located in a small cove just north of the Village Department of Public Works Facility. In total, these marinas provide moorings for about 75 privately owned boats. Use is restricted to individuals that rent the use of the facility.
5. Ferry - The Haverstraw Commuter Ferry with docking facilities and related parking is convenient and accessible to local residents and to the downtown area.
6. Dutchtown Playground - One acre area located along Riverside Avenue immediately south of Tilcon's overhead conveyors.
7. Palisades Interstate Park land located in the extreme southern end of the Village along the Hudson River shoreline. This site includes a Greenway path connection to Hook Mountain State Park. The undeveloped park land includes a stone beach.

Existing and potential waterfront access points are outlined on Map 5 of the LWRP.

K. WATER QUALITY AND NATURAL RESOURCES

Water Quality

The Hudson River is the dominant water course in the Village of Haverstraw. The river is a partially stratified estuary with hydrodynamics characterized by river geometry, freshwater inflow, tidal motion and a density induced circulation. Haverstraw Bay lies immediately offshore from the Village.

New York State Department of Environmental Conservation (NYSDEC) has classified the reach of the Hudson river adjacent to Haverstraw as "SB". This classification allows for primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes. The "S" simply identifies that the water is brackish or saline.

Water quality standards established by DEC for particular constituents are presented below for SB waters.

- Total Coliform <2400/100 ML
- Total Coliform <200/100 ML
- Dissolved Oxygen >5.0 ML

Any uses along the Hudson River that would raise the coliform counts or reduce the level of dissolved oxygen would be in violation of these standards and subject to penalties. Under the present standard, the waters of the Hudson River in the vicinity of Haverstraw meet the standards for public swimming areas.

Rivers, streams and lakes in the planning area have also been classified for water quality by NYSDEC. That portion of the Minisceongo Creek that is tidal is classified "I" indicating that the water is suitable for secondary contact recreation. The lower marsh and freshwater portions of the Minisceongo Creek are class "D" waters.

Significant Habitat

Fish and wildlife habitat within Haverstraw Bay encompasses the entire river, which is the widest section of the Hudson estuary. Haverstraw Bay has extensive shallow areas (less than 15 feet deep at mean low water) which deepen to a navigation channel (which is dredged to maintain a depth of about 35 feet) in the western half of the area. During much of the year, this area is the place where freshwater from the upper river mixes with salt water from the Atlantic, producing predominantly brackish water habitats, with salinities varying from 0-10 parts per thousand (ppt). Habitat disturbances, such as dredging, shoreline filling and bulkheading, waste disposal, and pollution from upland and in-river sources, have all been significant during the recent history of this area.

Haverstraw Bay is a critical habitat for most estuarine-dependent fisheries originating from the Hudson River. This area contributes directly to the production of in-river and ocean populations of food, game, and forage fish species. Consequently, commercial and recreational fisheries throughout the North Atlantic depend on, or benefit from, these biological inputs from the Hudson River estuary.

Habitat Description: Haverstraw Bay extends approximately six miles on the Hudson River, from Stony Point to Croton Point, in the Towns of Stony Point, Haverstraw, and Clarkstown, in Rockland County, and the Town of Cortlandt, in Westchester County (7.5' Quadrangle: Haverstraw, NY; NOAA Chart No. F, 12343).

The fish and wildlife habitat encompasses the entire river over this approximate six-mile reach, which is the widest section of the Hudson estuary. Haverstraw Bay has extensive shallow areas (less than 15 feet deep at mean low water) that deepen to a navigation channel that is dredged to maintain a depth of about 35 feet) in the western half of the area. During much of the year, this area is the place where freshwater from the upper

river mixes with salt water from the Atlantic, producing predominantly brackish water habitats, with salinities that vary according to many factors, among which are inshore/offshore, freshwater flow, time of tide, and most importantly, the depth where measurement is taken. In Haverstraw Bay, channel bottoms can have salinities as high as 12-15 parts per thousand (ppt) in mid-winter and late-summer and early-fall. The land area surrounding Haverstraw Bay supports a variety of land uses, including industrial, commercial, residential, and recreational developments, although much undeveloped forestland also remains.

Habitat disturbances, such as dredging, shoreline filling and bulkheading, waste disposal, and pollution from upland and in-river sources, have all been significant at some time during the recent history of this area.

Fish and Wildlife Values: Despite various habitat disturbances, Haverstraw Bay possesses a combination of physical and biological characteristics that make it one of the most important fish and wildlife habitats in the Hudson River estuary. The regular occurrence of brackish water over extensive areas of shallow bottom creates highly favorable (if not essential) conditions for biological productivity within the estuary, including submergent vegetation, phytoplankton and zooplankton, aquatic invertebrates, and many fish species.

Although the location of the salinities vary or change in a much narrower scope than “annual” or “seasonal”, significant changes can be daily, even hourly. Frequent changes of 10%-50% can occur depending upon strength of tide or weather phenomenon. This is a very dynamic aspect of the lower brackish reach of the Hudson. Haverstraw Bay regularly comprises a substantial part of the nursery area for striped bass, American shad, white perch, tomcod, and Atlantic sturgeon that are produced in the Hudson River. Other anadromous species, such as blueback herring and alewife, spawn in upstream freshwater areas, but move south and concentrate in this area before leaving the river in the fall.

Haverstraw Bay is also a major nursery and feeding area for certain marine species, most notably bay anchovy, Atlantic menhaden, and Atlantic blue crab. Depending on location of the salt front, a majority of the spawning and wintering populations of Atlantic Sturgeon in the Hudson may reside in Haverstraw Bay. Shortnose sturgeons usually winter in this area, as well. Significant numbers of waterfowl do occur in Haverstraw Bay during spring (March-April) and winter (September to January) migrations. In addition to migratory waterfowl, passing through to points south, there is a significant population of wintering waterfowl that spend the winter in Haverstraw Bay and Peekskill Bay, e.g., Bufflehead, Ruddy Ducks, Common Mergansers, Ring-necked Ducks, Black Ducks, Mallards, and Canada Geese.

Haverstraw Bay is a critical habitat for most estuarine dependent fisheries originating from the Hudson River. This area contributes directly to the production of in-river and ocean populations of food, game, and foraging fish species. Young-of-the-year bluefish and weakfish are two species of marine spawners that use the Haverstraw Bay complex for a feeding and nursery area. Consequently, commercial and recreational fisheries throughout the North Atlantic depend on, or benefit from, these biological inputs from the Hudson River estuary. Haverstraw Bay has been designated as a Significant Tidal Habitat by the NYS Department of Environmental Conservation. The DEC has identified Submerged

Aquatic Vegetation (SAV) as an important component of the Significant Tidal Habitat. The term Submerged Aquatic Vegetation (SAV) refers to plants that live under tidal waters. Most of these plants are eel grass or macroalgae. The NYS Department of Environmental Conservation's Tidal Wetlands Mapping Unit is currently undertaking a project to identify areas of SAV's, map these areas using a GIS (Geographical Information System) computer program, and make the information available to be used in a GIS program.

According to the NYS Department of Environmental Conservation, construction over or within areas containing Submerged Aquatic Vegetation should be avoided.

A list of Submerged Aquatic Vegetation and description of Submerged Aquatic Vegetation mapping is included in the Appendix. A map of the Haverstraw waterfront showing Submerged Aquatic Vegetation is also provided on page 20.

In addition to Haverstraw Bay, Bowline Pond, while not included in the Significant Tidal Habitat designation, does possess significant amounts of Submerged Aquatic Vegetation.

L. WATERFRONT LAND USE, ZONING AND REDEVELOPMENT

The predominant land uses within the Waterfront Revitalization Area are commercial, industrial and residential. In addition, the northerly and southerly ends of the Waterfront Revitalization Area consist of recreational uses. Most of the privately-owned land along the Hudson are industrial sites. Starting at the northern boundary of the Village shoreline, a property owned by Southern Energy, located just west of Bowline Park, contains fuel storage tanks associated with the MIRANT Power Plant.

The former Empire Chair Factory is located just south of Bowline Park, though separated by a small channel of water. This property contains the remains of a relatively large industrial building which was in operation until March 1995. A fire in the summer of 1995 destroyed most of the large structure. Vacant waterfront land locally known as the Damiani property separates the former chair factory site and Emeline Park. South of Emeline Park is an open space property and restaurant site jointly owned by the Village of Haverstraw and Scenic Hudson. The area further south contains single-family residences and several vacant lots.

In the center of Haverstraw's waterfront are two local marinas: Rockland-Bergen Boat Club with 40 boat slips and a boat launch/ramp; and Haverstraw Elks Lodge with approximately 35 slips. The formerly industrial site south of the marinas, known locally as the Keahon property, was vacant until recently. Currently it is the temporary site of the Haverstraw Ferry landing. It consists of approximately 256 parking spaces for commuters taking the trans-Hudson ferry service to Ossining. Directly south, the Rockland Fuel site, vacant since 1995, was formerly used as a fuel storage depot. Adjacent inland sites in the area include two small machine shops, the Village Department of Public Works, and several single family residences. South of this area is a large vacant parcel which was formerly used for the manufacture of concrete pipe. South of this area is the Tilcon Industries industrial complex, which includes a quarry, a rock processing facility, and an asphalt plant.

Other land uses within the Waterfront Revitalization Area include a restaurant immediately south of Emeline Park, and the Haverstraw Elks Lodge located about 500 feet south of the restaurant. As noted above, Bowline Park is located at the northerly end of the Waterfront Revitalization Area, while a portion of the Palisades Interstate Park is located at the southerly end of the Waterfront Revitalization Area.

Commercial uses within the Waterfront Revitalization Area are concentrated in the central business district which consists of parts of Broadway, Main Street and New Main Street. The central business district primarily consists of a variety of small retail and personal service establishments. Most of these establishments are oriented to serve the needs of Haverstraw's residents, and do not serve the wider region.

Within the central business district are a number of upper story residences as well as first floor residences that were formerly street level commercial uses. A small area of residences is located along First Street, just west of the Hudson River. In addition, a neighborhood of just over 30 single-family residences is located south of the Tilcon Industries land holdings.

Zoning

Map 8 in the LWRP shows the Existing Zoning plan of the Village of Haverstraw.

The area immediately adjacent to the waterfront, has been categorized into four zoning districts: SP, Special Purpose; WD, Waterfront Development; PI, Planned Industrial; and R-1, First Residence. The remainder of the Village is zoned for a variety of residential districts including a Planned Residential Development (PRD) and various business districts. There is a Central Business District (CBD), Professional Office District (PO), a Highway Business District (HB), and a Mountain Protection Overlay District (M) which works in conjunction with the underlying district to restrict development on areas with steep slopes.

The northern and southern most areas of the waterfront have been placed into the SP zoning district. This zoning district was created to permit public parks and recreational facilities, public schools, public and semi-public uses, and cemeteries. The two SP zoning districts along the Hudson River contain Bowline Park and the large wetland just west of the park, and State parkland in the southerly portion of the Village.

The current WD zoning district is located in the central portion of Haverstraw's waterfront. The purpose of this zoning district is to provide for the development of uses generally associated with waterfront activities. Uses permitted by right include boat hauling, launching, mooring, dry storage and dry sailing facilities; public and private recreational facilities; docking facilities for tour boat services and similar passenger vehicles; maritime centers and similar facilities which utilize the waterfront for recreational, educational, cultural or scientific uses; waterfront trails, parks, and scenic overlooks; supplies, equipment, materials and parts used in connection with boats and/or fishing; facilities for the sale and/or rental of boats, new and/or used. Special permit uses include marinas, including related uses such as boat dockage, clubhouses, locker rooms, equipment sales, eating and drinking facilities and boat services facilities; multiple dwellings (subject to the standards of the Planned Residential District); restaurants, excluding drive-in and fast food restaurants; business, professional and government offices; light industrial uses; solid waste management facilities and/or

resource recovery facilities; and commuter passenger ferry service with docking facilities and related parking. Much of the future development of Haverstraw's waterfront area will occur within this area currently zoned WD.

Waterfront land within the Planned Industrial (PI) zoning district consists of the Tilcon Industries facility. This zoning district permits the following selected uses: light industrial uses, research and development laboratories, offices, and automotive uses as-of-right. Heavier industrial uses including quarries, concrete plants, and bulk oil storage among other uses are permitted by special permit. However, the waterfront area will continue to be used in conjunction with the existing quarry operation into the foreseeable future (99 years).

Just south of the PI zoning district is a small pocket of residences in a R-I zoning district. This zoning district is intended to permit the development of single-family dwelling units, along with a number of compatible uses which include churches, parks and playgrounds, schools, museums, libraries, community centers, and fire, police and similar public buildings. Permitted densities are the same as those in the existing WD district.

Potential Redevelopment Sites

The following is a listing and description of vacant, underutilized and deteriorated sites within the waterfront coastal area of the Village of Haverstraw. These sites are identified on Map 4, Selected Existing Conditions of the LWRP.

1. The Warren Court property, formerly a residential site, requires environmental remediation activities prior to redevelopment.
2. Former ambulance site
3. The former site of the Empire Chair Factory is currently not in use. The site contains the remains of a relatively large industrial building, which occupies much of the property.

This site is ideal for a mixed-use, residential, commercial/retail development which would allow public access to the waterfront and enable the greenway path/or riverfront promenade to reconnect the Village of Haverstraw, particularly the downtown, with its waterfront.

4. A vacant 1.5 acre parcel located between the former Empire Chair factory property to the north and Emeline Park to the south known as the Damiani property. The property is currently vacant, although there are some old pier footings that extend about 250 feet into the Hudson River.
5. The site south of Emeline Park, owned by the Village and Scenic Hudson, offers opportunities for expansion of the waterfront park. A portion of the site is occupied by Civile's Restaurant, a tenant of the Village. The existing parking lot on this site is currently being reconfigured to improve parking for restaurant and park patrons.
6. The 6.5 acre property just north of the Rockland Fuel Company in the industrial area east of West Street was vacant and deteriorating until recently. This site is currently developed for parking for 250+ cars to serve commuter ferry service between the Village of Haverstraw in Rockland County and the Village of Ossining in Westchester County.

7. The Rockland Fuel site, used as a fuel storage depot until 1995, still contains deteriorated buildings and tanks which contribute to the general appearance of blight and deterioration in the waterfront area.

8. The Village Department of Public Works (DPW) site is an underutilized site at a waterfront location. As part of the LWRP it is proposed that the DPW facility be relocated to a non-waterfront location.

9. The property that lies between the above-noted waterfront industrial area and Tilcon Industries is currently vacant. The site was formerly used for the manufacture of concrete pipe. The site was approved for a townhouse development a few years ago, but the project was not constructed. This site provides an opportunity to improve public access to the waterfront and create public amenities which would benefit the entire village.

10. The 7.2 acre property owned by Tilcon Industries located east of the CSX railroad tracks and west of West Street/Short Clove Road is vacant and underutilized.

In addition, there are a variety of small parcels located in the waterfront coastal area are vacant and underutilized or contain deteriorated, dilapidated, and obsolete buildings. These parcels contribute to the general appearance of blight and deterioration in the waterfront coastal area.

III. PROPOSED WATER USES

The Village of Haverstraw recognizes the need to manage their nearshore areas of the Hudson River and have integrated the Village of Haverstraw Harbor Management Plan within the LWRP. A Harbor Management Plan addresses conflict, congestion and competition for space in the use of a community's surface waters and underwater lands and provides the opportunity to identify various alternatives for the optimum use of the waterfront and adjacent water surfaces.

Section II identified the key harbor management issues concerning water use in the Village of Haverstraw. These are the large number of vacant, underutilized and deteriorated sites in conjunction with two large industrial water-dependent uses; the presence of significant habitat just offshore within Haverstraw Bay; the need for additional shoreline improvements; and to a lesser extent the current tenure of underwater lands.

As shown on Map 7 in the LWRP, the Village has identified the following existing water-dependent uses. These are proposed to be maintained within the waterfront area:

1. The Haverstraw – Ossining commuter passenger ferry
2. The MIRANT Power Plant
3. The Rockland-Bergen Boat Club and boat launch/ramp (40 slips).

4. The Haverstraw Elks Lodge (35 slips).

5. The Tilcon Industries site.

As noted earlier, the Village has identified the following locations as those best suited for water-dependent or water-enhanced uses.

1. The Warren Court property.

2. Former ambulance site

3. The former site of the Empire Chair Factory.

4. The vacant 1.5 acre Damiani parcel.

5. The site south of Emeline Park, owned by the Village and Scenic Hudson.

6. The 6.5 acre property just north of the Rockland Fuel Company in the industrial area east of West Street which currently supports the parking area for the Haverstraw-Ossining commuter ferry service. (Former Keahon site)

7. The Rockland Fuel site.

8. The Village Department of Public Works (DPW) site.

9. The property between the above-noted waterfront industrial area and Tilcon Industries. (Former pipe manufacturing site)

10. A 7.2 acre property owned by Tilcon Industries located east of the CSX railroad tracks and west of West Street/Short Clove Road.

Map 7 included in the LWRP shows the Proposed Land and Water Uses. Map 5 shows Existing and Potential Waterfront Access Sites. These maps, in conjunction with Map 9: Proposed Projects, illustrate the Village's objectives for the waterfront and water surface areas.

Continuous Public Pedestrian Waterfront Access

The Village intends to require continuous public pedestrian access along the majority of its waterfront, with connections to trailways in Hook Mountain State Park to the south, and other parklands to the north. As shown on Map 9 in the LWRP, selected portions of the promenade would connect to, and be supplemented by, trailways within the interior of the Village.

The continuous public pedestrian access would take the form of a promenade / esplanade of uniform width and would include overlooks and a pedestrian bridge (see Map 5A: Proposed Waterfront Promenade for an illustrative plan).

Waterfront Amenities and Uses

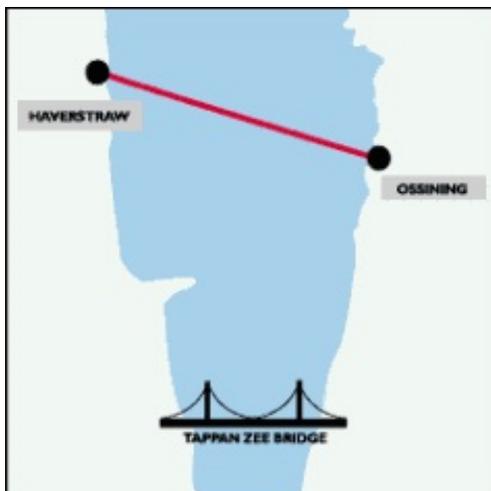
In addition to overlooks, features along the waterfront would include seating areas, pavilions, landmark poles, flagpoles and historic markers, a canoe / kayak dock, boat docks and ramps in several locations, improvements to the Village's Emeline Park (including a café terrace, information pavilions, and rest rooms, and a Recreation / Fishing Pier. An information pavilion with rest rooms would be required for the West Street Stair area at the west end of the existing marina cove.

As shown on Map 5A, additional features being considered for the waterfront include a marina adjacent to Site A (with docks for approximately 40 slips as well as a floating dock for ferries and excursion boats), a potential marina east of the Elks Club property, a floating restaurant and ecological learning center adjacent to Site B, and enhanced floating docks (for transient boater use) adjacent to the shore near South Street. To increase the waterfront's function as a tourist and visitor destination, the Hudson Valley Children's Museum is expected to relocate to a waterfront location at the foot of Main Street.

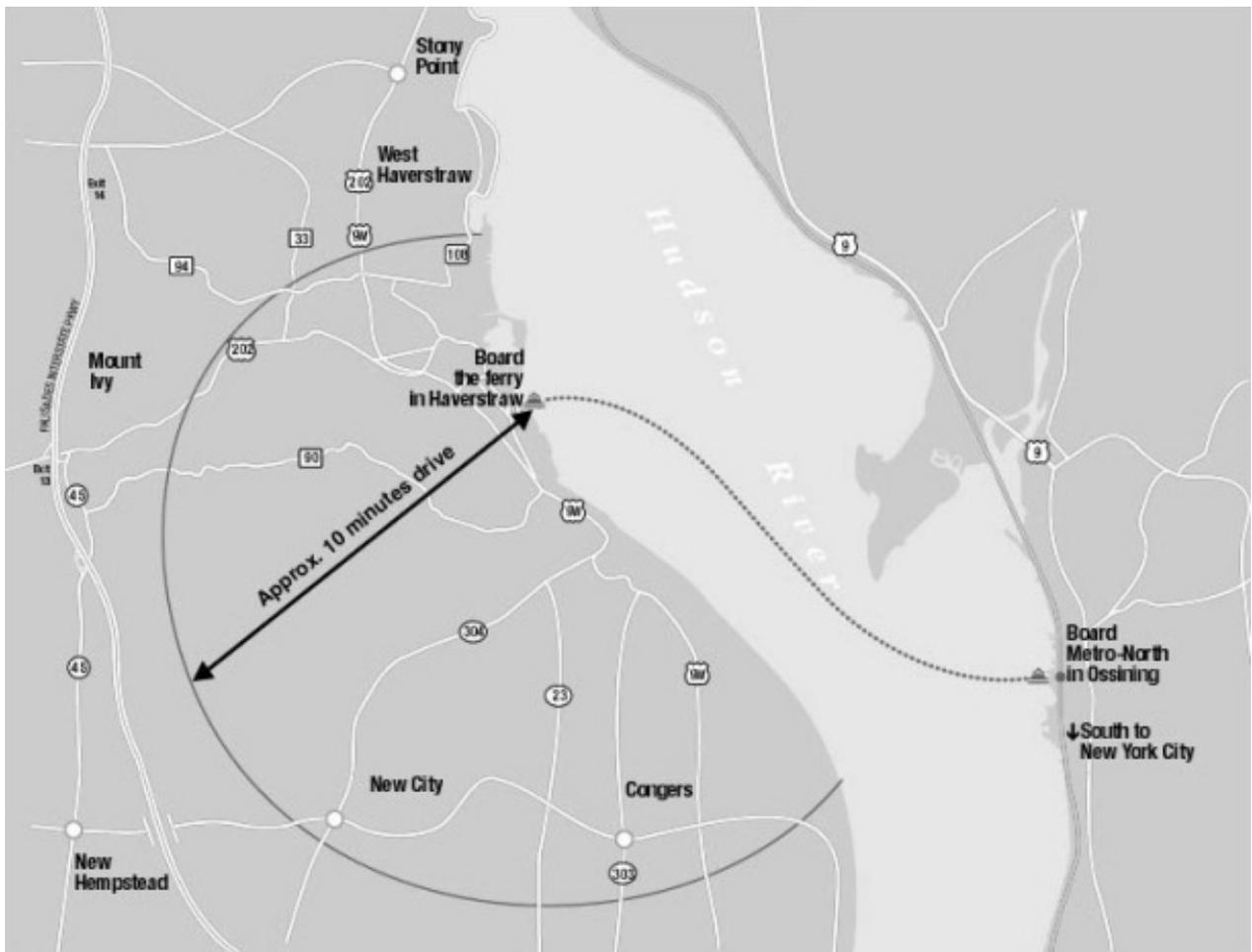
Commuter Ferry

As noted earlier, the Haverstraw-Ossining commuter ferry is currently operating from the Keahon property to the south of the Village's Central Business District, at the end of Dr. Girling Drive. This location was intended to be temporary until a location near the CBD at the foot of Main Street became available. This permanent location for the ferry landing facility would have the advantage of being multi-modal (i.e., located at a public transportation node), immediately adjacent to the downtown central business district area. A more central location would allow ferry service to be accessible to a larger population than those able to drive or walk to the current site. Signs throughout the Village of Haverstraw direct travelers and commuters to the ferry landing site.

The ferry route is shown below:



The ferry service is provided by NY Waterway via a 97-passenger Sea Otter, with 600-horsepower engines capable of traveling at 33 knots (40 miles per hour). As of April 2003, six ferry departures are scheduled in the morning (five during the peak), and nine return arrivals are scheduled in the evening (including seven during the peak, one in the off-peak afternoon, and one in the after-peak evening). The current ferry and connecting railroad schedule is shown below.



Effective April 28, 2003 through October 24, 2003												
Mornings to NY		Morning Peak	Off-Peak	Off-Peak								
Ferry	Lv. Haverstraw	05:56 AM		6:28 AM	6:58 AM	7:29 AM				8:14 AM		8:48 AM
	Ar. Ossining	6:13 AM		6:44 AM	7:14 AM	7:45 AM				8:30 AM		9:04 AM
		EXPRESS	LOCAL	EXPRESS	LOCAL	EXPRESS	LOCAL	LOC/EXP	EXPRESS	LOCAL	EXPRESS	LOCAL
Metro-North	Lv. Ossining	6:23 AM	6:30 AM	6:51 AM	7:23 AM	7:52 AM	7:34 AM	8:10 AM	8:37 AM		9:11 AM	
	Ar. Tarrytown	6:32 AM	6:38 AM	7:01 AM			7:42 AM	8:35 AM	8:47 AM	8:53 AMC	9:21 AM	9:28 AMC
	Ar. Yonkers		6:57 AM				8:03 AM	8:51 AM		9:12 AMC	9:32 AM	9:47 AMC
	Ar. Marble Hill		7:08 AM				8:15 AM			9:22 AMC		9:57 AMC
	Ar. 125th St.	6:56 AM	7:20 AM	7:25 AM	7:52 AM		8:27 AM	9:06 AMC	9:11 AM	9:34 AMC	9:50 AM	10:09 AMC
	Ar. GCT	7:07 AM	7:31 AM	7:36 AM	8:05 AM	8:35 AM	8:40 AM	9:18 AMC	9:23 AM	9:45 AMC	10:01 AM	10:20 AMC

C Connection required. Change at Tarrytown.

(1) Passengers can board at Ossining for Haverstraw, except at 9:04AM. Morning ferries may leave Ossining up to four minutes earlier than times indicated.

Evenings to Haverstraw	Off-Peak	Evening Peak									
		EXPRESS	LOCAL	EXPRESS	LOCAL	EXPRESS	EXPRESS	EXPRESS	LOCAL	EXPRESS	EXPRESS
Metro-North	Lv. GCT	3:41 PM	4:15 PM	4:31 PM	4:55 PM	5:17 PM	5:54 PM	6:15 PM	6:20 PM	6:50 PM	7:23 PM
	Lv. 125 St	3:51 PM	4:25 PM	4:41 PM	5:05 PM	5:27 PM	6:04 PM		6:30 PM	7:00 PM	7:33 PM
	Lv. Marble Hill	3:59 PM	4:35 PM		5:18 PM				6:40 PM		
	Lv. Yonkers	4:05 PM	4:45 PM	4:55 PM	5:27 PM				6:51 PM	7:14 PM	7:45 PM
	Lv. Tarrytown	4:23 PM	5:05 PM	5:12 PM	5:48 PM	5:51 PM	6:28 PM	6:49 PM	7:10 PM	7:25 PM	8:03 PM
	Ar. Ossining	4:32 PM	5:14 PM	5:22 PM	5:55 PM	6:01 PM	6:38 PM	6:59 PM	7:19 PM	7:35 PM	8:13 PM
Ferry	Lv. Ossining	4:37 PM		5:27 PM		6:08 PM	6:43 PM	7:14 PM		7:44 PM	8:18 PM
	Ar. Haverstraw	4:53 PM		5:43 PM		6:22 PM	6:56 PM	7:29 PM		8:00 PM	8:33 PM

Evening Ferries may leave Ossining up to five minutes earlier once all customers board.

(1) Passengers may board at Haverstraw for Ossining, except 9:35 PM. Evening ferries may leave Haverstraw up to four minutes earlier than arriving times shown.

According to ridership figures provided by the Metro-North Railroad, which operates the railroad portion of the ferry / railroad service, currently over 325 persons per day use the service. After the introduction of high-speed ferry service in July 2002, ridership increased substantially, more than doubling within several months. Average daily ridership in March 2003, was 326 persons, an increase of 126 percent from the prior year's daily average of 144 persons.

Ferries are scheduled in conjunction with Metro-North Commuter Railroad service. Fares range between \$2 for children to \$2.75 for seniors, to \$3 for adults. Free parking is provided at the ferry landing site. The lot is attended Monday to Friday between the hours of 4:30AM and 10:00AM, and 5:00PM and 10:30PM.

Existing Marina Slips

As noted earlier, marina facilities are currently located at two facilities in the Haverstraw Harbor area -- the Rockland – Bergen Boat Club and the Haverstraw Elks Lodge. The Rockland-Bergen Boat Club also has a boat launch/ramp. Neither of the two marinas has fueling capabilities or pump-out facilities. Neither are other boater services available at each marina. Given the demand for such facilities in the area, additional marina slips are desirable.

Shoreline Improvements

Revitalization of the waterfront will necessitate additional investments in the shoreline stabilization, to allow construction of public pedestrian access, pavilions, and seating areas along the waterfront, installation of new docks and marina facilities, and a floating restaurant / learning center, and construction of a pedestrian bridge. Map 5A, included with the LWRP, illustrates the needed shoreline improvements.

Special Anchorage Area

As noted above, a marina is proposed to be located adjacent to Site A. In addition to the marina, this Harbor Management Plan proposes to locate a Special Anchorage Area just east of this marina. Special Anchorage Areas are areas where vessels not exceeding 65 feet in length are not required to carry or exhibit lights when at anchorage. Special anchorages are for recreational vessels only and are under the jurisdiction of the Secretary of Transportation through the Commandant of the Coast Guard.

Bowline Pond

As a protected area along the Village's waterfront, Bowline Pond is an ideal location for a marina, or other water-dependent use.

IV. POLICIES AND IMPLEMENTATION

Harbor management plans address many maritime planning issues. They consider regional needs and, as applicable, the competing needs of commercial shipping and recreational boating, commercial and recreational fishing and shellfishing, aquaculture, waste management, mineral extraction, dredging, public access, recreation, habitat and other natural resource protection, water quality, open space needs, aesthetic values, common law riparian or littoral rights and the public interest in underwater lands.

The table below lists the traditional planning issues and identifies their level of focus in the Village of Haverstraw Harbor Management Plan:

Issue	Focus
1. Economic Growth	Moderate: Revitalization of the Village's waterfront is intended to increase activity along the waterfront and adjacent central business district, having a concomitant positive effect on the Village economy.
2. Underwater Lands	Low:
3. Waterfront Infrastructure	Moderate: Revitalization and increased use of the Village's waterfront will necessitate additional investment in shoreline stabilization as part of any waterfront plan.
4. Winds and Waves	Low: Shoreline stabilization measures identified in #3 above should be adequate.
5. Navigation and Safety	Low: A federal shipping channel is located approximately 3,000 feet east of the Village shoreline. This channel is not likely to be adversely affected by revitalization activities.
6. Recreational Boating	High: Revitalization of the Village waterfront will take the form of enhancements and additions to existing recreational boating resources. Construction of additional marina slips, and approval of a Special Anchorage are considered high priorities. The Village's LWRP contains a recommendation to review the feasibility and desirability of adopting a local law that regulates personal watercraft (PWC) use.
7. Public Access	High: Increasing public access to the Village waterfront, along with enhancing the Village waterfront as a regional destination, are considered high priorities.
8. Flooding	Low: With the exception of the former Rockland Fuel Company site, flooding is not a problem at this time along the waterfront. .
9. Water Quality	High: The proximity of Haverstraw Bay with its critical fish habitat requires that revitalization and increased use of the Village waterfront maintain and if possible, improve on current levels of water quality.
10. Natural Resources	High: The proximity of Haverstraw Bay with its critical fish habitat requires that revitalization and increased use of the Village waterfront maintain and if possible, improve on current levels of water quality.
11. Maritime Economy / Commercial Users	Low: This HMP proposes to maintain the current commercial users that depend on waterfront locations – the MIRANT power plant and Tilcon Industries.
12. Waterfront Zoning	Moderate: Changes in the Village waterfront zoning plan may be necessary to implement the LWRP, and associated HMP.
13. Historic Maritime Resources	Moderate: Revitalization of the waterfront to include two piers – Emeline and Christine – which have historically provided public access.
14. Maritime Events	Moderate: Special events along and on the waterfront will be an important component of any plan to increase activity. These events can include maritime events as well as on-shore events..

APPENDIX

Hudson River Submerged Aquatic Vegetation

Submerged aquatic vegetation (SAV) is an important habitat and site of primary production in many aquatic ecosystems. Until recently, there was no baseline information on SAV extent or distribution in the tidal freshwater Hudson River. In 1994, a collaboration was initiated between the Institute of Ecosystem Studies (IES), the Hudson River National Estuarine Research Reserve/NYSDEC and the Cornell Laboratory for Environmental Applications of Remote Sensing (CLEARs, now the Cornell Institute for Resource Information Systems (IRIS)).

The project was undertaken in two separate time periods with different sources of funding. In 1995, Phase I (Hyde Park to Castleton) was initiated with NOAA and Hudson River Foundation funds. Subsequently in 1997, the remaining portions (Hastings to Hyde Park and Castleton to Troy) were undertaken in Phase II with N.Y. State Environmental Protection Funds through the Hudson River Estuary Program.

A four-category classification system was developed including Open Water Upland/Intertidal; *Vallisneria americana*, and *Trapa natans*. Of primary interest is *Vallisneria americana*, the predominant species of Submerged Aquatic Vegetation. The Upland/Intertidal category includes intertidal marshes and mudflats which were largely exposed at time of photography.

OW - Open Water

Definition - Water areas including the Hudson River, tributary rivers, bays, coves with no indicators of submerged rooted vegetation, upland vegetation or dry land. The water surface is unobscured by vegetation or cultural features. River-bed and submerged flats can be seen through clear water.

UP/INT - Upland/Intertidal

Definition - Dry land with or without upland vegetation or intertidal marsh vegetation. It is important to note that tidal wetlands with emergent macrophytes were mapped in the combined Upland/Intertidal category. For instance, *Phragmites* (common reed) is clearly identifiable in our photos but is mapped as Upland/Intertidal. The railroad grade on the eastern shore of the Hudson River defines the upland boundary. Bays and coves east of the railroad are considered outside the study area and have not been interpreted.

VA - *Vallisneria americana* (water or wild celery, tape grass)

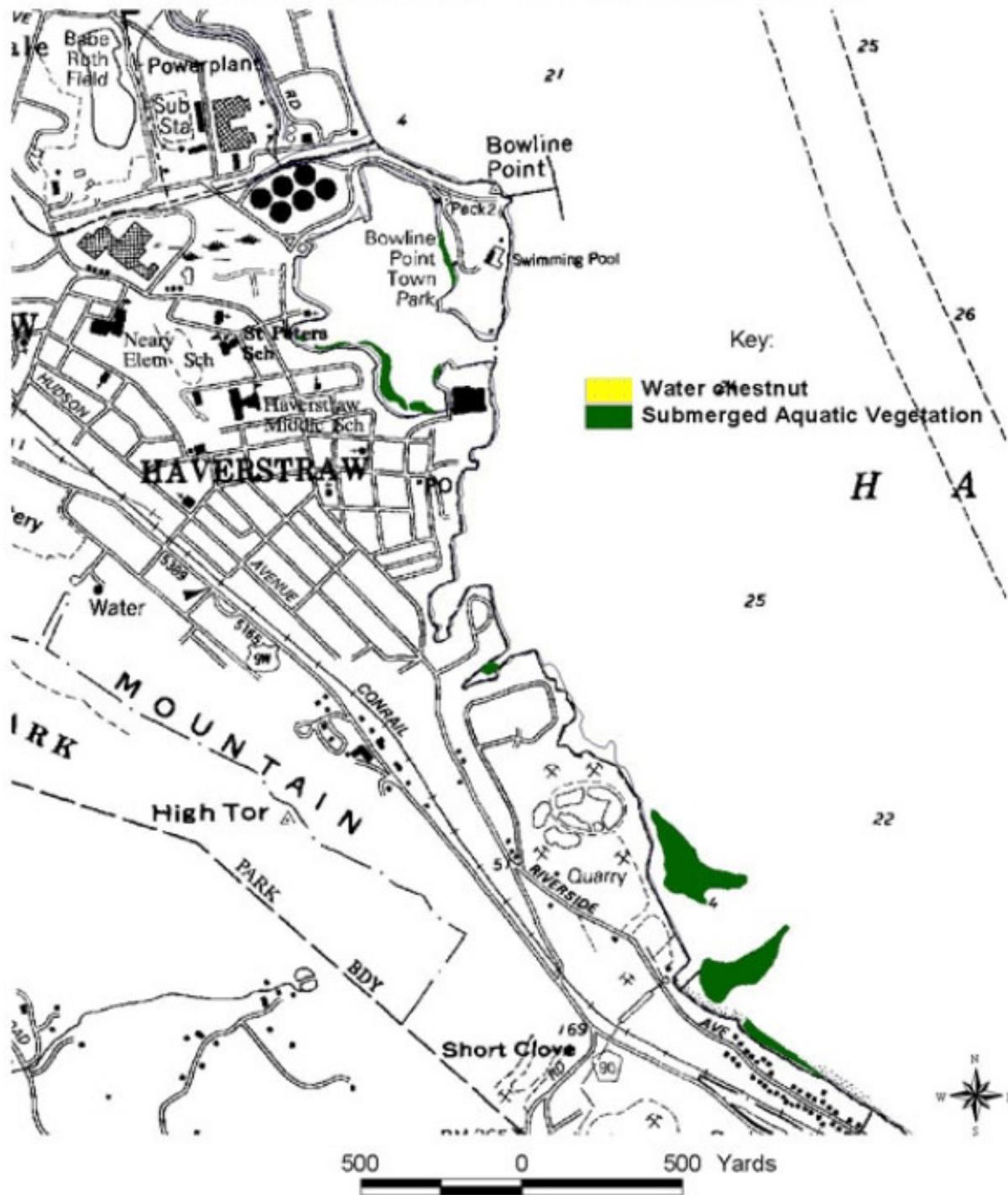
Beds of *Vallisneria americana* as well as beds of mixed vegetation including *Vallisneria americana*. Other species possibly present include Eurasian water milfoil (*Myriophyllum spicatum*), various pondweeds and naiads. They range from light green-brown to dark green-brown to dark green-blue. The vegetation appears at or below the surface of the water and exhibits a fine bumpy texture to a smooth velvet texture. When the substrate is light in color, a pattern of dark mottled patches can be seen.

North of Albany there are frequent occurrences of very narrow linear beds of *Vallisneria* located adjacent to the shoreline. These features are generally less than three meters wide and often less than two meters in width.

TN - *Trapa natans* (water chestnut, water nut), Beds of *Trapa natans*, rooted with floating leaves.

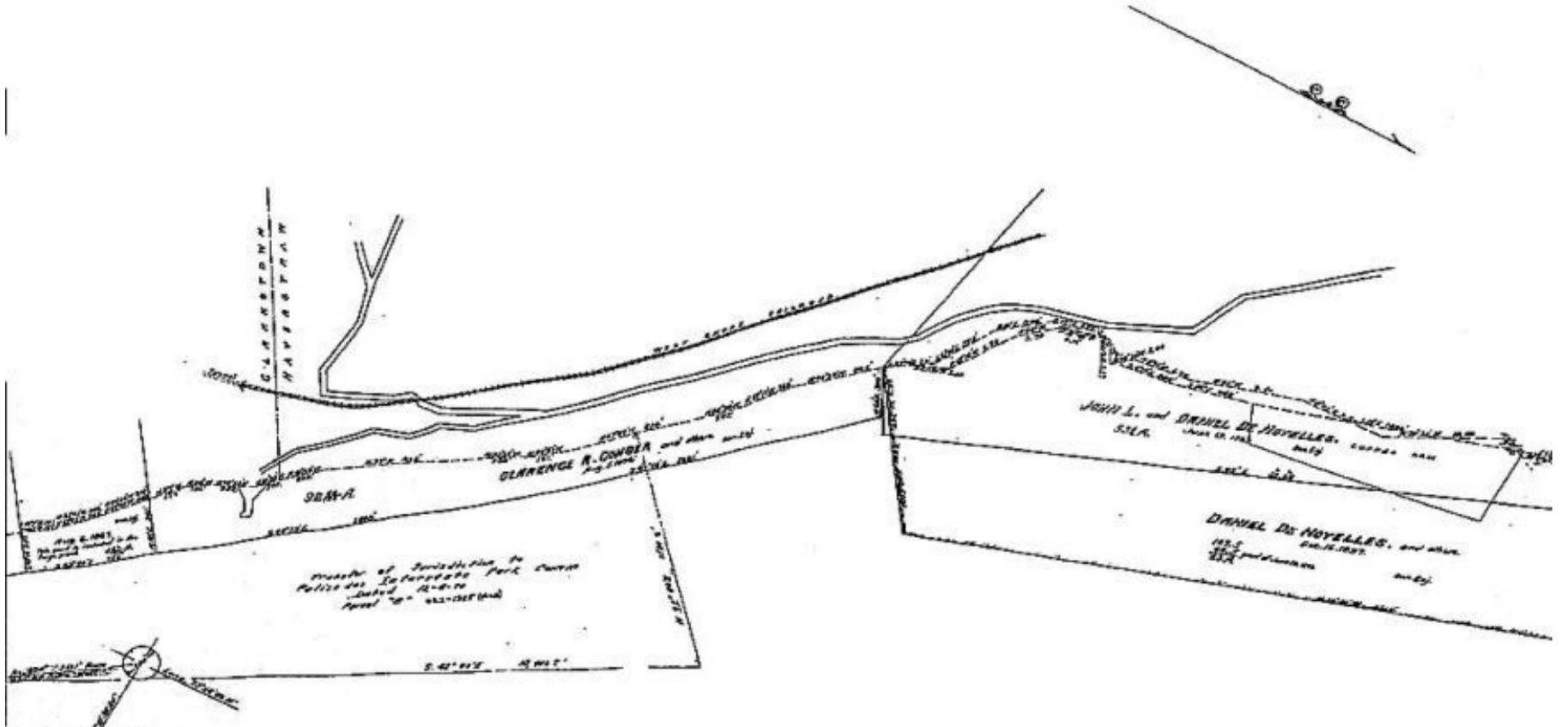
The leaves of *Trapa natans* in aggregate appear light green to yellow-green to creamy white in color. The texture is smooth due to the dense monocultures. Sometimes the beds exhibit a stippled pattern because small dark patches of water or other vegetation can be seen in less dense beds. Small isolated mats are easily identified due to the high contrast of the green/white color to the dark blue of open water. These loose plants can be seen in backwater eddies and at snags and obstructions as well as in mid-channel.

Haverstraw Waterfront



SAV inventory developed using 1997 true color aerial photography (1:14,400).
 Project completed by Cornell IRIS, Institute of Ecosystem Studies,
 Hudson River NERR, NYS DEC, Hudson River Estuary Program.

H A V E R S T R A W

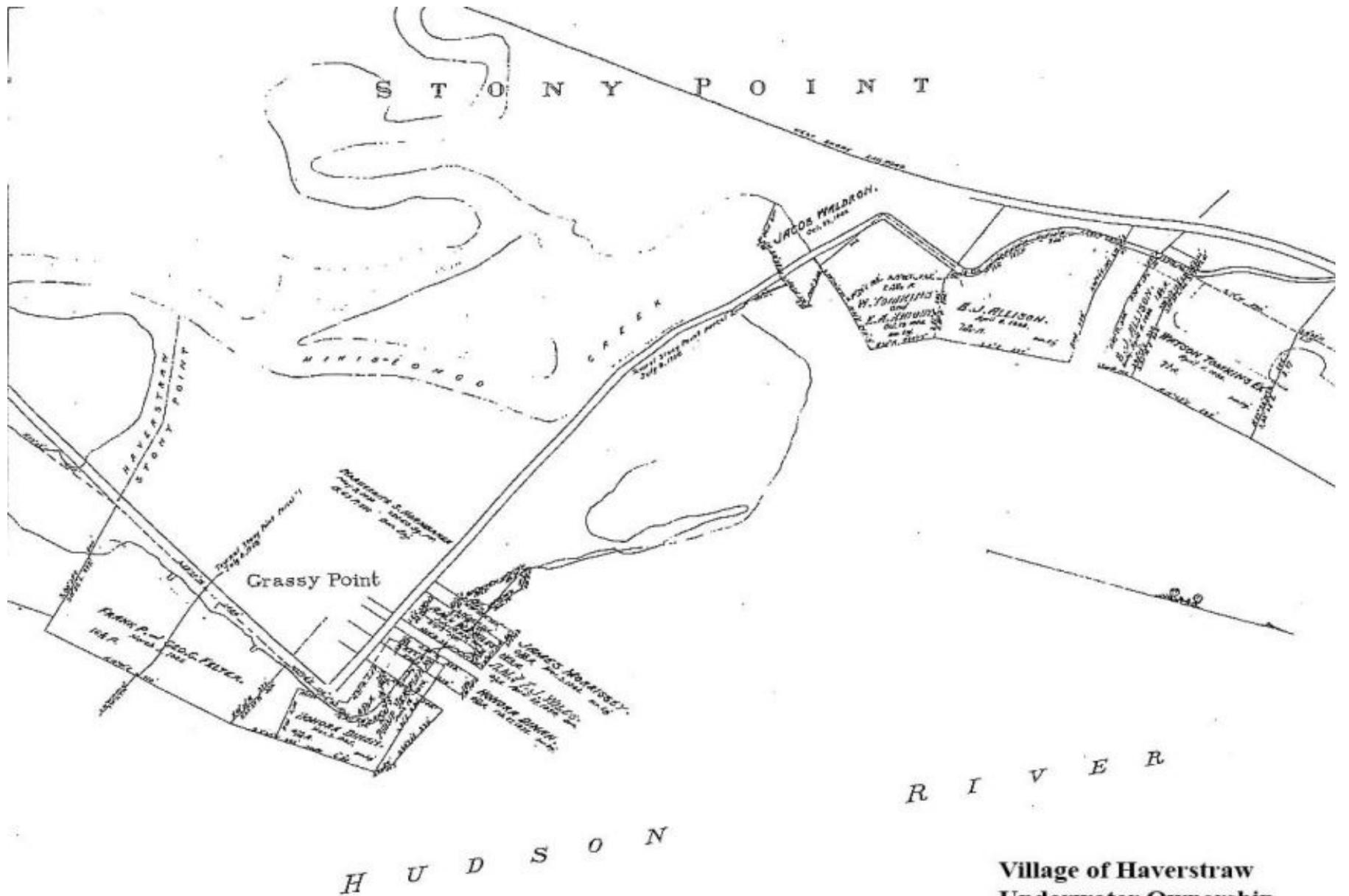


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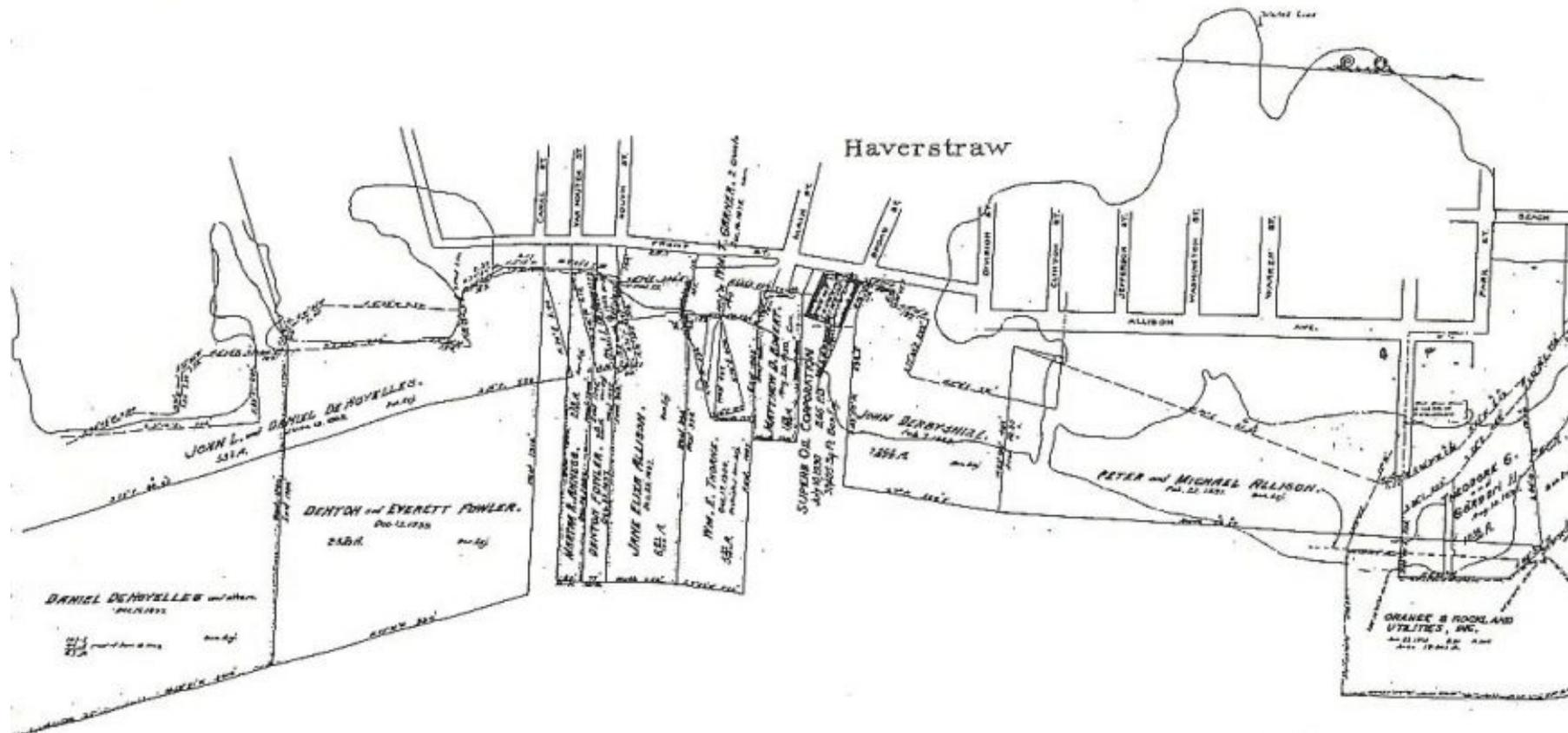
Village of Haverstraw
Underwater Ownership
Map 1

Approved by the Board of
Common Councils of the
Village of Haverstraw
Dec. 22, 1887. 64-17-1887



Village of Haverstraw
Underwater Ownership
Map 2

H A V E R S T R A W



H U D S O N

R I V E R

Village of Haverstraw
Underwater Ownership
Map 3