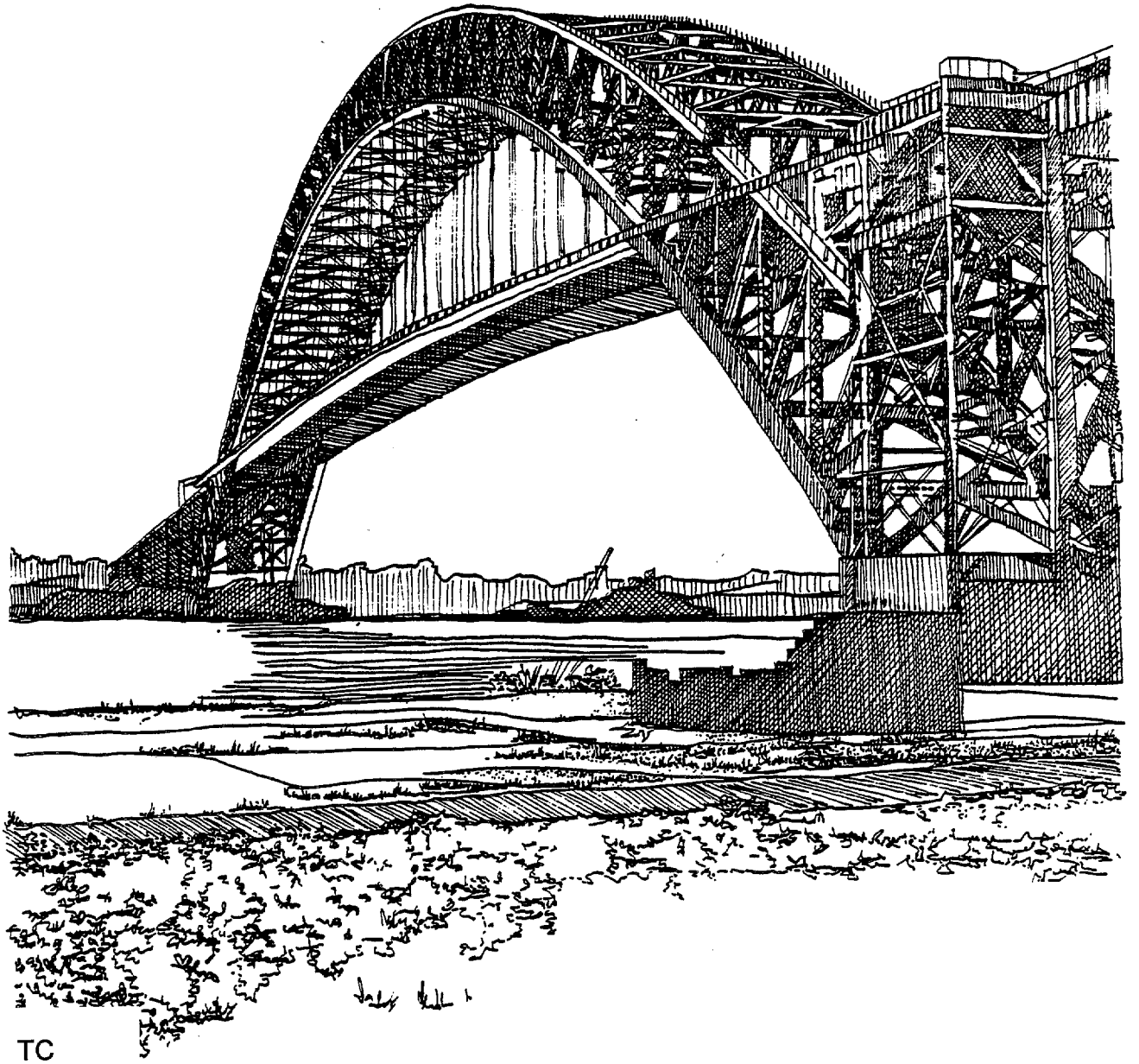
City of Bayonne Marina Study



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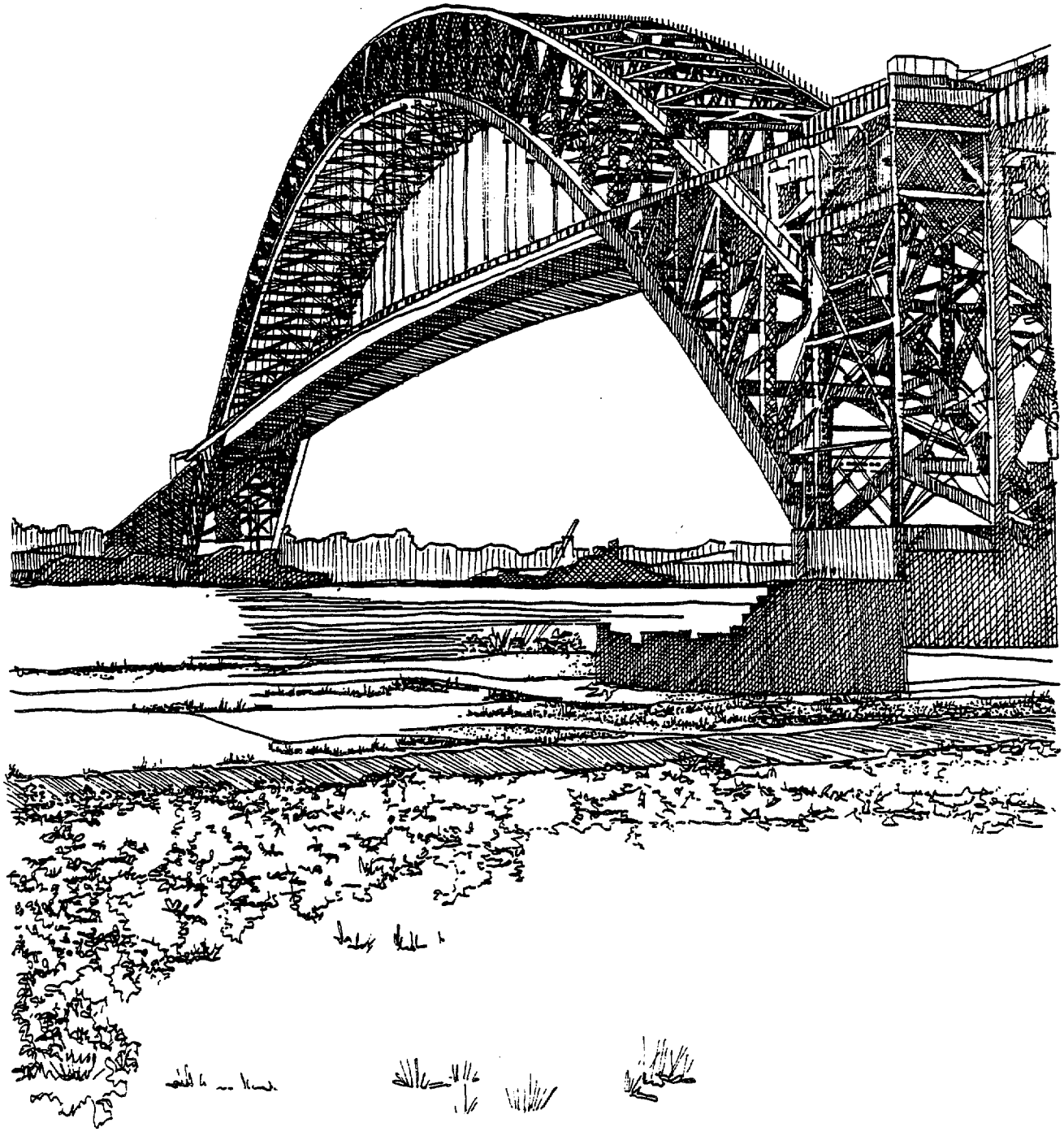

City of Bayonne Marina Study

Prepared for:
The City of Bayonne, New Jersey

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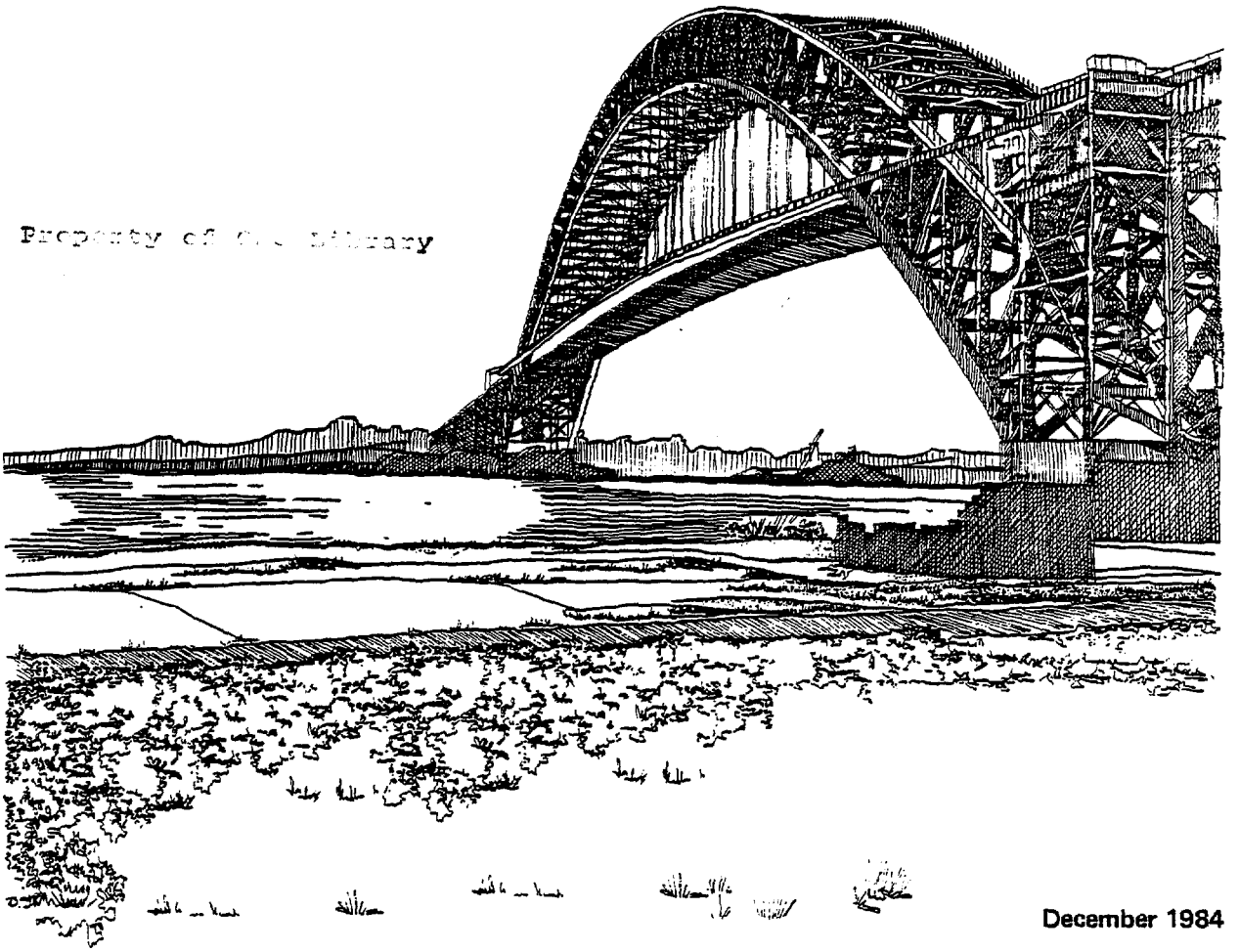

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INTRODUCTION

PURPOSE OF THE STUDY

The purpose of this study is to assist the City of Bayonne in the selection of a location in the City for development of a marina.

CITY OF BAYONNE OBJECTIVES

The City is interested in determining the potential for marina development along the City's waterfront because of the amenity value of that type of use and because the three marinas that exist may be endangered by the U.S. Army Corps of Engineers Harbor Drift Removal Program. Under this program, the sunken hulks, deteriorated wooden structures, piles and breakwaters that now offer protection to the City's three existing marinas will be removed, leaving their boat slips vulnerable to wave and surge from nearby channel traffic. A total of approximately 300 slips in three existing marinas may be affected.

The City's objectives are:

to provide an open space and recreational resource for Bayonne residents;

to accommodate City residents and boat-owners whose boats may be displaced by the Harbor Drift Clean-Up Program as well as City residents who do not presently own boats or use the existing marinas; and

to establish a marina facility that will generate income necessary to support capital and operating costs and profit margins.

SUMMARY OF THE MARKET OVERVIEW

Throughout the Country, recreational boating continues to grow while marinas and marina slips decrease, as marina lands are redeveloped for other purposes. This growth is particularly marked in New Jersey where there was an 8.8% increase in registered/documented boats between 1981 and 1983.

A review of existing marinas within fifteen miles of Bayonne found that most who responded to requests for information were either full, had waiting lists, or are turning people away. The only marina planning expansion is reportedly doing so because of the necessity of constructing a wave screen to address severe existing surge problems. Environmental restrictions are generally identified as the major limitation upon new marina development.

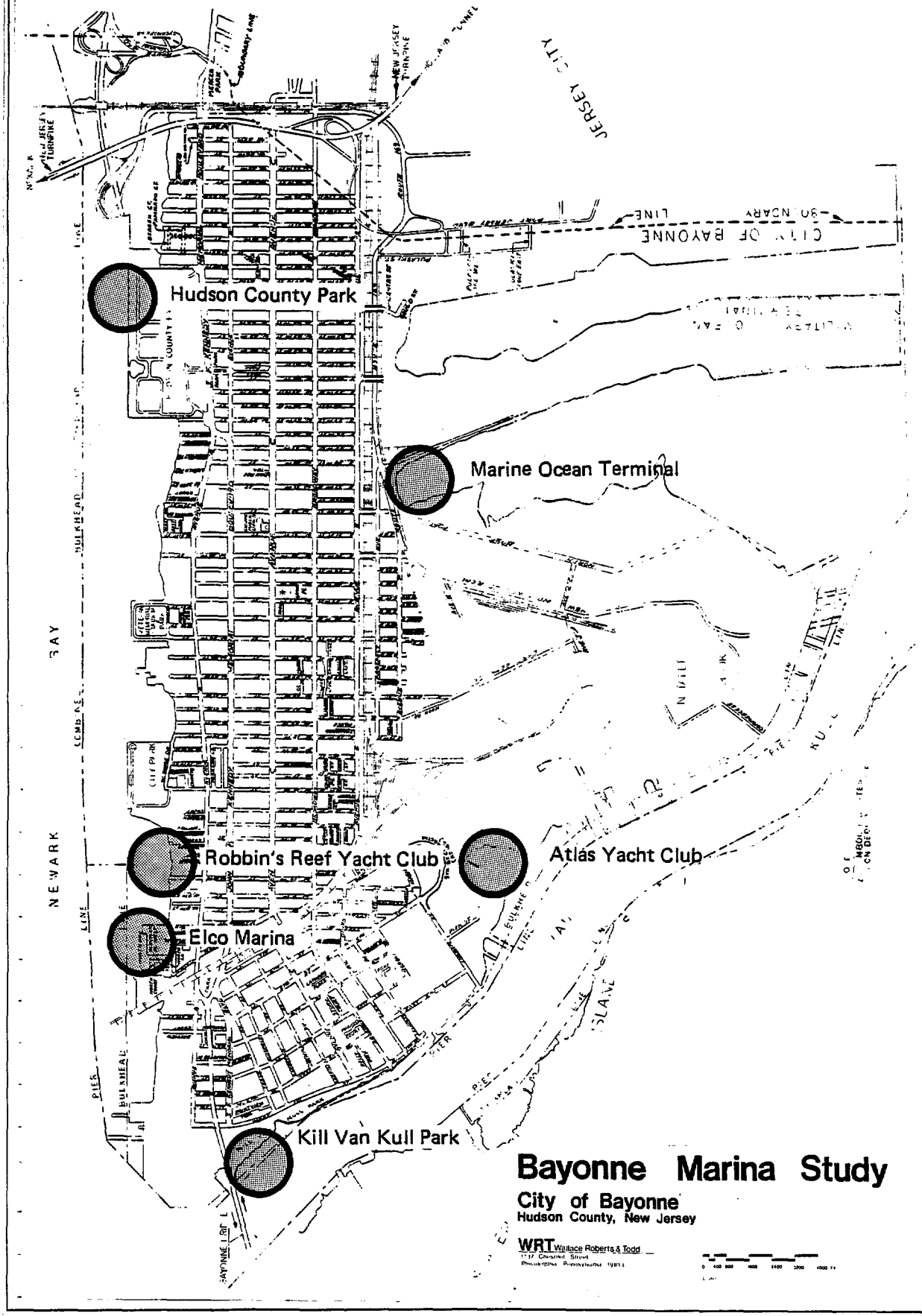
Of the six new marinas proposed, only one, the Liberty State Park Marina, is of a capacity and type clearly intended to serve boat-owners from well beyond either the residential or mixed use development or the community where it is located.

SUMMARY OF THE EVALUATION AND COMPARISON OF SITES

A comparison of five alternative sites for a marina in Bayonne found that all sites except the Kill Van Kull Park site present significant obstacles for public marina development, while the Kill Van Kull site presents special opportunities for such development.

The Hudson County Park Site, while it could accommodate the largest number of boat slips (386 slips), is closed by the County at night. Consideration has been given in the past to establishing a small boat harbor in the Park, but the County's unwillingness to permit anyone to travel in or

Marina Locations



Bayonne Marina Study

City of Bayonne
Hudson County, New Jersey

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through the Park at night is unconsistent with marina operations.

Both the Elco Marina and the Robbins Yacht Club are on privately owned land and are privately operated. Both plan to continue private ownership of the sites. Similarly, while the Atlas Yacht Club is located on public lands, it is and is intended to continue to be operated as a private club.

At both the Robbins Yacht Club and the Elco Marina, needed parking for the potential 288 slip marina at the former and the potential 318 slip marina at the letter would prevent setting aside 50% of the land for open space if either site were acquired by the City for a public marina.

The Atlas Site will be surrounded by industrial piers, one of which is under construction at present. Another is scheduled for construction. A storm sewer outfall in the basin contributes to siltation, and a high lead concentration in the silt means that disposal of any dredged material will be a problem. Furthermore only 140-150 slips could be constructed at the Atlas Site.

Access to the Robbins, Elco and Atlas Site is poor.

In contrast, the Kill Van Kull Site is a highly visible and accessible site, which has been enlarged recently through an agreement with the New York-New Jersey Port Authority. The site could accommodate 250-280 vessels, matching closely the preliminary program necessary for a private developer-operator.

Finally, development of a marina at this site would permit completion of what has to date been a very successful park development for the City, providing additional landscaped open space for the benefit of City residents, and turning a

rather ragged existing water's edge into a fine urban waterfront park at the foot of the Bayonne Bridge. Construction of a wave screen to provide needed shelter to the boat basin could be combined with a boardwalk and seating area along the pierhead line.

Construction of a marina at the Kill Van Kull Park Site would provide a special opportunity to:

- provide an open space amenity for residents of neighborhoods along and near 1st Street;

- create a fine southern terminus to the proposed Hudson Walkway, as a demonstration of waterfront public access and open space design;

- meet the City of Bayonne's critical need for public open space and for public access to and recreational use of its waterfront.

PART I

THE PROPOSED MARINA AT KILL VAN KULL PARK

LOCATION

The proposed marina at Kill Van Kull Park lies immediately to the east of the Bayonne Bridge, on the north bank of The Kill Van Kull River, on the bad weather alternative route to the Intercoastal waterway. The site of the marina and the proposed restaurant and marina services building is immediately visible from the heavily travelled Bayonne Bridge on Route 440.

RECENT IMPROVEMENTS TO KILL VAN KILL PARK

The Kill Van Kull Park Marina Site is part of a waterfront park that extends from the Bayonne Bridge to the recently reconstructed Brady's Dock in Killeen Park.

The entire Park area and lands along 1st Street were part of a summer resort for New York City residents in the 19th Century. Brady's Dock was a commercial dock until the 1920's, when the City took over the pier for public open space. In the late 1960's, a barge damaged the concrete dock so severely as to make it unusable. In 1979, the City undertook reconstruction of the dock using Community Development and Green Acres funds. The $600,000 project which includes a dock, pavillion and landscaping, is presently nearing completion.

The portion of the Park from Brady's Dock to Avenue C has been a public park at least since 1935. This portion of the Park has been completely refurbished by the City over the past seven years.

Location Map

Distances

Nautical Miles (approximate) from Sandy Hook

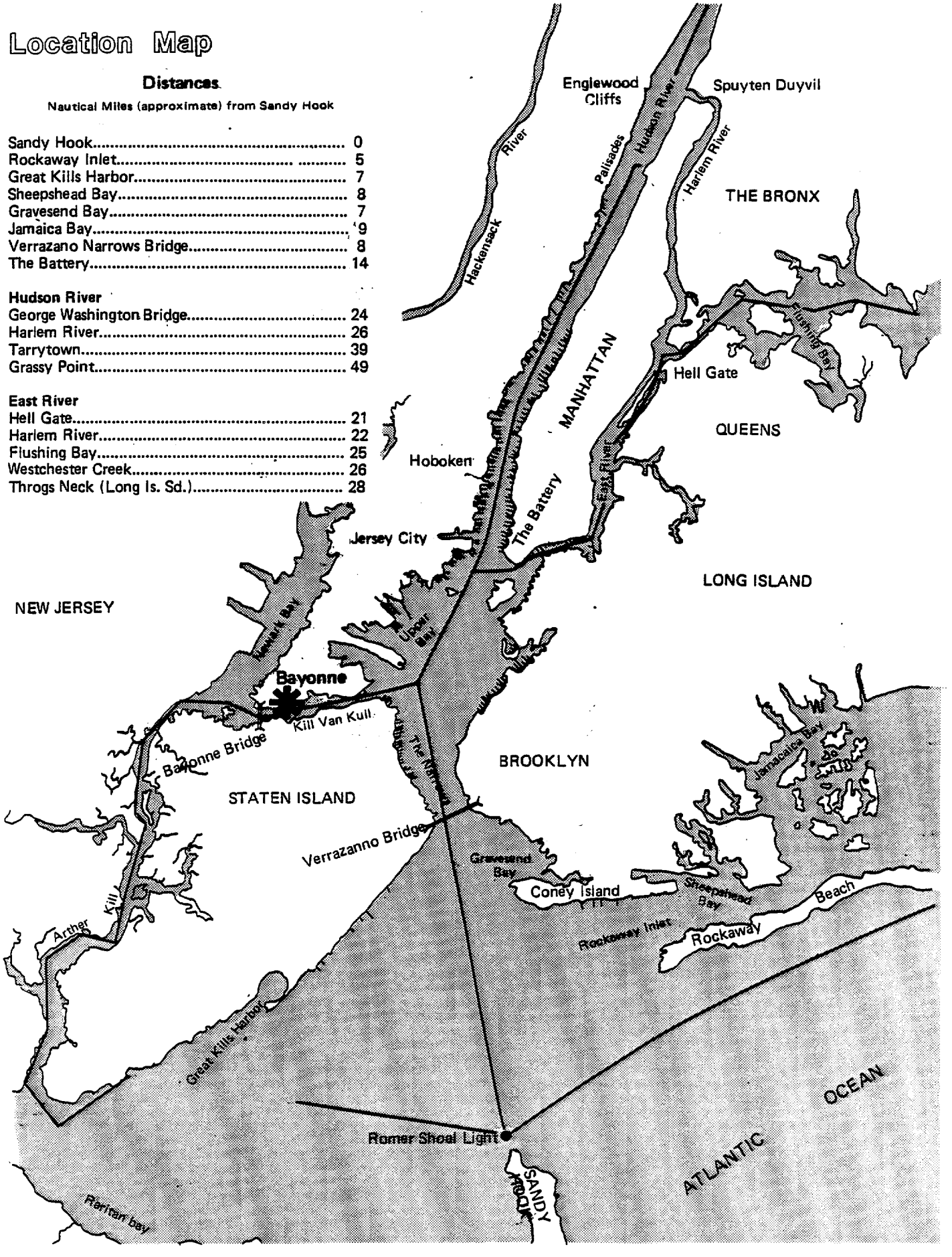
Sandy Hook	0
Rockaway Inlet	5
Great Kills Harbor	7
Sheepshead Bay	8
Gravesend Bay	7
Jamaica Bay	9
Verrazano Narrows Bridge	8
The Battery	14

Hudson River

George Washington Bridge	24
Harlem River	26
Tarrytown	39
Grassy Point	49

East River

Hell Gate	21
Harlem River	22
Flushing Bay	25
Westchester Creek	26
Throgs Neck (Long Is. Sd.)	28



The portion of the park between Avenue C and the Little League Field was an amusement park until the mid-1970's when the site was acquired by the City.

The proposed marina site itself, at the foot of the Bayonne Bridge was made available to the city of Bayonne for municipal use by the New York - New Jersey Port Authority in 1983. Port authority land may be used for open space, landscaped area or parking, but access must be retained at all times for repair of the bridge structure.

OPPORTUNITIES AND CONSTRAINTS FOR MARINA A DEVELOPMENT AT KILL VAN KULL PARK

The accompanying exhibit illustrates opportunities and constraints for marina development at the Kill Van Kull Park Site.

Prominent among opportunities are:

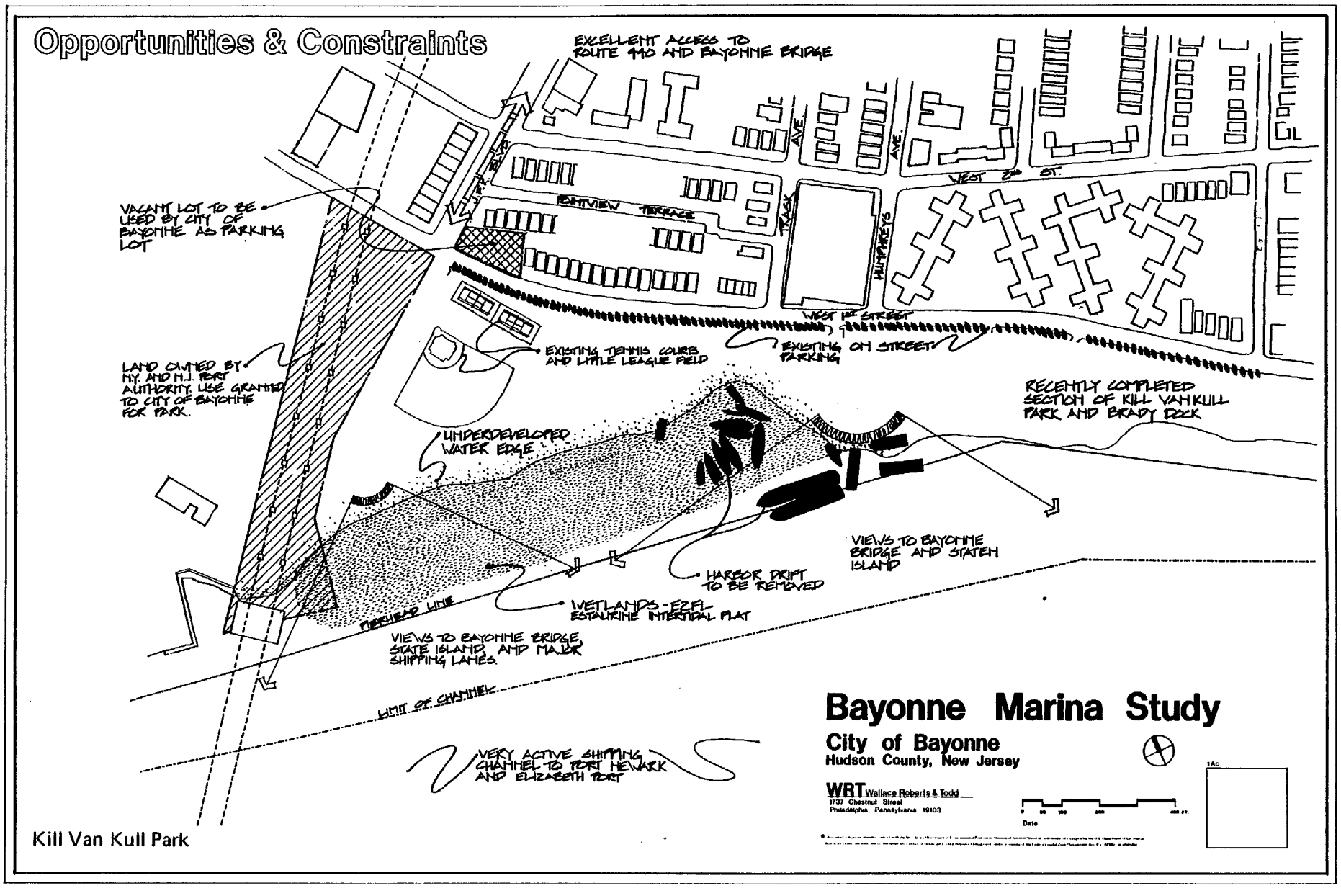
- The strong visual amenity provided by the Bayonne Bridge
- Views of Staten Island and particularly the wooded areas of Faber Park and the "village-like" nearby neighborhoods
- Views of commercial boat traffic on the Kill Van Kull
- Excellent access to Route 440 and the Bayonne Bridge
- Availability of on-street parking as well as extensive potential additional parking under the Bayonne Bridge and on the northeast corner of JFK and 1st Street.
- High visibility of the site
- Location of the site on the bad weather alternative route to the Intercoastal Waterway
- Potential relationship to the new Brady's Dock
- Proximity to New York Bay and the Ocean
- Potential means of improving the ragged and unfinished water's edge in the western portion of Kill

Van Kull Park

- Opportunity provided by removal of sunken vessels and debris

Major constraints include:

- Estuarine Intertidal Flats
- Existing Tennis Courts
- Existing Ballfields


Opportunities & Constraints
EXCELLENT ACCESS TO ROUTE 440 AND BAYONNE BRIDGE
VACANT LOT TO BE USED BY CITY OF BAYONNE AS PARKING LOT
LAND OWNED BY N.Y. AND N.J. PORT AUTHORITY. USE GRANTED TO CITY OF BAYONNE FOR PARK.
EXISTING TENNIS COURTS AND LITTLE LEAGUE FIELD
EXISTING ON STREET PARKING
RECENTLY COMPLETED SECTION OF KILL VAN KULL PARK AND BRADY DOCK
UNDERDEVELOPED WATER EDGE
VIEWS TO BAYONNE BRIDGE AND STATEN ISLAND
HARBOR DRIFT TO BE REMOVED
WETLANDS - EFFL ESTUARINE INTERTIDAL FLAT
MEANHIGH LINE
VIEWS TO BAYONNE BRIDGE, STATE ISLAND AND MAJOR SHIPPING LANES.
LIMIT OF CHANNEL
VERY ACTIVE SHIPPING CHANNEL TO PORT NEWARK AND ELIZABETH PORT
Kill Van Kull Park
Bayonne Marina Study
City of Bayonne
Hudson County, New Jersey
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Philadelphia, Pennsylvania 19103
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MARINA PLAN

The Marina Plan, illustrated on the accompanying exhibit provides for:

- 234 boatslips, with on-land storage for 20-60 boats of 16'-20' in length

- 158 parking spaces, with 22 spaces for cars with boat trailers

- 10,000 square foot restaurant plus 10,000 square foot for marina facilities

- 1,500 linear feet of riprap bulkheading and water-front walkway

- 1,200 linear feet wavescreen-boardwalk and seating area

- Gas pumps, boat storage, boat launch

- Marina office, fueling dock, harbor master and marina sales, in and near the restaurant building

- Parking, boat storage, boat launch and retrieval, and boat repair, near the bridge end of the marina

- Floating oil containment boom

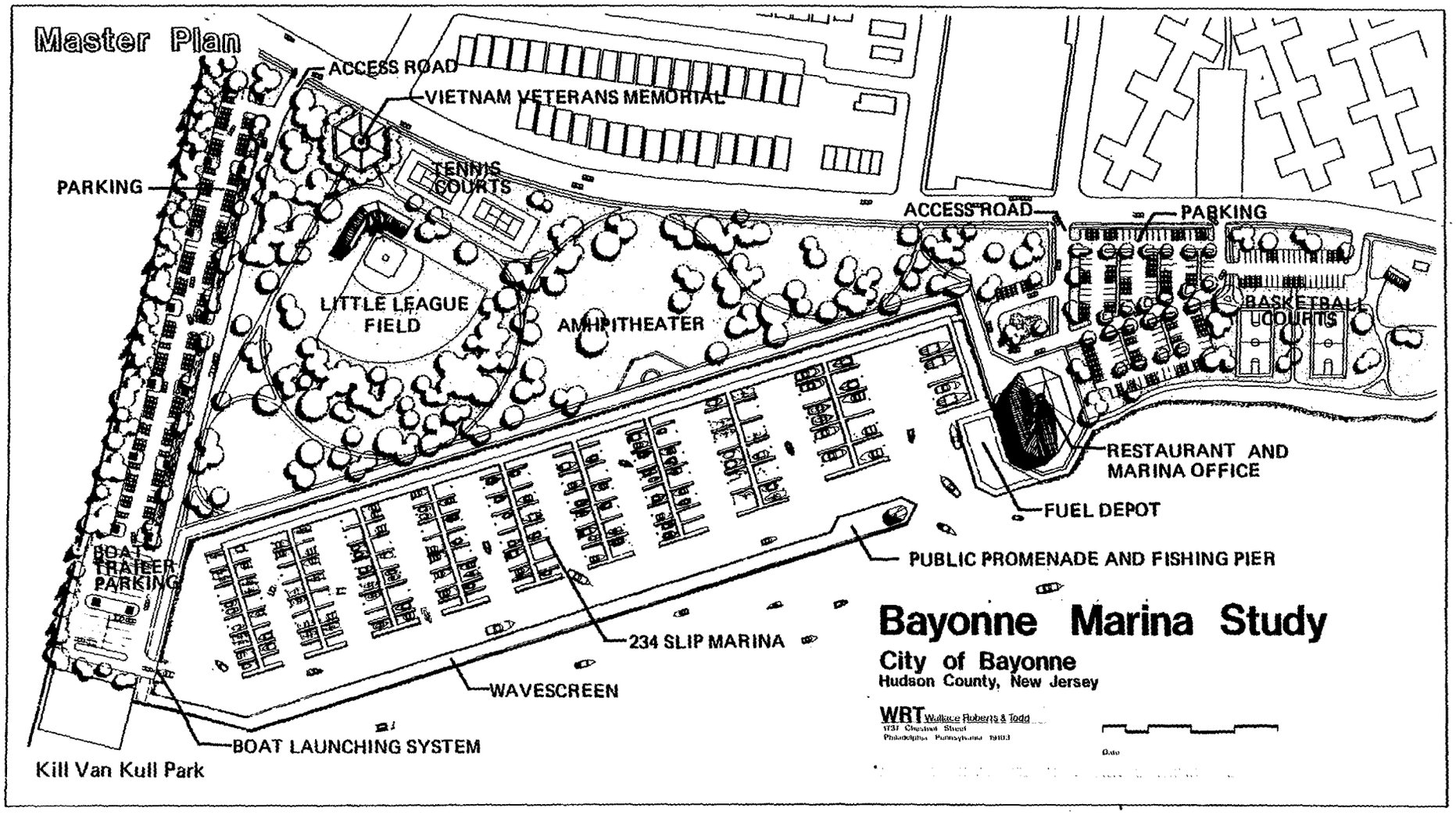
- Pumpout facilities

- Little League Field and tennis courts at their present locations

- Small neighborhood park to include Vietnam Veterans

Memorial

- Landscaped open space


Master Plan
ACCESS ROAD
VIETNAM VETERANS MEMORIAL
PARKING
TENNIS COURTS
ACCESS ROAD
PARKING
LITTLE LEAGUE FIELD
AMPHITHEATER
BASKETBALL COURTS
RESTAURANT AND MARINA OFFICE
FUEL DEPOT
BOAT TRAILER PARKING
PUBLIC PROMENADE AND FISHING PIER
234 SLIP MARINA
WAVESCREEN
BOAT LAUNCHING SYSTEM
Kill Van Kull Park
Bayonne Marina Study
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Hudson County, New Jersey
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PART II

RELATIONSHIP OF THE MARINA TO PUBLIC OBJECTIVES

Development of the Kill Van Kull Park site as a marina would help to realize significant objectives of the City of Bayonne and of the State of New Jersey's Coastal Management Program.

City Objectives

City objectives that will be particularly well served by development of the Kill Van Kull Park site as a marina include Open Space and Recreation Objectives and Land Use and Development Objectives.

CITY OPEN SPACE AND RECREATIONAL OBJECTIVES

The Land Use Element of the Comprehensive Plan for the City of Bayonne, prepared in June, 1977, by Community Housing and Planning Associates, Inc., identifies a critical need for public open space in the City.

The City was found to be deficient by over 200 acres in open space, both in the form of city Parks and of small parks to serve neighborhoods. (Land Use Element p. 27)

Development of the Kill Van Kull Site as a marina would not only provide an additional recreational boat basin for Bayonne residents, but also, would provide an opportunity to continue the successful development and refurbishing of Kill Van Kull Park as a recreational resource for all City residents, as well as for residents of immediately adjacent neighborhoods. Construction of a wave screen to protect the boat basin is proposed to incorporate a 1500 foot boardwalk and seating area. At a width of six feet, this boardwalk

would increase the City's usable passive open space by nearly a quarter of an acre.

CITY LAND USE AND DEVELOPMENT OBJECTIVES

The City's Land Use and Development policies as expressed in the Land Use Plan call for industrial use of the City's Hudson River Waterfront, and of the eastern portions of its Kill Van Kull Waterfront. The remainder of the City's waterfront from Brady's Dock west along the Kill Van Kull and north along Newark Bay is intended as a long range future goal, to be improved and enhanced as a recreational resource and visual and open space amenity for nearby residential neighborhoods.

As summarized above, the eastern portions of the Park, from Brady's dock to the Little League field have been extensively improved through a series of Green Acres and Community Development projects over the past eight years.

The only portions of the park that remain undeveloped are the western most portion near the bridge, and the water's edge along the western portion of the Park. This water's edge is now strewn with partially sunken harbor drift, and is separated from the park by a chain link fence which interrupts fine views of passing commercial boat traffic, and of the Bayonne Bridge.

The 1983 Agreement with the New York New Jersey Port Authority providing for City use of lands under the bridge for open space provides a new opportunity for extending the park west along the Kill Van Kull. It should be emphasized that uses of this land are limited to open space, vehicular access and parking.

State Objectives

The following objectives of the State's Coastal Resource and Development Program are particularly relevant to development of a marina at the Kill Van Kull Park Site:

Finfish Migratory Pathways
Navigation Channels
Marina Moorings
Filled Water's Edge
Wetlands
Intertidal Flats
Historic and Archaeological Resources
Special Urban Areas
Submerged Infrastructure
Resort/Recreational Use Policies
Buffers and Compatibility of Uses
Public Open Space
Public Access to the Waterfront

In addition Acceptability Conditions must be met with regard to the following aspects of the proposed marina:

Boat Ramps
Docks and Piers (Recreational and Fishing)
New Dredging
Dredge Spoil Disposal
Piling
Submerged Infrastructure

Each of these is discussed briefly below in terms of its applicability to the proposed Kill Van Kull Park Marina.

Finfish Migratory Pathways

DEFINITION

Waterways (rivers, streams, creeks, bays, inlets) which can be demonstrated to serve as passageways for diadromous fish to or from seasonal spawning areas, including juvenile anadromous fish which migrate in autumn and those listed by H. E. Zich (1977) "New Jersey Anadromous Fish Inventory" NJDEP Miscellaneous Report No. 41, and including those portions of the Hudson and Delaware Rivers within the coastal zone boundary are defined as Finfish Migratory Pathways. Species of concern include: alewife (river herrring) (Alosa pseudoharengus), blueback herring (Alosa aestivalis), American shad (Alosa sapidissima), striped bass (Morone saxatilies), and American eel, (Anguilla rustrata).

POLICY

Development, such as dams, dikes, spillways and intake pipes, which creates a physical barrier to the movement of fish along finfish migratory pathways is prohibited, unless acceptable mitigating measures such as fish ladders, erosion control, or oxygenation are used. Development which lowers water quality to such an extent as to interfere with the movement of fish along finfish migratory pathways or to violate State and Delaware River Basin Commission water quality standards is prohibited.

Mitigating measures are required for any development which would result in: lowering dissolved oxygen levels, releasing toxic chemicals, raising ambient water temperature, impinging or suffocating fish, causing siltation, or raising turbidity levels during migration periods.

Water's edge development which incorporates migration access

structures, such as functioning fish ladders, will be conditionally acceptable, provided that the NJDEP, Division of Fish, Game, and Wildlife approves the design of the access structure.

CONSISTENCY WITH POLICY

Marina development at the Kill Van Kull Park Site may require mitigating measures in order to prevent or to minimize lowering dissolved oxygen levels, releasing toxic chemicals, raising ambient water temperature, impinging or suffocating fish, causing siltation or raising turbidity levels during migration.

Navigation Channels

DEFINITION

Navigation channels include water areas in tidal rivers and bays presently maintained by DEP or the Army Corps of Engineers and marked by U.S. Coast Guard with buoys or stakes, as shown on NOAA/National Ocean Survey Charts: 12214, 12304, 12311, 12312, 12313, 12314, 12316, 12317, 12318, 12323, 12324, 12326, 12327, 12328, 12330, 12331, 12332, 12333, 12334, 12335, 12337, 12341, 12343, 12345, 12346, and 12363. Navigation channels also include channels marked with buoys, dolphins, and stakes, and maintained by the State of New Jersey, and access channels and anchorages. Navigation channels are approximately parallel to the river bed. Access channels are spurs that connect a main navigation channel to a terminal. Anchorages are locations where vessels moor within water at a terminal. Anchorages are locations where vessels moor within water at or near the water's edge for the purpose of transferring cargo, or awaiting high tide, better weather, or fuel and terminal

availability.

POLICY

New or maintenance dredging of existing navigation channels, is conditionally acceptable providing that the condition under the new or maintenance dredging policy is met (see Section 7:7E-4.10(e) and (f). Development which would cause terrestrial soil and shoreline erosion and siltation in navigation channels shall utilize appropriate mitigation measures. Development which would result in loss of navigability is prohibited.

CONSISTENCY WITH POLICY

A preliminary and official review of the concept plan for the Kill Van Kull Park Marina by staff of the New York office of the U.S. Army Corps of Engineers found that there is little likelihood of any loss of navigability resulting from construction of the marina or the wave screen. Staff suggested design of apertures at specific intervals in the wave screen to prevent unacceptable disruption of water movement.

Special mitigation measures may be required during marina construction to minimize erosion and siltation.

Marina Moorings

DEFINITION

Marina moorings are areas of water that provide mooring, docking and boat maneuvering room as well as access to land and navigational channels for recreational boats. Typically maintenance dredging is required to preserve water depth.

POLICY

1. Any use that would detract from existing or proposed recreational boating use in marina mooring areas is discouraged.

2. Maintenance dredging in the marina mooring area and access channel is encouraged, provided that turbidity is controlled and that there is an acceptable dredge spoil disposal site.

RATIONALE

Marinas are a key element in New Jersey's coastal resort economy. The maintenance of existing marina areas and the protection of these areas from competing uses which would detract from the recreational service they provide is, therefore, a high priority.

CONSISTENCY WITH POLICY

Development of a marina at Kill Van Kull Park would be supportive of the Coastal Policy of expanding this important element in New Jersey Coastal resort economy. Soil borings are recommended to be made to determine whether or not dredge spoil contains toxic materials and requires special disposal provisions.

Filled Water's Edge

DEFINITION

Filled Water's Edge areas are existing filled areas lying between Wetlands or Water Areas, and either: (1) the upland limit of fill, or (2) the first public road or railroad landward of the adjacent Water Area; whichever is closer

the water. Some existing or former dredge spoil and excavation fill areas are Filled Water's Edge Area.

POLICIES

(1) Water dependent uses are acceptable in the Filled Water's Edge.

(2) Non-water dependent development in the Filled Water's Edge is conditionally acceptable provided (a) it would not preempt use of the waterfront portion of the Filled Water's Edge for potential water dependent uses, and (b) it would not prevent public access along the water's edge.

CONSISTENCY WITH POLICY

Marina development at the base of the Bayonne Bridge would be in conformance with the Coastal Policy of encouraging water dependent use of the filled water's edge.

Wetlands

DEFINITION

Wetlands are areas where the substrate is inundated or saturated by surface or groundwater water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions which are subject to the Wetlands Act, or the Coastal Area Facility Review Act (CAFRA) or the Waterfront Development Law.

Wetlands regulated under the Wetlands Act of 1970 are delineated at a scale of 1:2,400 on official maps as listed at

N.J.A.C. 7:7A-1.13. All coastal wetlands situated in the Raritan Basin, south along the Atlantic Ocean and north along Delaware Bay and River are subject to the Wetlands Act.

Under CAFRA, DEP regulates freshwater wetlands and forested wetlands such as white cedars on sites proposed for the major developments requiring a CAFRA permit.

Generalized location maps of White Cedar Stands and other woody wetlands can be found in J. McCormick and L. Jones, The Pine Barrens Vegetation (1973), and forest type maps within DEP's Bureau of Forestry, and, in some areas, in the vegetation maps prepared by the N.J. Pinelands Commission for the Comprehensive Mangement Plan.

The Waterfront Development Law regulates all wetlands north of the Raritan Basin, except for areas within the Hackensack Meadowlands District not now or formerly flowed by the tides, and all coastal wetlands in the Delaware River Basin and Raritan Basin not regulated under the Wetlands Act.

Generalized locations of both coastal and inland Wetlands can be found at a scale of 1:24,000 on maps produced for the National Wetlands Inventory by the U.S. Fish and Wildlife Service.

Generalized locations of some wetland types can be found in county soil surveys prepared by the U.S. Department of Agriculture, Soil Conversation Service.

POLICY

(1) In general, development of all kinds is prohibited in wetlands, unless DEP can find that the proposed development meets the following four conditions (see also N.J.A.C. 7:7A-1.5 and 1.7):

(i) Requires water access or is water oriented as a central purpose of the basic function of the activity (this policy applies only to development proposed on or adjacent to waterways),

(ii) Has no prudent or feasible alternative on a non-wetland site,

(iii) Will result in minimum feasible alteration or impairment of natural tidal circulation (or natural circulation in the case of non-tidal wetlands), and

(iv) Will result in minimum feasible alteration or impairment of natural contour or the natural vegetation of the wetlands.

(2) In particular, dumping solid or liquid waters and applying or storing certain pesticides on wetlands are prohibited.

(3) Both the restoration of degraded wetlands as a mitigation measure for certain types of approved wetlands development and the creation of new wetlands in non-sensitive areas are encouraged. The Division of Coastal Resources previously has required restoration of temporarily disturbed wetlands and will continue to do so on a case-by-case basis.

(4) Under the Wetlands Act, the activities of DEP, the Tidelands Resource Council, the State Mosquito Control Commission and county mosquito control commission are exempted from the coastal wetlands policies within mapped coastal wetlands. Voluntary administrative compliance with the regulations adopted by DEP under to the Act is not, however, precluded.

(5) Development that adversely affects white cedar stands is prohibited.

APPLICABILITY TO THE KILL VAN KULL PARK SITE

The only type of wetland identified at the Kill Van Kull Park Site is intertidal flats, for which Coastal Policies are as follows:

Intertidal Flats

DEFINITION

Intertidal Flats are extensive areas between the mean high water line and mean low water line along tidal bayshores. Intertidal flats are found along Delaware Bay in Cape May County and in other tidal bayshores.

POLICIES

(1) Development, filling, new dredging or other disturbance of intertidal flats is discouraged.

(2) Submerged infrastructure is conditionally acceptable, provided that (i) there is no feasible alternative route that would not disturb intertidal flats, (ii) the infrastructure is buried deeply enough to avoid exposure or hazard, and (iii) all trenches are backfilled with naturally occurring sediment.

RATIONALE

Intertidal flats play a critical role in estuarine ecosystems. They are a land-water ecotone, or ecological edge

where many material and energy exchanges between land and water take place. They are critical habitats for many benthic organisms and are critical forage areas for many migrant waterfowl. The sediments laid down in intertidal flats contain much organic detritus from decaying land and water's edge vegetation, and the food webs in these areas are an important link in the maintenance of estuarine productivity . Preservation is, therefore, the intent of these policies, with limited exceptions to allow for needed water-dependent uses and submerged infrastructure.

CONSISTENCY WITH POLICY

In preparation of Phase B of the Bayonne Marina Study, it was determined that as much as four or five acres of intertidal flats may exist at the proposed Kill Van Kull Park Marina Site. Preliminary discussions with staff of the New Jersey Department of Environmental Protection Division of Coastal resources indicate that site visits will be necessary to determine the degree to which this Intertidal Flat has been disrupted and its value to the estuarine Ecosystems of the Kill Van Kull River. At least half of this Tideland Flat area will be disrupted during removal of sunken vessels and debris during the harbor Drift Removal Program.

Depending on the value of the area, construction of a marina, and associated filling and dredging may require mitigation actions.

This issue will be explored further in Phase C of the Marina Study.

Historic and Archaeological Resources

DEFINITION

Historic and Archaeological Resources include objects, structures, neighborhoods, districts, and man-made or man-modified features of the landscape, including archaeological sites, which either are on or are eligible for inclusion on the State or National Register of Historic Places. The criteria for eligibility are defined at N.J.A.C. 7:4-4.2.

Policy

(1) Development that detracts from, encroaches upon, damages, or destroys the value of Historic and Archaeological Resources is discouraged.

(2) Development that incorporates Historic and Archaeological Resources in adaptive reuse is encouraged.

(3) Scientific recording and/or removal of the Historic and Archaeological Resources or other mitigation measures must take place, if the proposed development would irreversably and/or adversely affect Historic and Archaeological Resources.

(4) New development in undeveloped areas near Historic and Archaeological Resources is conditionally acceptable, provided that the design of the proposed development is compatible with the appearance of the Historic or Archaeological Resource.

CONSISTENCY WITH POLICY

No recognized historic or archaeological resources are known to be present on the proposed Kill Van Kull Park Marina site.

Special Urban Areas

DEFINITION

Special urban areas are those areas defined in urban aid legislation (N.J.S.A. 52:27D-178) which designate municipalities qualified to receive State aid to enable them to maintain and upgrade municipal services and offset local property taxes. The City of Bayonne is one of these minicipalities.

POLICY

(1) Development that will help to restore the economic and social viability of special urban areas is encouraged. Development that would adversely affect the economic well being of these areas is discouraged, when an alternative more beneficial to the Special Urban Areas is feasible. Development that would be of economic and social benefit and that serves the needs of local residents and neighborhoods is encouraged.

(2) Housing, hotels, motels, and mixed use development are acceptable over only one water area type, Large Rivers, and only when located on structurally sound existing pilings, provided public access between the development and the water body is not unreasonably restricted.

(3) Housing, hotels, motels and mixed use development are acceptable in Filled Water's Edge Areas, provided public access is provided for, as required by 7:7E-8.13, and provided that Special Areas are adequately protected.

CONSISTENCY WITH POLICY

Development of a Marina at the Kill Van Kull Park Site would

reinforce the economic and social viability of nearby neighborhoods and of the City of Bayonne.

Submerged Infrastructure Routes

DEFINITION

A submerged infrastructure route is the corridor in which a pipe or cable runs on or below a submerged land surface.

POLICY

Any activity which would increase the likelihood of infrastructure damage or breakage, or interfere with maintenance operations is prohibited.

RATIONALE

Submerged infrastructure routes are a large capital investment and much depends on the safe functioning of the infrastructure. Both human and natrual systems suffer from accidental breakage, especially of large oil or gas pipelines. Activities which increase hazard for submerged infrastructure must therefore be excluded.

CONSISTENCY WITH POLICY

Detailed site studies at the outset of marina development will provide for identification of any as yet unanticipated submerged infrastructure that might be affected by marina construction, and for necessary mitigating actions.

Resort/Recreational use Policies

DEFINITION

Resort-recreation uses include the wide range of small and large developments attracted to an often dependent upon locations along the coast. Resort-recreation uses include hotels, motels, marinas, boating facilities, campgrounds, amusement piers, parks and recreational structures such as bath houses, natural areas, open space for active and passive recreation, and linear paths for bicycling and jogging.

RECREATION PRIORITY

1. Policy

(i) Each waterfront municipality should contain at least one waterfront park on each body of water within the municipality. Municipalities or private developments that do not currently provide, or have active plans to provide, access to the water will not be eligible for Green Acres or Shore Protection Bond Funding.

(ii) Resort/Recreation Uses shall have priority over all other uses, in Monmouth, Ocean, Atlantic, and Cape May, Cumberland and Salem Counties with highest priority reserved for those uses that serve a greater rather than a lesser number of people, and those uses that provide facilities for people of all ages and for people with physical handicaps.

2. Rationale

The national and state interests in recreation are clearly indicated in the coastal economy and are essential for the quality of life. The coastal environment provides numerous opportunities for recreation which

should be expanded by public policy and action, including priority setting.

MARINAS

1. Policy

(i) New or expanded marinas for recreational boating are conditionally acceptable if:

(a) the demonstrated regional demand for recreational boating facilities cannot be met by the upgrading or expansion of existing marinas, and

(b) the proposed marina includes the development of an appropriate mix of dry storage areas, public launching facilities, and berthing spaces, depending upon the site conditions and

(c) the proposed marina provides adequate pump out stations for wastewater disposal from boats in a manner consistent with federal and state water quality laws and regulations.

(ii) New marinas or boat launching facilities that provide primarily for soil and oar boating are encouraged.

(iii) Expansions of existing marinas shall be encouraged by limiting non-water dependent land uses that preclude support facilities for boating.

(iv) Publicly funded marinas shall be designed to be part of multiple use parks, to the maximum extent practicable.

(v) Recreational boating facilities are acceptable provided that they are designed and located in order to cause minimal feasible interference with the commercial boating industry.

2. Rationale

The location of marinas requires the use of sensitive lands at the waters edge which exist in only limited supply ;and are also valued for other activities. The policies aim to ensure that the area devoted to marinas is fully and efficiently utilized to keep the size of the area required to a minimum. Waiting lists for slips at existing marinas would be one type of evidence of regional need for additional facilities. Facilities for sail and oar boating are encouraged because such boats consume less energy and have less of a polluting impact on the water than motor boats.

CONSISTENCY WITH POLICY

Construction of the marina is highly consistent with coastal policies regarding marinas, as:

- A need has been demonstrated for additional marina slips within a fifteen mile radius of the City of Bayonne

- Dry storage public launching facilities and berthing spaces are to be provided for

- Pump out facilities are to be provided

- Water depths, slip sizes, etc. will accommodate sailboats

- The marina is designed as a part of the mulitiple use Kill Van Kull Park

- The marina will cause minimal interference with the commercial boating industry because of its distance from the navigation channel

Buffers and Compatibility of Uses

DEFINITION

Buffers are natural or man made areas, structures, or objects that serve to separate distinct uses or areas. Compatibility of uses is the ability for uses to exist together without aesthetic or functional conflicts.

POLICY

Development shall be compatible with adjacent land and water uses to the maximum extent practicable.

Development that is likely to adversely affect adjacent areas, particularly Special Areas, (7:7E-3.1 through 7:7E3.41) or residential or recreational uses, is prohibited unless the impact is mitigated by an adequate buffer. The purpose, width and type of the required buffer shall vary depending upon the type and degree of impact and the type of adjacent area to be affected by the development, and shall be determined on a case-by-case basis.

RATIONALE

The juxtaposition of different uses may cause various problems. One activity may cause people to experience noise,

dust, fumes, odors, or other undesirable effects. Examples of possible incompatibility of uses include factories or expressways next to housing, residential developments next to farms, and residential, commercial or industrial development adjacent to wetlands or Endangered or Threatened Wildlife or Vegetation Species Habitat. Vegetated buffer areas between uses can overcome, or at least ameliroate, many of these problems especially if earth berms are included. Buffers can benefit users of both areas. Where farms operate near a residential area, for example, a buffer can protect the residents from the noise and smells of farming, while protecting the farmers from local regulations controlling the hours in which machinery can be used.

Buffers serve several important functions, including maintenance of wildlife habitats, water purification, open space and recreation, and control of runoff. Buffers may include fences, landscaped berms, and vegetated natural areas.

CONSISTENCY WITH POLICY

Planted buffer areas are incorporated in the marina plan, to screen marina parking and other activities from adjacent residential neighborhoods.

Public Open Space

DEFINITION

Public Open Space constitutes land areas owned and maintained by state, federal county and municipal agencies or non-profit private groups (such as conservation organizationa and homeowner's associations) and dedicated to conservation of natural resouces, public recreation, or wildlife protection or management. Public Open Space also includes State

Forests, State Parks, and State Fish and Wildlife Management Areas and designated Natural Areas (N.J.S.A. 13:1B-15.12a et seq.) within DEP-owned and managed lands.

POLICY

(1) New or expanded public or private open space development is encouraged at locations compatible or supportive of adjacent and surrounding land uses.

(2) Development that adversely affects existing public open space is discouraged.

(3) Development within existing public open space, such as campgrounds and roads, is conditionally acceptable, provided that the development complies with the Coastal Resource and Development Policies and is consistent with the character and purpose of the public open space, as described by the park master plan when such a plan exist.

RATIONALE

As the rapid urbanization of New Jersey continues and leisure time increases, open space will play an increasingly important role in maintaining a desirable living environment for the residents of New Jersey. Even though the supply of open space has decreased under the growing pressure for development, the State's expanding population will require more public open space to satisfy its needs.

Not only is open space the basic resource for recreation facility development, it also performs other worthwhile functions. Open space can create public spaces in densely settled areas, shape urban growth, provide buffers for incompatible uses, retain contiguous farmland, insure the preser-

vation of wildlife corridors, increases the economic value of adjacent land, and preserve distinct architectual, historic, and geologic sites.

The distribution of open space should not only be centered around the preservation of unique areas, but must also respond to the needs of people. Where possible, open spaces should be onctinguous both visually and physically to promote a sense of continutiy and to afford users continued movement through the public open spaces.

CONSISTENCY WITH POLICY

Development of a marina at the Kill Van Kull Park Site will result in making approximately 2060 feet of water's edge that are now separated from the Park by a chain link fence accessible to the public and will also add almost a quarter acre of accessible public open space to the park in the form of a boardwalk and seating area incorporated in the 1500 wave screen necessary to protect the marina boat basin from wave and surge action.

Public Access to the Waterfront

POLICY

The State of New Jersey Department of Environmental Protection's Hudson Waterfront Walkway Plan and Design Guidelines, March, 1984, prepared by Wallace Roberts & Todd, Louis Berger & Associates and Ralph B. Hirsch, sets out policies and standards with regard to public access to the waterfront. Regarding the role of waterfront municipalities in providing for such access, the plan states that:

"An important and very direct way in which waterfront

municipalities can assist in realizing the Walkway Plan is by constructing the portions of the proposed walkway that cross municipally owned open space on the water-front" (p. 28)

The Walkway Plan delineates a continuous access system linking the George Washington Bridge to the Bayonne Bridge.

> "With a clear span from abutment to abutment of 1,652 feet, the bridge, [completed in 1931], is still the world's longest man-made arch." (Hudson Walkway Plan Summary)

CONSISTENCY WITH POLICY

Construction of a walkway along an improved bulkheaded edge of Kill Van Kull Park, together with construction of a new 1,500 foot boardwalk and seating area as part of a wavescreen to protect the marina boat basin, would provide a fine southern terminus for the Hudson Walkway, balancing the Palisades Park at its northern end.

Detailed design of the marina must take into account minimum requirements and design guidelines for construction of the walkway.

Boat Ramps

DEFINITION

Boat ramps are inclined planes, extending from the land into a water body for the purpose of launching a boat into the water until the water depth is sufficient to allow the boat to float. Boat ramps are most frequently paved with asphalt or concrete, or covered with metal grates.

1. Acceptability Conditions

(i) Where boat ramps are conditionally acceptable, they must meet the following conditions: (a) there is a demonstrated need that cannot be met by existing facilities, and (b) they cause minimal practicable disturbance to intertidal flats or subaqueous vegetation.

(ii) In all water areas, boat ramps shall be constructed of environmentally acceptable materials, such as concrete or oyster shell, and garbage cans shall be provided near the boat ramp. Public use ramps shall have priority over restricted use and private use ramps.

CONSISTENCY WITH POLICY

The public launching ramp at the proposed marina will be constructed of environmentally accepted materials and designed to cause the minimum practicable distrubance to intertidal flats or subaqueous vegetation. The need for launching ramp in sheltered waters in Bayonne will be exacerbated by the Harbor Drift Removal Program.

Docks and Piers (Recreational and Fishing)

DEFINITION

Recreational and fishing docks and piers are structures supported on pilings driven into the bottom substrate, or floating on the water surface, which are used for recreation or fishing or for the mooring of boats which are used for recreation or fishing, including commercial fishing.

1. Acceptability Conditions

Docks and Piers are conditionally acceptable in General Water Areas bodies provided that: (i) there is a demonstrated need that cannot be satisfied by existing facilities, the construction minimizes adverse environmental impact to the maximum extent feasible, (iii) the docks piers are located so as to not hinder navigation or conflict with overhead transmission lines, and (iv) there is minimum feasible interruption of natural water flow patterns.

Docks and piers on pilings shall be preferred to construction on fill. Reparis and maintenance of existing docks and piers are generally acceptable.

CONSISTENCY WITH POLICY

The wave screen necessary for the marina will also serve as a recreational and fishing pier for the residents of Bayonne for whom this and other types of open space are very limited at present.

A preliminary review of the plan by the New York office of the U.S. Army Corps of Engineers and unofficial discussions with the Coast Guard find that the screen and other marina facilities will not hinder navigation and will be designed not to interrupt natural water flow patterns.

Dredging - New

DEFINITION

New dredging is the removal of sediment from the bottom of a

water body that has not been previously ;dredged or excavated, for the purpose of increasing water depth, or the widening or deepening of navigable channels to a newly authorized depth or width.

1. Acceptibility Conditions

New dredging is conditionally acceptable in Oceans, Rivers, Creeks and Streams for boat moorings, navigation channels or anchorages (docks) providing that: (i) there is a demonstrated need that cannot be satisfied by existing facilities, (ii) the facilities served by the new dredging satisfy the location requirments for Special Water's Edge Areas, (iii) the adjacent water areas are currently used for recreational boating, commercial fishing or shipping, (iv) the dredge area causes no significant disturbance to Special Water or Water's Edge Areas, (v) the adverse environmental impacts are minimized to the maximum extent feasible, (vi) dredging will have no adverse impacts on groundwater resources, (vii) an acceptable dredge spoil disposal site exists, (viii) the dredged area is reduced to the minimum practical and (ix) turbidity is controlled during the dredging operation using best available technology (reference: U.S. Army Waterways Experiment Station, Dredged Material Research Program Report, TR D5-78-22).

As necessary on a case-by-case basis to mitigate adverse impacts upon Shellfish Beds (7:7E-3.2), Surf Clam Areas (7:7E-3.3), Finfish Migratory Pathways (7:7E-3.9), and nursery areas for finfish, and to prevent reduction of ambient dissolved oxygen below critical levels, or the increase of turbidity or the resuspension of toxic substances above critical levels, seasonal limitations may be imposed on new dredging.

New dredging or excavation to create new lagoons for residential development is prohibited. New dredging in Lakes, Ponds and Reserviors, Bays, Man-made Harbors and Guts is discouraged.

New dredging is conditionally acceptable to control siltation in Lakes, Ponds and Reservoirs.

CONSISTENCY WITH POLICY

This site requires less dredging than any of the alternative sites considered. Detailed design of the marina will include mitigation actions for any adverse environmental impacts associated with dredging.

The identification of a spoils disposal site will depend on the type of spoils materials dredged.

Dredge Spoil Disposal

DEFINITION

Dredge spoil disposal is the discharge of sediments (spoils) removed during operations.

1. Acceptability Conditions

Dredge Spoil Disposal is prohibited in Tidal Guts, Man-made Harbors, and Medium Rivers, Creeks and Streams, and discouaged in Open Bays and Semi-Enclosed and Back Bays when the water depth is less than 6 feet. Spoil disposal be sidecasting in these water body types when shallow waters preclue removal of the dredge spoil from the area is conditionally acceptable on a case by case basis.

Disposal of dredge spoils in the ocean and bays deeper than six feet is conditionally acceptable provided that it is conformance with USEPA guidelines (40 CFR 230, 40 FR 41291, September 5, 1975) established under Section 404(b) of the Clean Water Act.

EPA guidelines require that consideration be given to the need for the proposed activity, the availability of alternate sites and methods of disposal that are less damaging to the environment, and applicable water quality standards. They also require that the choice of site minimize harm to municipal water supply intakes, shellfish, fisheries, wildlife, recreation, threatened and endangered species, benthic life, wetlands and submerged vegetation, and that it be confined to the smallest practicable area.

Clean dredge sediments of suitable particle size are acceptable for beach nourishment on ocean or open bay shores.

The use of clean dredge spoil to create new wetlands in any General Water Area is conditionally acceptable depending upon an evaluation of the biological value of the wetlands gained compared with the water area lost.

Spoil disposal in Lakes, Ponds and Reservoir is conditionally acceptable provided that the spoil is adequately contained.

CONSISTENCY WITH POLICY

Depending upon the type of spoils materials identified, spoils may be used in creating new Tideland Flats along the Kill Van Kull to replace areas distrubed by marina construction.

If spoil borings find toxic spoils materilas special efforts will be required to find an acceptable spoils disposal site.

Piling

DEFINTION

Piling is the insertion of columnar structural members into the water bottom substrate.

1. Acceptability Conditions

When pilings are an element of docks and moorings they must meet the acceptability conditions for those uses. The placement of pilings for other purposes is discouraged in lakes, ponds, reservoirs, and ocean and bay waters greater than 18 feet in depth. Elsewhere pilings are conditionally acceptable provided that they are not a hazard to navigation.

CONSISTENCY WITH POLICY

A preliminary unofficial review of the marina plan by the New York office of the U.S. Army Corps of Engineers, and preliminary discussions with the Coast Guard indicate that proposed piling locations will not be a hazard to navigation.

Marina Guidelines

A review of NJDEP's Marina Guidelines, Developing a Marina in New Jersey: A Handbook, prepared by Rodgers, Golden and Halpern finds that the proposed Marina includes all recommended elements and many optional elements, as indicated in

the following summary:

Marina Should Include:

YES o Breakwater
YES o Fairways and Channels
YES o Piers and Mooring Slips
YES o Boat Launching System - Travel Haul, Railroad, etc.
YES o Marina Office - lsr Floor
YES o Parking - Under Bridge
YES o Access Road

May Also Include:

POSSIBLE o Boat Repair
YES o Boat and Accessory Sales - lsr Floor
POSSIBLE o Boat Rental
YES o Boat Equipment and Supplies Sales - lst Floor
YES o Fuel Depot - Near Restaurant
YES o Fresh Water & ice Supply
YES o Sewage Pumpout & Solid Waste Disposal
YES o Telephone & Electric Hookup - On Pier
NO o Grocery Store
NO o Club House
YES o Lockerroom - lst Floor
YES o Dry Storage Area Under Bridge For Wet Storage w/Bubbler Option

Large Development May Have

YES o Restaurant
NO o Shops
NO o Trade Center
NO o Community Center
NO o Convention Center
NO o Selected Industry

NO o Offices
NO o Exhibition Center
NO o Muesum
NO o Historic Vessel Display
YES o Sports Recreation Facility
NO o Hotel/Motel
NO o Residential

PART III

BUILDING THE MARINA AND MAKING IT WORK

OPTIONS FOR MARINA DEVELOPMENT AND MANAGEMENT

The size and type of marina to be develop in Bayonne will depend upon the City's ultimate decision with regard to its objectives.

If, like the cities of Perth Amboy, Sewaren, and Elizabeth, the City of Bayonne decides that its primary purpose is to provide a small marina as a part of its waterfront improvement program, with rental fees comparable to those at existing marinas in the City, then the marina will almost certainly have to publicly owned, maintained and managed, and the program may vary considerably from the program for a marina to be developed and managed by a private sector operator.

If the City of Bayonne continues on its initial course, with the intention of seeking a private sector marina developer and operator, then certain minimum program criteria must be taken into account in selecting the marina site and developing the marina plan.

Preliminary reserach finds that the minimum number of slips necessary to make a new marina profitable to a private sector operator in the Bayonne area is 100-150 slips. Based upon boat ownership patterns, and waiting lists at existing marinas in the area, it is estimated that new 150 slip marina in Bayonne, charging permanent slip fees of $38/foot and winter storage fees of $15/foot, would be fully occupied within six months and that the market could support an additional 100 slip second phase if not during the same period of time, then shortly thereafter. Appropriate marketing will be necessary

to determine whether or not to construct the entire marina in a single stage.

The $38/foot permanent slip fee is considered to be the minimum necessary in order for the City to be ablt to attract a marina developer/operator, based upon preliminary analyses. While higher slip fees would increase the numbers of marina developer-operators from whom the City can select, the objective of providing slips for City residents suggest that fees of $50-$60/foot charged at many new East Coast marinas may be inappropriate for a marina that is intended to serve as a community amenity.

Demand could be expected to be at least as strong for slips in this size marina if it were run as a municipal marina, like the Elizabeth marina where the City of Elizabeth is seeking only to cover the salary costs of staff to operate the marina, and where ship fees are therefore $18.75/foot for City residents and $25/foot for non-residents. Similarly, Perth Amboy has established a Port Authority to operate its marina. Slip fees of $26/foot for residents and $52/foot for visitors generate revenues intended to pay only for the costs of marin operation and maintenance.

Based upon a review of boat types and sizes in marinas in Bayonne and nearby, the following preliminary slip size allocation was prepared for the Bayonne Marina.

Slip Size	Phase I	Phase II	Total
25' slips	60 slips	40 slips	100 slips
30' slips	45 slips	30 slips	75 slips
35' slips	30 slips	20 slips	50 slips
45' slips	12 slips	8 slips	20 slips
55' slips	3 slips	2 slips	5 slips
TOTAL	150 slips	100 slips	250 slips

Additional research found that storage for smaller boats would best be provided on land. The proposed unit for the Bayonne Marina therefore provides for 234 slilps and on-land storage for 20-60 additional boats of 16'-20' length.

Since nearly 40% of the annual income of waterfront facilities that cater to boat-owners is derived from one type of service or another, it is essential if a private sector operator is to be sought to provide for "upland" space for such uses as yacht brokers, electronics sales, ships chandleries, restaurants and fish markets.

While a ratio of 0.50 parking spaces to slips must be provided to meet peak season boat owner requirements, additional parking will be required for a restaurant and any other ancillary uses to be provided. Sites that are adequate to permit additional parking for non-boating recreational uses and marina visitors are preferred.

Finally, in order to assure that project site improvements are eligible for Green acre funds, at least fifty percent of the upland portion of the site must be public open space.

ORDER OF MAGNITUDE COSTS FOR THE MARINA

Preliminary order-of-magnitude costs for development the basic public portions of the marina are estimated to be as follows:

wavescreen (coffer dam) @ $1490/linear foot x 1380' =	$2,056,200
timber walkway with electricity, lights, benches, etc, @ $1030/linear foot x	

1380' =	$1,421,400
riprap (dump rock) @ $800/linear foot x 2060' =	$1,648,000
timber relieving platform walkway over dump rock riprap @ $65/square foot x 35,200 sq. ft. =	$2,288,000
dredging to 12' depths $4.80/w.yd. x $214,600 w.yds. =	$1,030,100
landscaping of 8 acre land area @ $150,000/acre x 8 acres =	$1,200,000
Subtotal	$9,643,700
Landscaping and Engineering Services	482,185
Hydrologic Survey, 1 foot contours	10,000
Six 3 1/2 inch vibra-core bottom samples to 40' depth	25,000
	$10,160,885

It is assumed that construction of the marina and restaurant and marina facilities building will be carried out and paid for by private developers with twenty-year or longer leases from the City.

OPTIONS FOR FUNDING MARINA IMPROVEMENTS

Major potential sources for funding for public improvements for the proposed marina include:

- Green Trust low interest loans and grants from the NJDEP Green Acres Program

- Shore protection low interest loans from NJDEP Coastal Engineer

- Possible special funding for walkway and waterfront access construction from the state which might be able to be used to help match green trust funds for specific improvements such as the proposed timber walkway system.

DEVELOPMENT PHASING

Proposed development of the marina at the Kill Van Kull Park Site has been broken into three phases, as follows. It should be noted that the length of time between phases will be determined largely by availability of funding.

Phase A

Step 1 - construction of the wave screen.

Step 2 - Water's edge stabilization.

Marina and Restaurant developers should be sought after completion of either of these improvements. Either Step 1 or Step 2 could be undertaken first or independently or they could be undertaken simultaneously, depending upon availability of public funding.

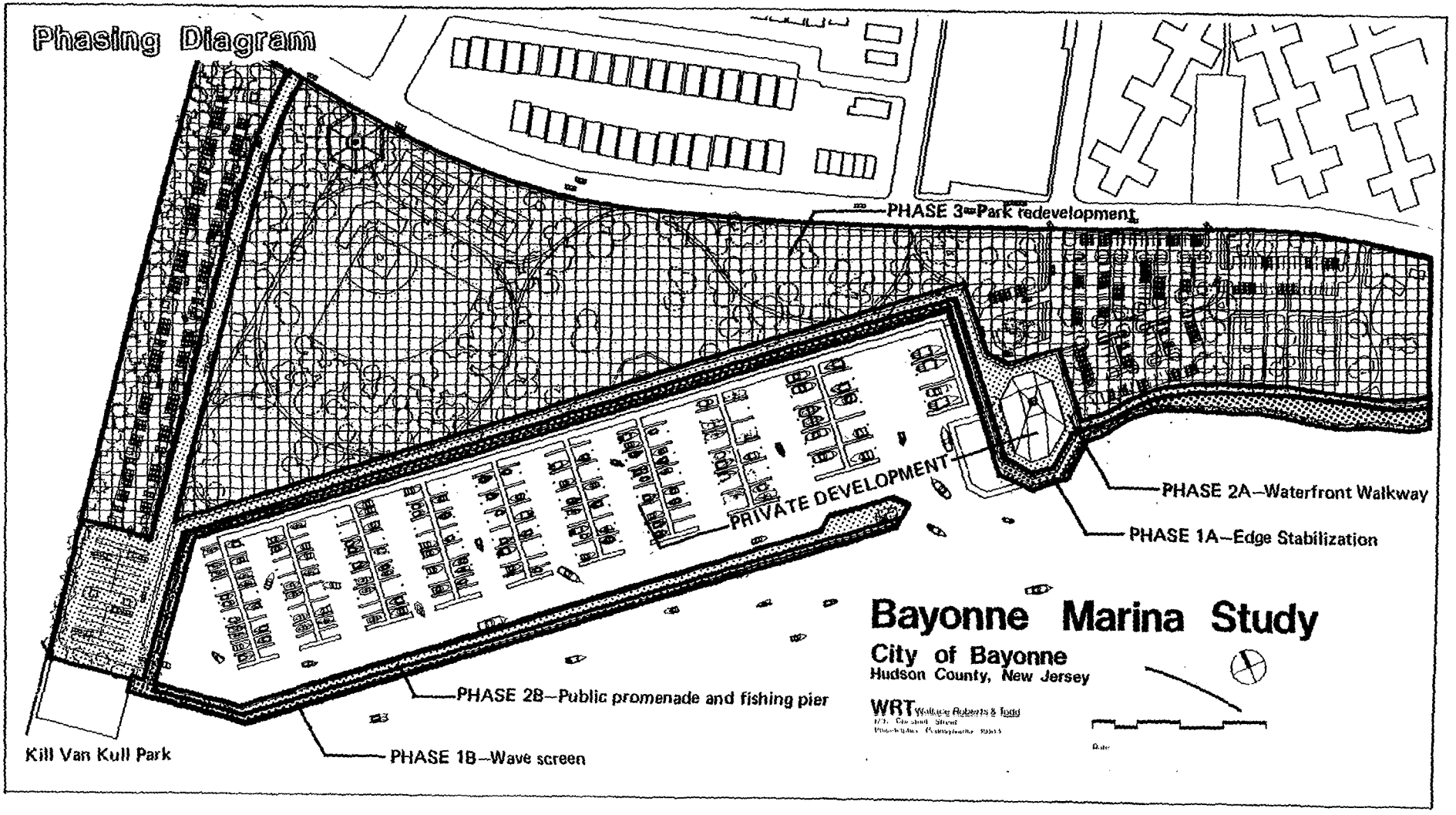
Phase B

Step 1 - Construction of timber walkway on wavescreen.

Step 2 - Construction of timber walkway on riprap.

Phase C

Landscaping and development of land area.


Phasing Diagram
PHASE 3—Park redevelopment
PRIVATE DEVELOPMENT
PHASE 2A—Waterfront Walkway
PHASE 1A—Edge Stabilization
PHASE 2B—Public promenade and fishing pier
PHASE 1B—Wave screen
Kill Van Kull Park
Bayonne Marina Study
City of Bayonne
Hudson County, New Jersey
WRT Wallace Roberts & Todd

NEXT STEPS

Next steps necessary to make the plan a reality are:

1. Approval of the Marina Plan by Bayonne City Council.

2. Application for funding of construction of the open space elements of the plan under Green Acres Programs.

3. Application for funding of construction of the wave screen with shore protection funds from the New Jersey Department of Environmental Protection Division of Coastal Resources.

4. Seek assistance from New Jersey Department Environmental Protection Division of coastal Resources in obtaining special demonstration project funds for walkway and other elements of the marina.

5. Application for a waterfront development permit from the New Jersey Department of Environmental Protection Division of Coastal Resources.

6. Application for a marina development permit from the U.S. Army Corps of Engineers and the New Jersey Department of Environmental Protection.

7. Seek marina developer, or choosing to build the marina as a publicly operated facility.

8. Seek a restaurant developer.

APPENDIX A
MARKET OVERVIEW

BOATING AND BOATING FACILITIES

National and State Trends

The 1980s have seen a continuation of growth in recreational boating, nationwide as well as in New Jersey. According to the most current available information from the National Marine Manufacturers Association, between 1981 and 1983, there was a 1.8% increase in persons participating in recreational boating in the U.S., a 6.0% increase in the number of all types of boats in use in the U.S. including recreational boats, and a 2.9% decrease in the number of marinas in the U.S. During the same period, there was an 8.8% increase in the number of registered/documented boats in New Jersey.

Boating Magazine's report, The Boating Business, 1981 found waiting lists for dock space throughout much of the country, and identify environmental restrictions as the major reason that supply has not matched demand throughout the country for marina space. Another reason that demand for marina slips exceeds supply is that existing marinas succomb to pressures to develop at a higher intensity of use.

TRENDS IN RECREATIONAL BOATING IN THE 1980's

	1981	1983	% Change 1981-1983
People Participating in Boating in the U.S.	60,711,000	61,776,000	+ 1.8%
Number of all Types of Boats in the U.S.	12,496,000	13,245,000	+ 6.0%
Number of Registered Documented Boats in New Jersey	120,287	130,922	+ 8.8%
Number of Marinas in the U.S.	4,550	4,419	- 2.9%

Source: National Marine Manufacturers Association, November, 1984.

Characteristics of Selected Marina Operations Within a Fifteen Mile Radius of Bayonne

A review of characteristics of selected marina operations in and near Bayonne was undertaken in order to:

identify competing marinas available to people who might choose to keep their boat at a marina in Bayonne;

determine what facilities are available at those marinas, and other critical characteristics, such as dockside water depth etc;

determine slip rental rates for these facilities.

Within this market area, a listing of marinas was developed as follows:

- The 1984 Northern Edition of the Waterway guide provided information with regard to facilities available at marinas within the area, based upon their annual survey of all marinas on the East Coast and in the Great Lakes that will accept transient vessels of 20' and in length;

- The 1984 Marinas and Boat Basins Guide of the New Jersey Department of Commerce and Economic Development Division of Travel and Tourism, which provided further information about marinas in the New Jersey portion of the Study Area;

- The two remaining existing marinas in the City of Bayonne were added to this list, as well as

- Marinas in Perth Amboy Elizabeth and Woodbridge, New Jersey, proposed, under construction, or recently completed, for which studies were funded by the New Jersey Department of Environmental Protection Division of Coastal Resources;

- Information that could be obtained about Marinas proposed for Liberty State Park and the Port Liberte development at Caven Point was also incorporated.

- In addition, locations were noted of marinas included as parts of proposals for Newport City in Jersey City, the Port Authority Terminal in Hoboken, the Hartz Mountain development in Weehawken, and the Arcorp development in Weehawken and West New York. Since these marinas are only at the concept planning stage, no information is available regarding their size, facilities, slip fees, etc.

To supplement information that was available from published sources, a questionnaire was prepared and mailed to marina operators within the study area. Follow-up calls succeeded in eliciting partial responses from sixteen of the thirty-two existing marine operators from whom additional information was sought.

Typically, none of the private marina operators were willing to provide information about their revenue sources or costs. Many were willing, however, to provide reponses to other questions including rental rates, types and sizes of boats accommodated, and services provided.

The size of the market area was determined on the basis of the objectives of the City of Bayonne, which are to provide an open space and recreational resource for Bayonne residents, to accommodate City residents and boat-owners whose boats may be displaced by the Harbor Drift Cleanup Program and to establish a marina facility that will generate income necessary to support capital and operating costs and profit margins.

Bayonne lies within fifteen miles of Long Island Sound, one of the great recreational boating areas of the eastern seaboard, and of the Romer Shoal light, where the lower New York Bay meets the Atlantic Ocean.

Discussions with marina owners and operators in Bayonne found that the most common destination for boaters who keep their boats in the Bayonne Marinas are the New York Bay and the Atlantic Ocean. Between 60 and 80 percent of the boat-owners come from the City of Bayonne and most of the remainder come from nearby communities such as Jersey City and Hoboken.

A fifteen mile radius of the City therefore accounts for most marina locations that would be likely to attract boat-owners who now keep their boats in Bayonne.

A total of 39 existing and proposed marinas were reviewed in analysing the marina market for the Bayonne area. Of these 39 marinas, 32 are existing, and the remaining 7 are proposed.

Type of Boats

Of the 24 marinas that indicated the type of boat they accommodate, 16, or two thirds, stated that they provided for both power and sailboats, while eight have only power boats. Many of those that accommodate sailboats as well as power boats indicated that they provide for a very limited number of sail boats, (e.g. five out of a total of 150 boats; three out of a total of 45 boats). The three existing marinas in Bayonne provide primarily for power boats, but each accommodates a few sailboats.

Marina Size

Of the 25 marinas for which information about numbers of slips was available, three have 16-25 slips, eight have 35-50 slips, eight have 75-165 slips, four have 200-230 slips and two have or plan to have 400-452 slips. The three existing marinas in Bayonne have 45 slips (Robbins Yacht club) 100 slips (Atlas Yacht Club) and 150 slips (Elco Marina).

Transient Slips

While many marinas accept transient vessels, few set aside specific slips for them. Those that do, generally limit such slips to five percent or less of total slips, excepting marinas like the New York Skyports Marina at 23rd Street and the East River in Manhattan that are particularly attractive to transient boaters because of their unique location. Of the three existing marinas in Bayonne, two accept transient vessels: the Elco Marina takes transients if they have available slipspace, and the Robbins Reef Yacht Club can accommodate three sailboats at their guest dock.

Length of Longest Slip

Marinas that reported the length of their longest slip fell into three groups: those whose longest slip was 45 feet or less who represented about half of those reporting and those whose longest slip is 100 feet, who represented one quarter of those reporting with the longest slips of the remaining quarter of those reporting ranging between 50 feet and 70 feet. The longest boat size accommodated by the Atlas Yacht Club is 33 feet at the Elco Marina, 75 feet, and at Robbins Reef, 40 feet.

Dockside Water Depth

For the 23 marinas for which information about dockside depth was available, these depths ranged rather evenly from three or four feet to 20 feet. All three of Bayonne's existing marinas have dockside depths of three to four feet.

Type of dock

All marinas in the area for which such information was reported have floating docks, because of the significant tidal changes throughout the area.

Fuel

Thirteen of 21 marinas provided both gas and diesel fuel, while eight provide only gas. Seven marinas were reported as not supplying any fuel.

Railway/Lift

Six of 26 marinas have railways and 11 have lifts. In Bayonne, the Elco Marina has a lift.

Travel/Ramp

Nine of 22 marinas have travelifts and six have ramps.

Repairs

Twenty-three of 28 marinas provided some type of engine repairs and 18 provide propeller and hull repairs.

Showers and Laundromat

Twelve of 24 marinas provide showers and three, laundromats.

Electrical Outlets

Eleven of 26 marinas provide both 110 volt and 220 volt outlets, and 13 provide 110 volt outlets, only.

Restaurants/Snack Bars

Eleven of 25 marinas have restaurants and four have snack bars at the marina.

Wiater Storage

Fourteen of 16 marinas provide for winter storage of boats.

Parking

Ratios of parking spaces to boat slip spaces range between 0.50 spaces per slip to 4.28 spaces per slip. As indicated in the accompanying table, high parking to slip ratios were typically found at Yacht clubs, and the overall average was 0.92 spaces/slip. Omitting these clubs, the average ratio of parking spaces to slips was 0.78.

Parking to Slip Ratios

Keyed to Marina
Location Map.

	Slips	Parking Places	Parking Place/Slip Ratio
3 Mansion Marina	230	150	0.65 spaces/slip
5 Marina at Bay Street Laundry	400	300	0.75 spaces/slip
6 MJM Marina	130	100	0.77 spaces/slip
7 Paradise Yacht Club	35	150	4.28 spaces/slip
10 Argo Boat Mfg.	16	10	0.62 spaces/slip
13 Worldwide Export	75	75	1.00 spaces/slip
18 New York Skyport Marina	36	45	1.25 spaces/slip
24 Mayer Boat Works	200	100	.50 spaces/slip
25 Flushing Bay Yacht Club	25	35	1.40 spaces/slip
27 Robbins Yacht club	45	135	3.00 spaces/slip
31 Elizabeth	45	88	1.96 spaces/slip
34 Proposed Liberty State Park	438	352	0.80 spaces/slip
Average	1,675	1,540	0.92 spaces/slip
Average Omitting Yacht Club	1,570	1,220	0.78 spaces/slip

Slip Fees and Storage Fees

As indicated in the accompanying table, there is a wide range in fees charged for permanent slips, winter storage and transient slips in and near Bayonne. Permanent slip fees range between $10/foot and $70/foot, with an average of $30.45/foot. Winter storage fees range from $9/foot to $20/foot with an average of $14/foot. Transient fees range from $.50 to $1.25/foot/day.

Slip Fees and Storage Fees for Selected Marinas

Keyed to Marina
Location Map.

	Permanent Slip Fees	Winter Storage	Transient Slip Fees
3 Mansion Marina	$30-35/foot	$20/foot	-
5 Marina at Bay Street Landing	$49-70/foot	-	$1.25/foot/night
6 MJM Marina Seweran	$31-62.50/foot*	$11.25/-18.75/foot	-
7 Paradise Yacht Club	$55/foot	-	-
10 Argo Boat	$181/foot	$11/foot	-
11 King's Plaza Marina	$22-$40/foot	-	-
13 Worldwide Export	$22.50/foot**	$10/foot	-
18 New York Skyport Marina	$50/foot	-	$1/foot/night
19 Conroy Marine Sales	$27/foot	$15/foot	$10/day
24 Mayer Boat Works	$22/foot	$18/foot (dry)	
	$25/foot	$12/foot (wet)	$.50/foot
26 T & W Marine Service	$25/foot	$18/foot	-
27 Robbin's Yacht Club	$10/foot	-	-
28 Elco Marina	$18.80/foot	$18.80/foot	-
31 City of Elizabeth	$18.75/foot resident	$9/foot resident	
	$25/foot non-resident	$12/foot non-resident	-
34 Proposed Liberty State Park	$30-35/foot	-	$10-$25/day
Average	$30.45/foot	$14/foot	$.50-$1.25/foot/day

*$500-$2,500, permanent slip fee; $300-$450, winter storage

**$450-$900

Waiting Lists, Expansion Plans and Proposed New Marinas

Most of the marinas reporting indicated that they were either full, had waiting lists, or are turning people away. The only marina planning expansion is reportedly doing so because of the necessity of constructing a wave screen to address severe existing surge problems. One marina indicated that they would expand if they could, but do not have expansion space available. Environmental restrictions are generally identified as the major limitation upon new marina development.

The 62 slip Perth Amboy Marina and the 50 slip Sewaren Marina, like the Elizabeth Marina, are elements in major improvements of the waterfront in these communities. The 200 slip Marina proposed by the Spoerry Group at Port Liberte at Caven Point is intended to serve those of the 2,200 residential units in the development that do not have boat slips immediately at their door along the community's proposed internal canal system. The Newport City Marina, the Hartz Marina in Weehawken and the Arcorp Marina in Weehawken and West New York are similarly planned primarily to serve residents within their developments, although Arcorp is proceeding with an application for marina development in advance of residential development. The only currently proposed new marina identified in the Bayonne area that is of a capacity and type clearly intended to serve boat-owners from well beyond either the residential or mixed use development or the community where it is located is the proposed 438 slip Liberty State Park Marina.

Existing Marina Locations

Distances

Nautical Miles (approximate) from Sandy Hook

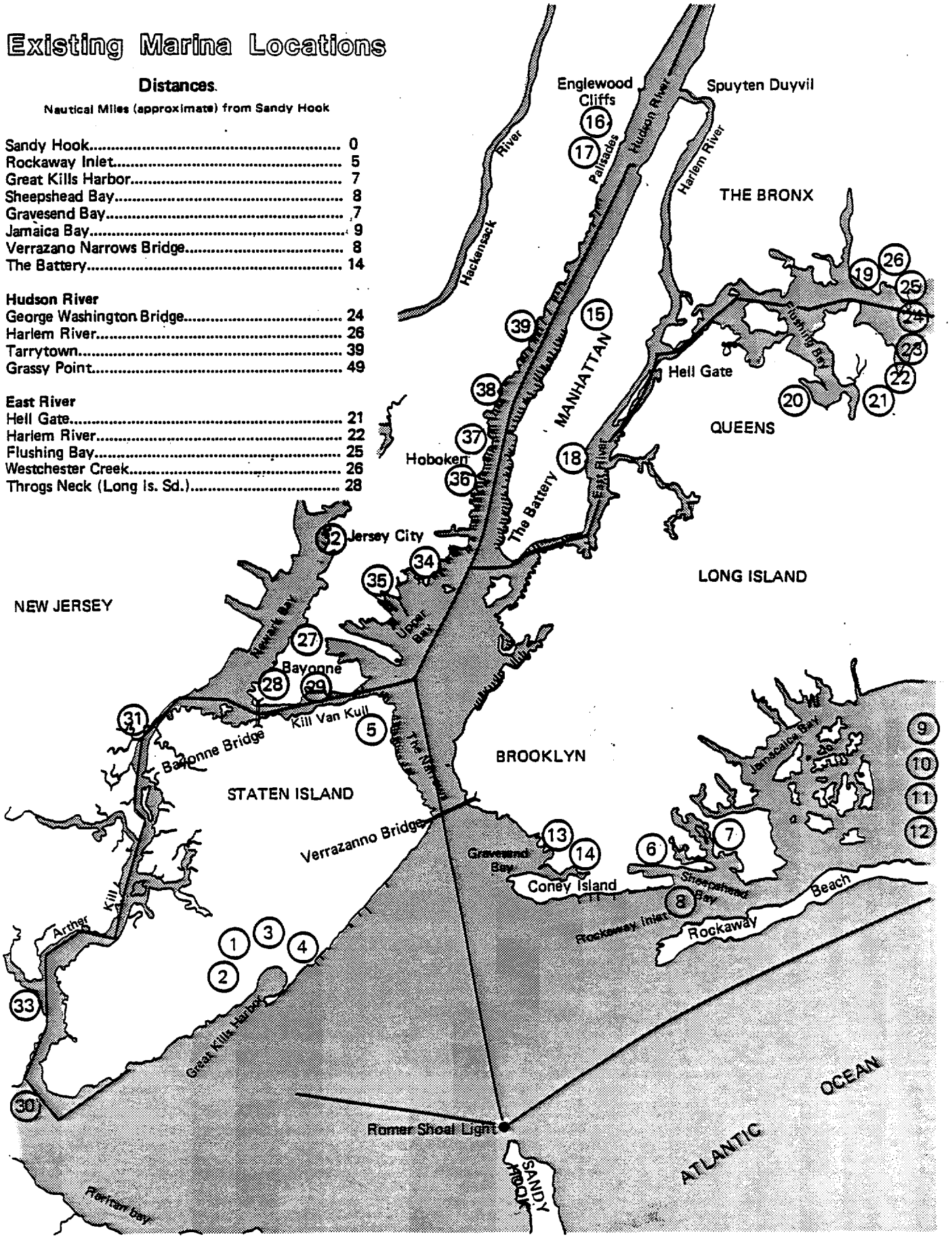
Sandy Hook	0
Rockaway Inlet	5
Great Kills Harbor	7
Sheepshead Bay	8
Gravesend Bay	7
Jamaica Bay	9
Verrazano Narrows Bridge	8
The Battery	14

Hudson River

George Washington Bridge	24
Harlem River	26
Tarrytown	39
Grassy Point	49

East River

Hell Gate	21
Harlem River	22
Flushing Bay	25
Westchester Creek	26
Throgs Neck (Long Is. Sd.)	28



SELECTED MARINAS WITHIN A
FIFTEEN MILE RADIUS OF THE CITY OF BAYONNE
(keyed to marina location map)

1. Great Kills Boatyard and Marina
2. Staten Island Boat Sales
3. Mansion Marina
4. Great Kills Marina
5. Marina at Bay Street Landing
6. MJM Marina
7. Paradise Yacht Club
8. Sheepshead Bay Yacht Club
9. Channel Drive Boatyard
10. Argo Boat Mfg. Co., Inc.
11. Kings Plaza Marina
12. Viking Marina and Hardware
13. Worldwide Export
14. Marina Basin Marina
15. 79th Street Boat Basin
16. Richmond Sales & Marina
17. Von Dohln Marina
18. New York Skyports Marina
19. Conroy Marina Sales
20. Nichols World's Fair Marina
21. Williamsburg Yacht Club
22. Skyline Marine
23. Arrow Yacht Club
24. Mayer Boat Works
25. Flushing Bay Yacht Club
26. T & W Marine Service
27. Robbins Yacht Club
28. Elco Marina
29. Atlas Yacht Club
30. Perth Amboy
31. Elizabeth
32. Roosevelt Marina

33. Sewaren Marina
34. Proposed Liberty State Park Marina
35. Proposed Port Liberte Marina
36. Proposed Newport City Marina
37. Proposed Port Authority Terminal Marina
38. Proposed Hartz Marina
39. Proposed Arcorp Marina

APPENDIX B

EVALUATION AND COMPARISON OF ALTERNATIVES SITES

Six sites were identified as potential future marina sites for the City of Bayonne. This part of the study summarizes the analysis and comparison of these sites that served as the basis for selection of sites for detailed study.

Three of the six sites considered are located on Newark Bay: from north to south these are Hudson County Park, Robbins Yacht club and the Elco Marina. Two of the sites, the Kill Van Kull Park and Atlas Yacht Club are located on the Kill Van Kull River. The sixth site, the Military Ocean Terminal is located on the Upper Hudson Bay.

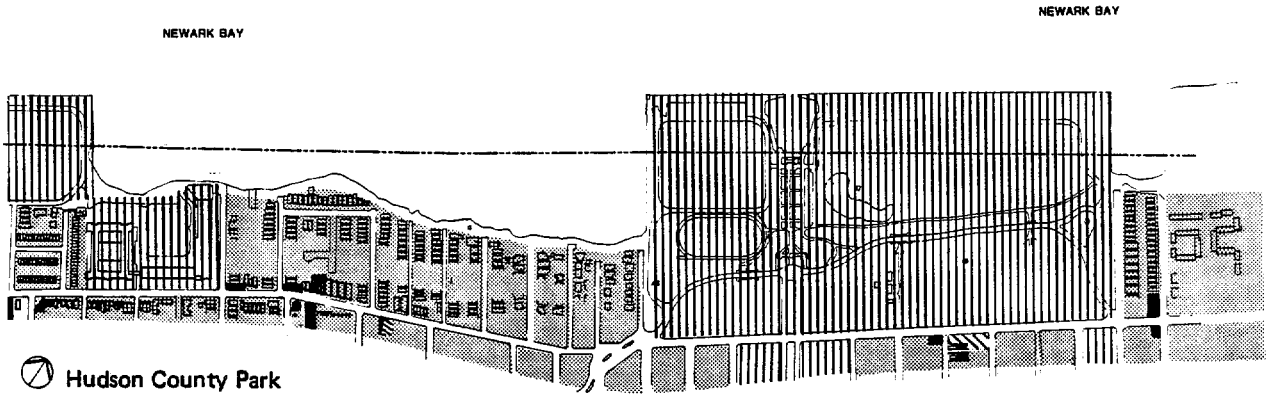
The last of these alternatives, the Military Ocean Terminal site was eliminated from further consideration in a first round evaluation when it was determined that the amount of dredging that would be required would be unacceptable because of existing water depths recorded as 1-3 feet for a distance of at least a mile from the potential site toward the channel.

LAND USE AND PROPERTY OWNERSHIP

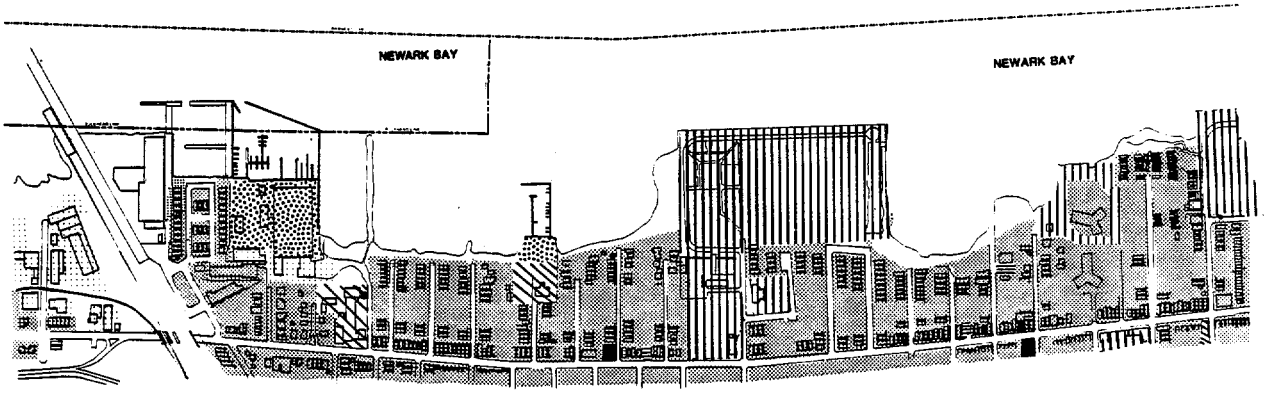
The Hudson County Park Site is a large well established park, with recent bulkheading and promenade currently owned and operated by Hudson County. It is used as active and passive recreational park space. The adjacent land uses are generally residential on the north, west and southern edges.

The Robbins Reef site is a privately owned and operated yacht club. Primarily residential land use exists on all neighboring sides.

Existing Land Use

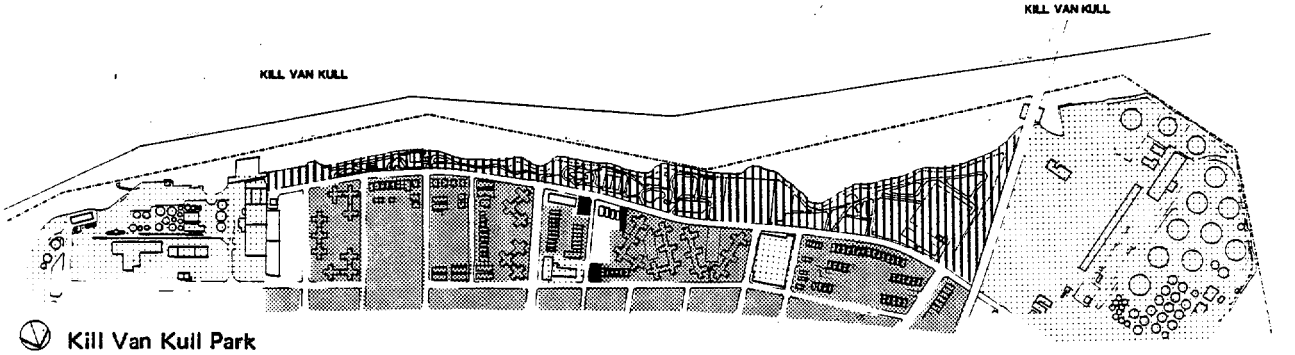


Hudson County Park

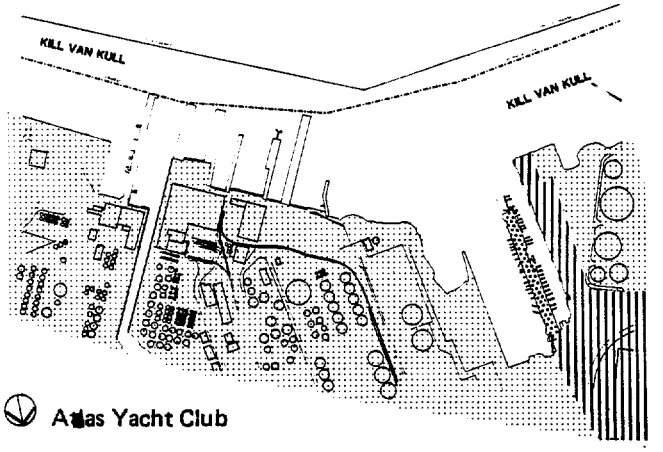


Elco Marina

Robbin's Reef Yacht Club



Kill Van Kull Park



Atlas Yacht Club

- Residential
- Commercial
- Industrial
- Public
- Semi-public
- Marina
- Parking
- Mixed Use
- Vacant

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Hudson County, New Jersey

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Date:

5 Ac.
1 Ac.

The Elco Marina is currently on a year-to-year lease from the owner, the Englander Mattress Company. Adjacent land uses vary from residential to the south to vacant industrial and industrial to the north and east respectively.

The Kill Van Kull Site is owned by the City of Bayonne. An area under the Bayonne Bridge is owned by the New York, New Jersey Port Authority, but a license has recently been granted to the City for its use for public open space. Land uses are heavy industrial to the east and west, with residential to the north.

The Atlas Yacht Club is located on land owned by the City of Bayonne. To the east and west area adjacent heavy industrial uses. To the north is the City's sewage treatment plant.

ZONING

While the Atlas Yacht club is located in an area zoned for manufacturing uses, Hudson County Park, Robbins Yacht Club the Elco Marina and Kill Van Kull Park are all zoned for residential use.

ACCESS

Access to the Hudson County Park site is provided by three entrances along J. F. Kennedy Boulevard. These entrances all connect to an efficient internal loop road system linking all part functions.

Access to Robbins Yacht Club and the Elco Marina is severely constrained by narrow residential streets.

The Kill Van Kull site ranks far and away best among the sites considered in terms of ease of access to the major regional circulation system as well as major local collector streets. This physical accessibility is also associated with a high degree of visibility, an important factor for marina development.

Access to the Atlas Yacht Club is poor, as the site is isolated in a manufacturing area with few adjacent through streets.

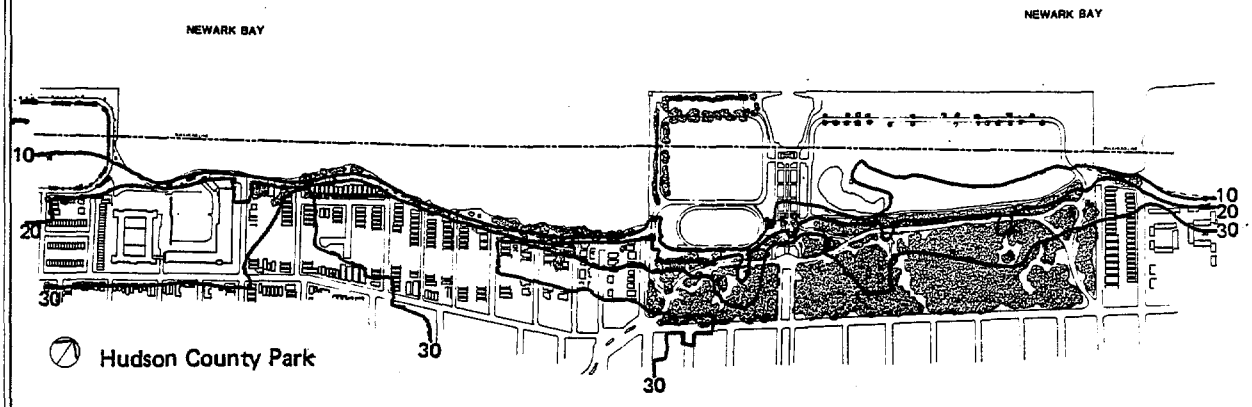
TOPOGRAPHY, SOILS AND VEGETATION

All five sites are relatively flat. The only significant change in elevation occurs on the Hudson County Park Site, which rises gently to an elevation of thirty feet on the east side.

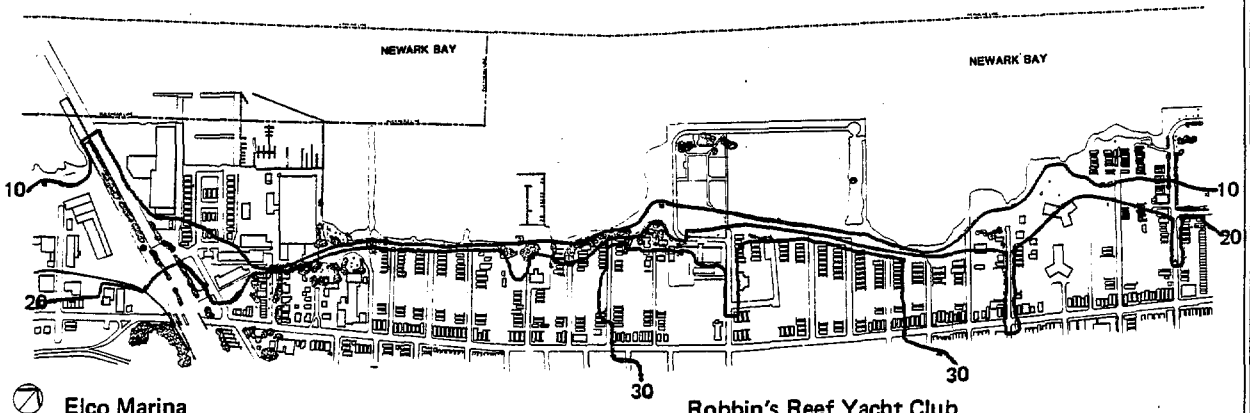
Available information classifies soils as urban land. All of the conclusions of this study assume that there are no unusual subsurface conditions that will present problems for marina construction. Soil borings, and a geotechnical and bathymetric surveys will be necessary to determine whether or not this assumption is correct and to identify such factors as the depth to which bearing piles for docks and other structures must be driven.

Of the five sites, the Hudson County Park site contains the largest concentration of mature vegetation. Mature hardwoods comprise approximately 50% of the park land. The remaining 50% of made land has young introduced varieties of ornamental and shade trees.

Vegetation & Topography

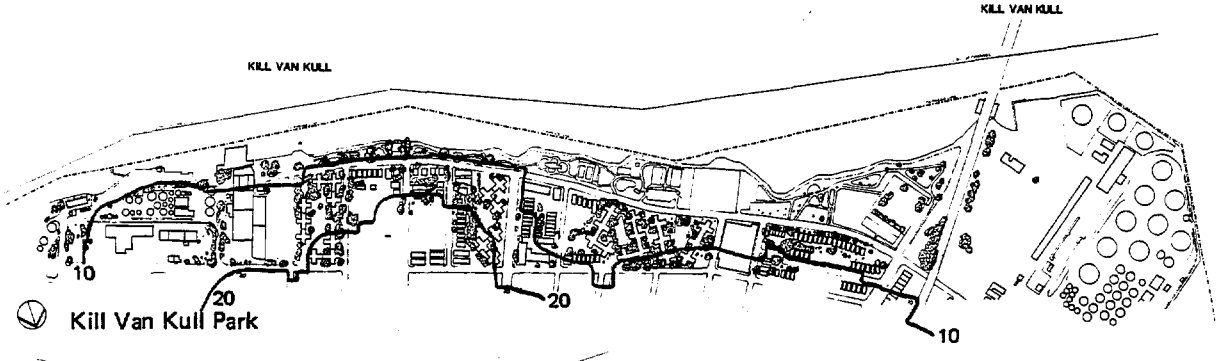


Hudson County Park

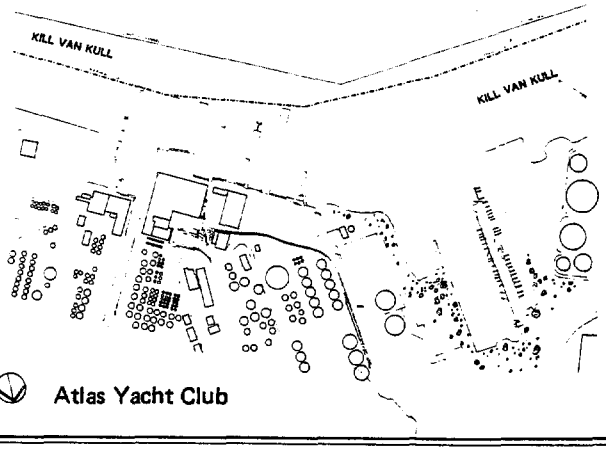


Elco Marina

Robbin's Reef Yacht Club



Kill Van Kull Park



Atlas Yacht Club

Vegetation
10 0-10'
20 10-20'
30 20-30'
30+

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The Robbins, Elco, and Atlas Sites are virtually devoid of any major vegetative cover. A few large mature varieties are present but, most consist of small scrub, and intrusive growth.

Vegetation in the Kill Van Kull Park consists of small introduced varieties of Crabapple, Cherry, Willow and Marple, interspersed with a few mature stands of Ginkgo, and Ash.

TIDES

According to the National Oceanic and Atmospheric administration charts, Mean tide range is from 4.5' near the Kill Van Kull Site to 5.1 near the Hudson County Park Site. Tidal elevations are summarized below.

	Mean High	Mean Low
Hudson County Park	5.1'	0.0
Robbins Reef	4.9'	0.0
Elco	4.5'	0.0
Kill Van Kull	4.5'	0.0
Atlas	4.5'	0.0

All elevations are given to mean low water (MLW) datum.

CURRENTS

Maximum currents found along the Kill Van Kull and Newark Bay are summarized within the table that follows.

	Max. Flood	Max. E75B
Hudson County Park	1.1 Knots	1.7 Knots
Robbins Reef	1.4 Knots	1.4 Knots
Elco	1.4 Knots	1.4 Knots
Kill Van Kull	2.7 Knots	2.1 Knots
Atlas	2.3 Knots	2.2 Knots

Data sources are the National Oceanic and Atmospheric Administrations Publications:

Tidal Current Tables 1985
Atlantic Coast of North America.

Tidal Current Charts
eight edition 1975 New York Harbor.

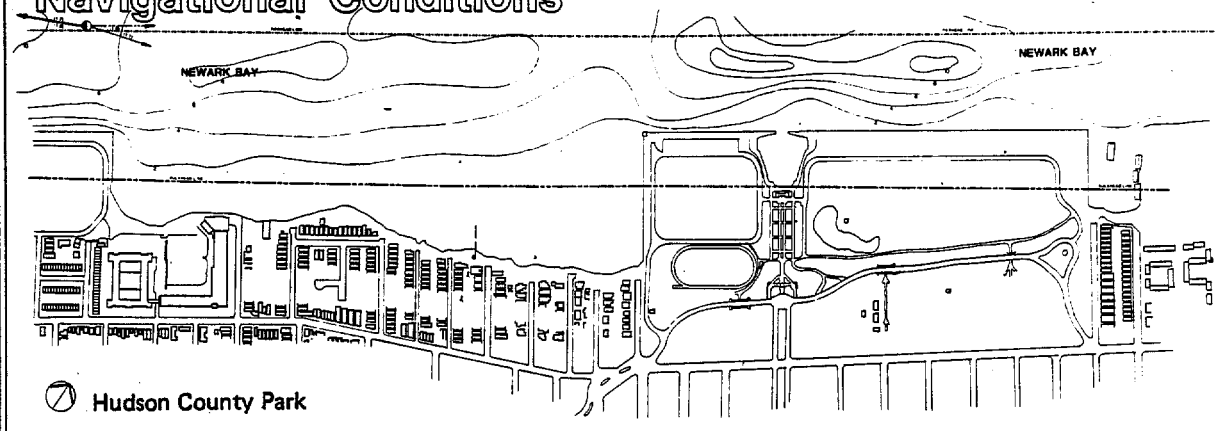
BATHYMETRY

There are two navigational channels which pass by the marina sites in Bayonne, the Kill Van Kull and Newark Bay. Both carry substantial commercial traffic to Elizabeth Port and Port Newark. Both of these channels are maintained by the U.S. Army Corp of Engineers. Depths of these channels are 35'. Areas directly adjacent to all of the sites are shallows with depths ranging from 1' to 12' below mean low water. Robbins Reef and Elco are operating marinas and maintain a channel of navigational depth for in-coming and out-going boats.

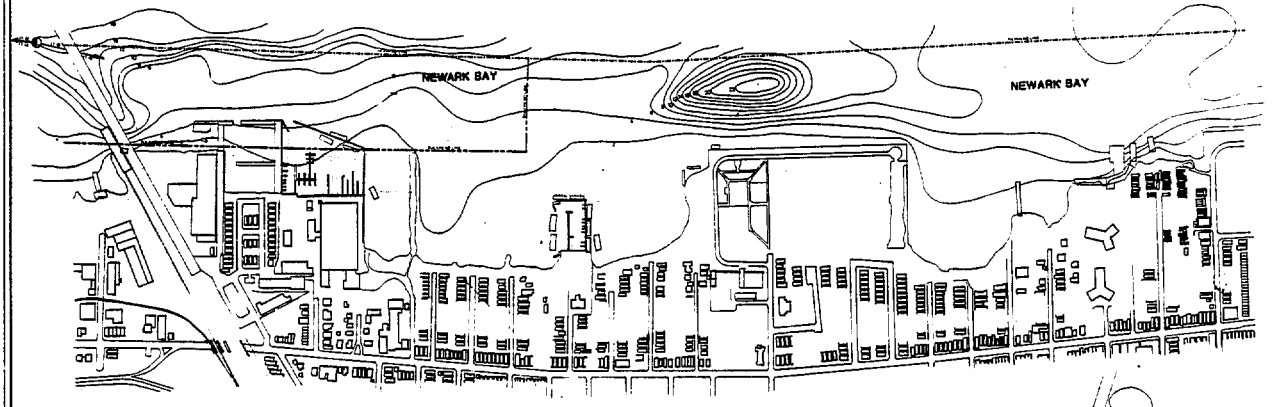
UTILITIES

Water, electric and sewer service lines are available at all five sites.

Navigational Conditions

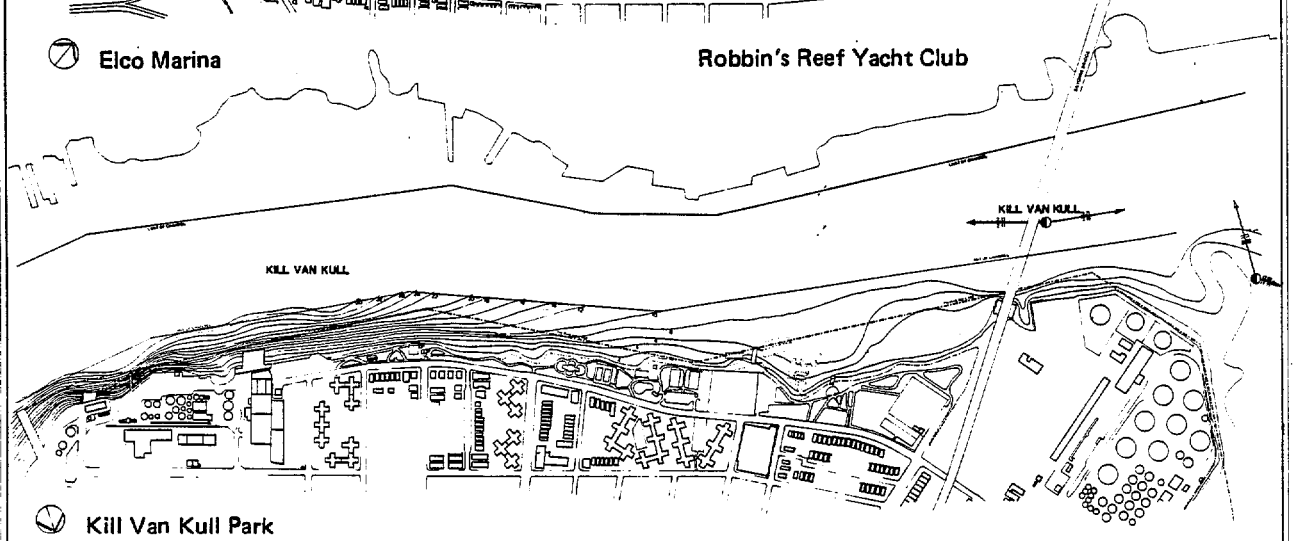


Hudson County Park

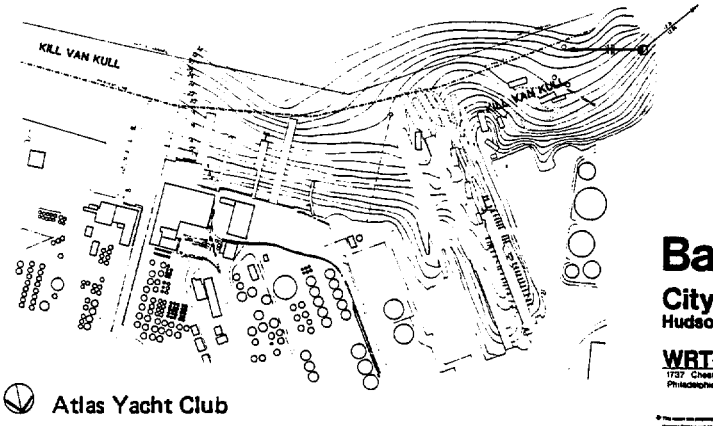


Elco Marina

Robbin's Reef Yacht Club



Kill Van Kull Park



Atlas Yacht Club

Navigational hazard

Flood

Ebb

Note: The arrows show the directions, and the figures the maximum speed in knots of the currents.

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SPECIAL AREAS

The New Jersey Department of Environmental Protection, in an effort to increase the predictability of the department's coastal decision making process and ensure the enforceability of the Coastal Zone Management Program, published Coastal Resource and Development Policies (N.J.A.C. 7:7E-1.1 Et. Seq.). In defining these policies, the Department designated 44 different coastal areas (resources) which merit focused attention and special management policies. The areas are referred to as "Special Areas" and include water areas, water edge areas and land areas.

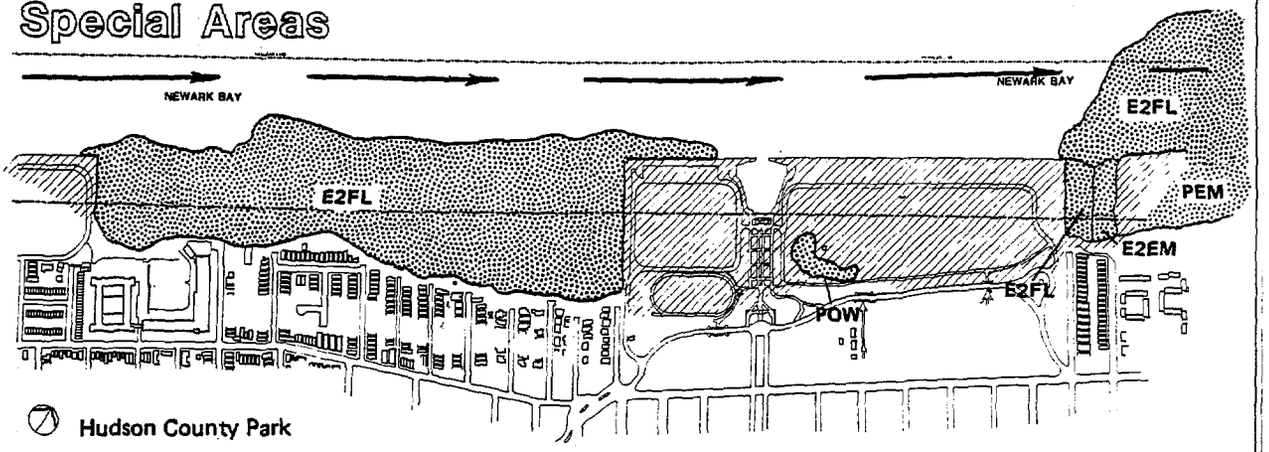
It has been determined that for the five potential marina sites identified, within the City of Bayonne, eight of these special areas may apply to one or all of the sites. These eight "Special Areas" include:

Finfish Migratory Pathways
Navigation Channels
Marina Moorings
Filled Water's Edge
Wetlands
Historic and Archaeological Resources,
Special Urban Areas, and
Public Open Space

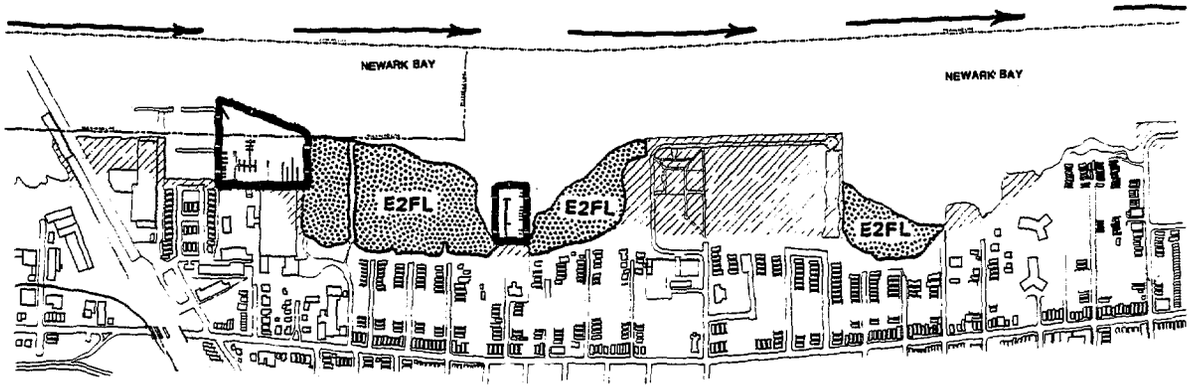
Finfish Migratory Pathways

Marina development at any of the sites may require mitigating measures in order to prevent or to minimize lowering dissolved oxygen levels, releasing toxic chemicals, raising ambient water temperature, impinging or suffocating fish, causing siltation or raising turbidity levels during migration periods.

Special Areas

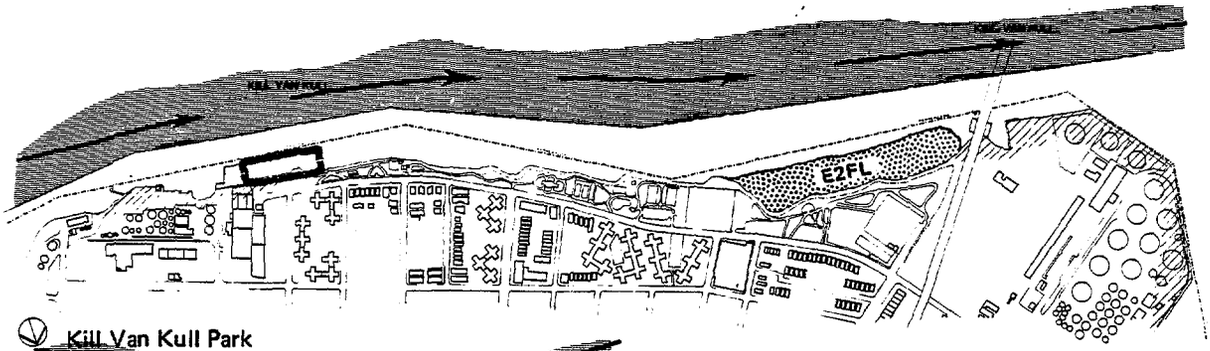


Hudson County Park

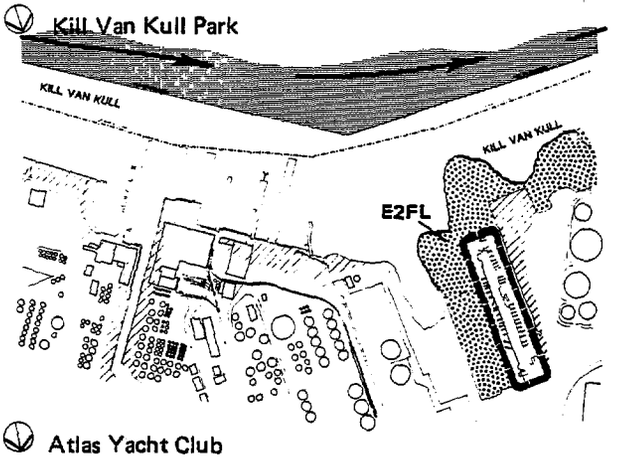


Elco Marina

Robbin's Reef Yacht Club



Kill Van Kull Park



Atlas Yacht Club

- Navigational channel
- Marina mooring
- Filled water's edge
- Wetlands
- Finfish Migratory Pathway
- Historical and Archaeological Resources

Note: All of Bayonne is considered a special urban area by coastal resources & development policies.

Bayonne Marina Study

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Navigation Channels

No loss of navigability would result within established navigation channels near any of the sites as a result of marina development. The Kill Van Kull Park site would require construction closest to the channel in the form of wave screen approximately two hundred feet from the edge of the channel. The New York office of the U.S. Army Corps of Engineers is currently reviewing preliminary drawings of a marina at that site to determine whether or not channel impacts would be acceptable.

Mitigating measures will be required to minimize erosion and siltation during marina construction at any of the sites.

Marina Moorings

Development of any of the five sites as a marina would be supportive of the coastal policy of expanding this important element in New Jersey's coastal resort economy.

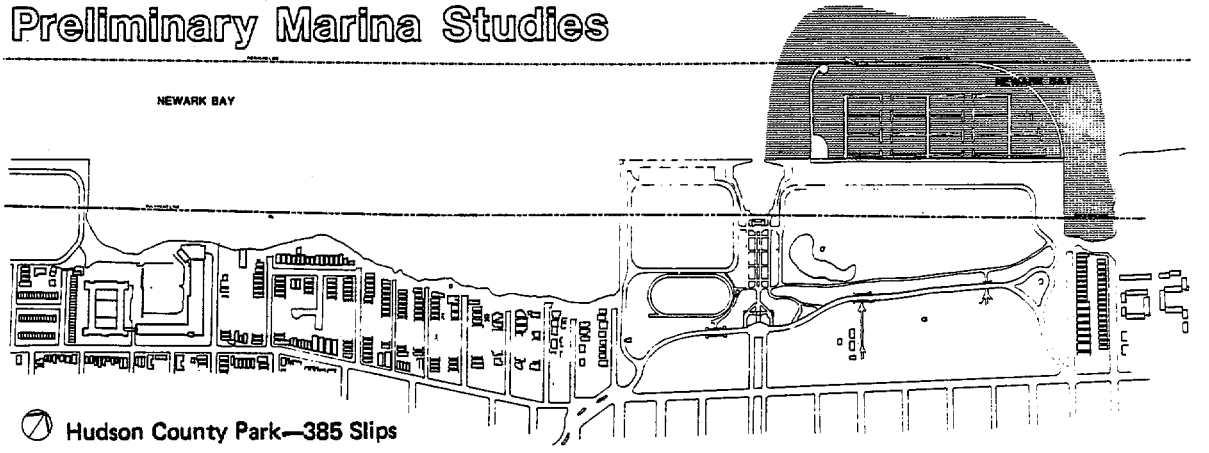
Filled Water's Edge

Marina development on any of the five sites would be in conformance with the Coastal Policy of encouraging water dependent uses of the filled water's edge.

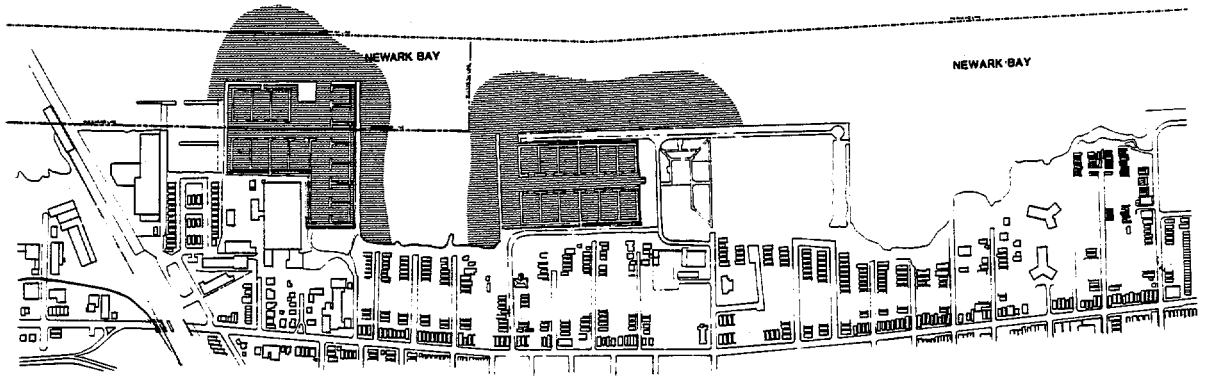
Wetlands

Wetlands occur on all five sites as illustrated on the accompanying map illustrating locations of special areas. Since all sites are affected, the presence of wetlands will be a consideration in the development of any of the five sites. The relatinship of wetlands to the proposed project will be investigated further in Phase B of the study.

Preliminary Marina Studies

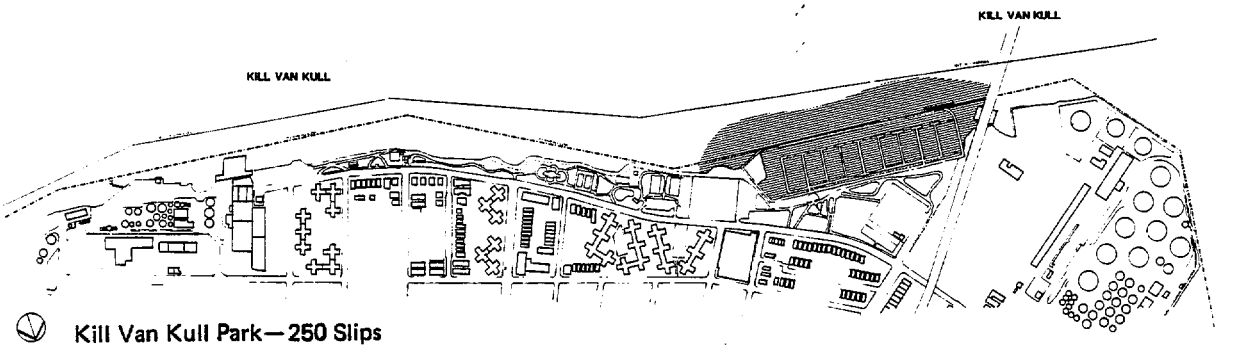


Hudson County Park—385 Slips

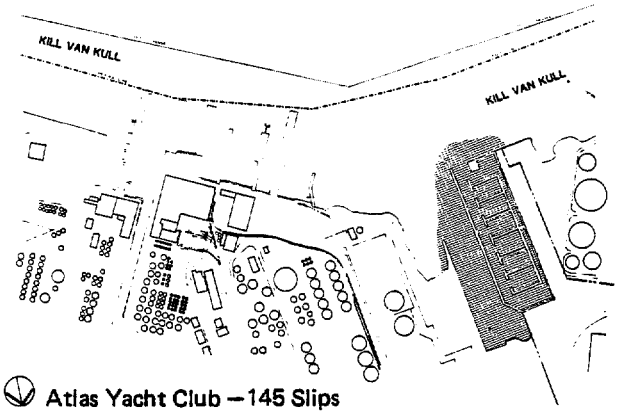


Elco Marina — 315 Slips

Robbin's Reef Yacht Club — 280 Slips



Kill Van Kull Park—250 Slips



Atlas Yacht Club —145 Slips

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Date:

5 Ac.
1 Ac.

Historic and Archaeological Resources

No recognized historic or archaeological resources are known to be present on any of the five sites.

Special Urban Areas

Marina development on any of the five sites would reinforce the economic and social viability of nearby neighborhoods and of the City of Bayonne.

Public Open Space

Marina development at either the Hudson County Park or the Kill Van Kull Park would provide an opportunity to enhance and expand public open space along the waterfront. Since the operators of Robbins Yacht Club, the Elco Marina and the Atlas Yacht Club wish to keep these as private operations, no such opportunity exists at these sites. Between Robbins Yacht Club and the Elco Marina, however, is a waterfront edge owned by the city which is ideally suited for development as part of a Newark Bay Waterfront Walkway, connecting with the 16th Street Park.

SUMMARY EVALUATION OF SITES

A comparison of the five sites found that all sites except the Kill Van Kull Park site present significant obstacles for public marina development, while the Kill Van Kull Site presents special opportunities for such development.

The Hudson County Park Site, while it could accommodate the largest number of boat slips (386 slips), is closed by the County at night. Consideration has been given in the past to

establishing a small boat harbor in the Park, but the County's unwillingness to permit anyone to travel in or through the Park at night is unconsistent with marina operations.

Both the Elco Marina and the Robbins Yacht Club are on privately owned land and are privately operated. Both plan to continue private ownership of the sites. Similarly, while the Atlas Yacht club is located on public lands, it is and is intended to continue to be operated as a private club.

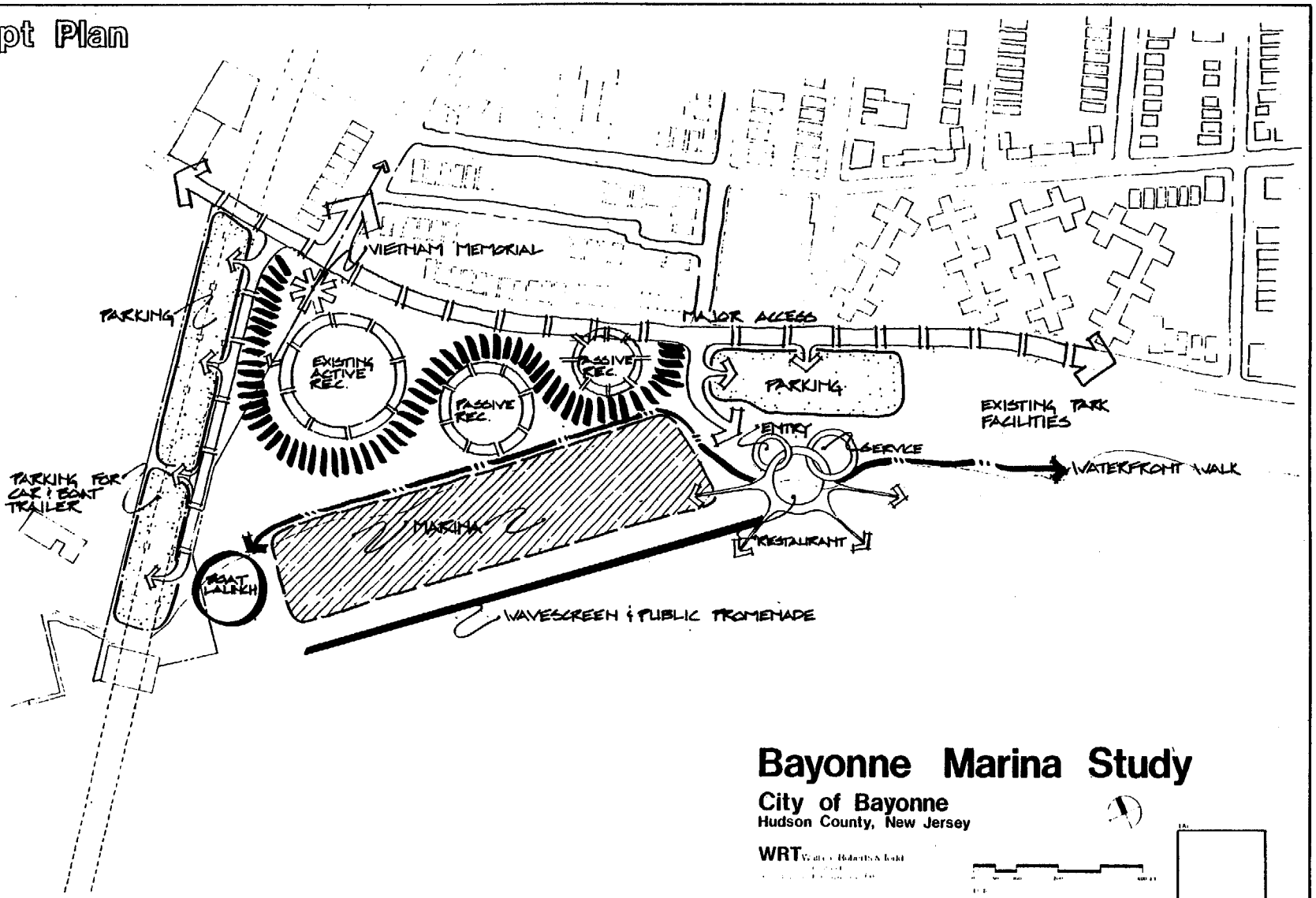
At both the Robbins Yacht Club and the Elco Marina, needed parking for the potential 288 slip marina at the former and the potential 318 slip marina at the latter would prevent setting aside 50% of the land for open space if either site were acquired by the City for a public marina.

The Atlas Site will be surrounded by industrial piers, one of which is under construction at present. Another is scheduled for construction. A storm sewer outfall in the basin contributes to siltation, and a high lead concentration in the silt means that disposal of any dredged material will be a problem. Furthermore only 140-150 slips could be constructed at the Atlas Site.

Access to the Robbins, Elco and Atlas Sites is poor.

In contrast, the Kill Van Kull Site is a highly visible and accessible site, which has been enlarged recently through an agreement with the New York-New Jersey Port Authority. The site could accommodate 252 boatslips, matching closely the preliminary program necessary for a private developer-operator.

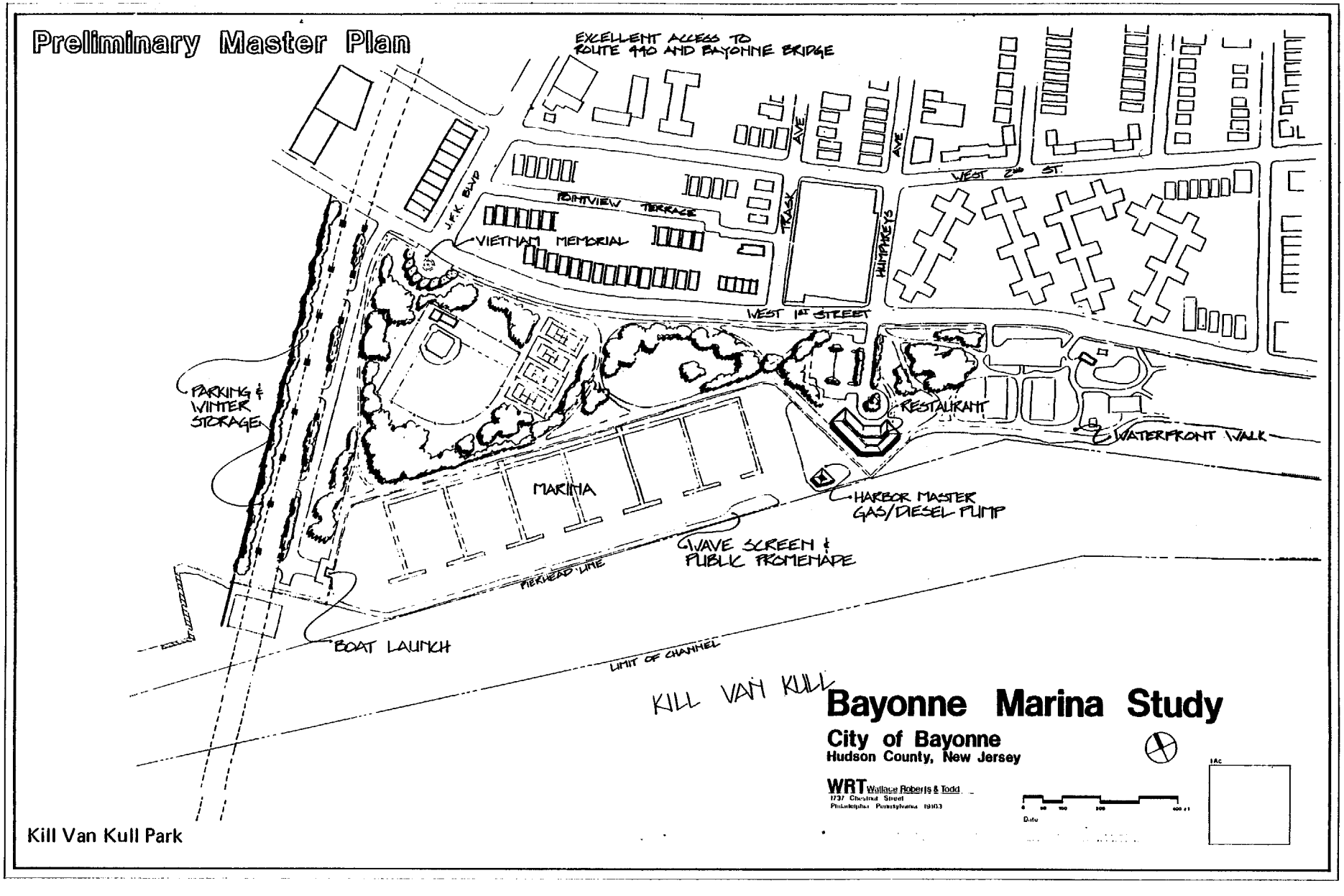
Concept Plan



Bayonne Marina Study

City of Bayonne
Hudson County, New Jersey

WRT


Preliminary Master Plan
EXCELLENT ACCESS TO ROUTE 440 AND BAYONNE BRIDGE
J.F.K. BLVD
POINTVIEW TERRACE
VIETNAM MEMORIAL
TRASK
HUMPHREYS
AVE
AVE
WEST 2nd ST.
WEST 1st STREET
PARKING & WINTER STORAGE
RESTAURANT
WATERFRONT WALK
MARINA
HARBOR MASTER GAS/DIESEL PUMP
WAVE SCREEN & PUBLIC PROMENADE
PIERHEAD LINE
BOAT LAUNCH
LIMIT OF CHANNEL
KILL VAN KULL
Bayonne Marina Study
City of Bayonne
Hudson County, New Jersey
WRT Wallace Roberts & Todd
1737 Chestnut Street
Philadelphia Pennsylvania 19103
Date
Kill Van Kull Park

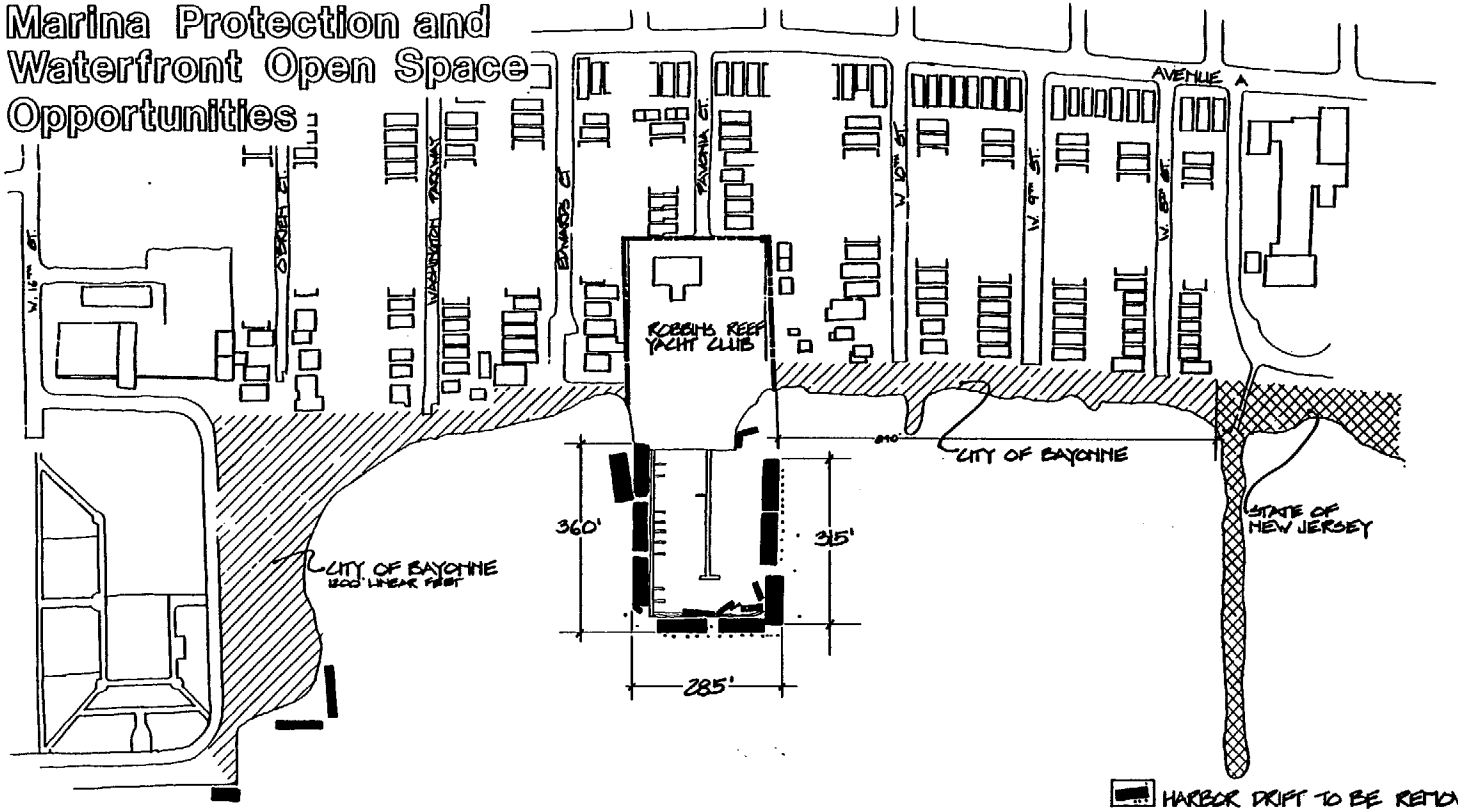
Finally, development of a marina at this site would permit completion of what has to date been a very successful park development for the City, providing additonal landscaped open space for the benefit of City residents, and turning a rather ragged existing water's edge into a fine urban waterfront park at the foot of the Bayonne Bridge. Construction of a wave screen to provide needed shelter to the boat basin could be combined with a boardwalk and seating area along the pier-head line. The site presents the opportunity for special open space and waterfront amenity for residents the City of Bayonne and the neighborhoods along and near 1st Street.

The accompanpying exhibits illustrate marina protection issues and waterfront open space opportunities at each of the other sites.

POTENTIAL MARINA CAPACITY AT ALTERNATIVE SITES

Hudson County Park	386 slips
Robbins Yacht Club	288 slips
Elco Marina	318 slips
Kill Van Park	252 slips
Atlas Yacht Club	144 slips

Marina Protection and Waterfront Open Space Opportunities



HARBOR DRIFT TO BE REMOVED

PROPERTY OWNED BY THE CITY OF BAYONNE

PROPERTY OWNED BY THE STATE OF NEW JERSEY

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Hudson County, New Jersey

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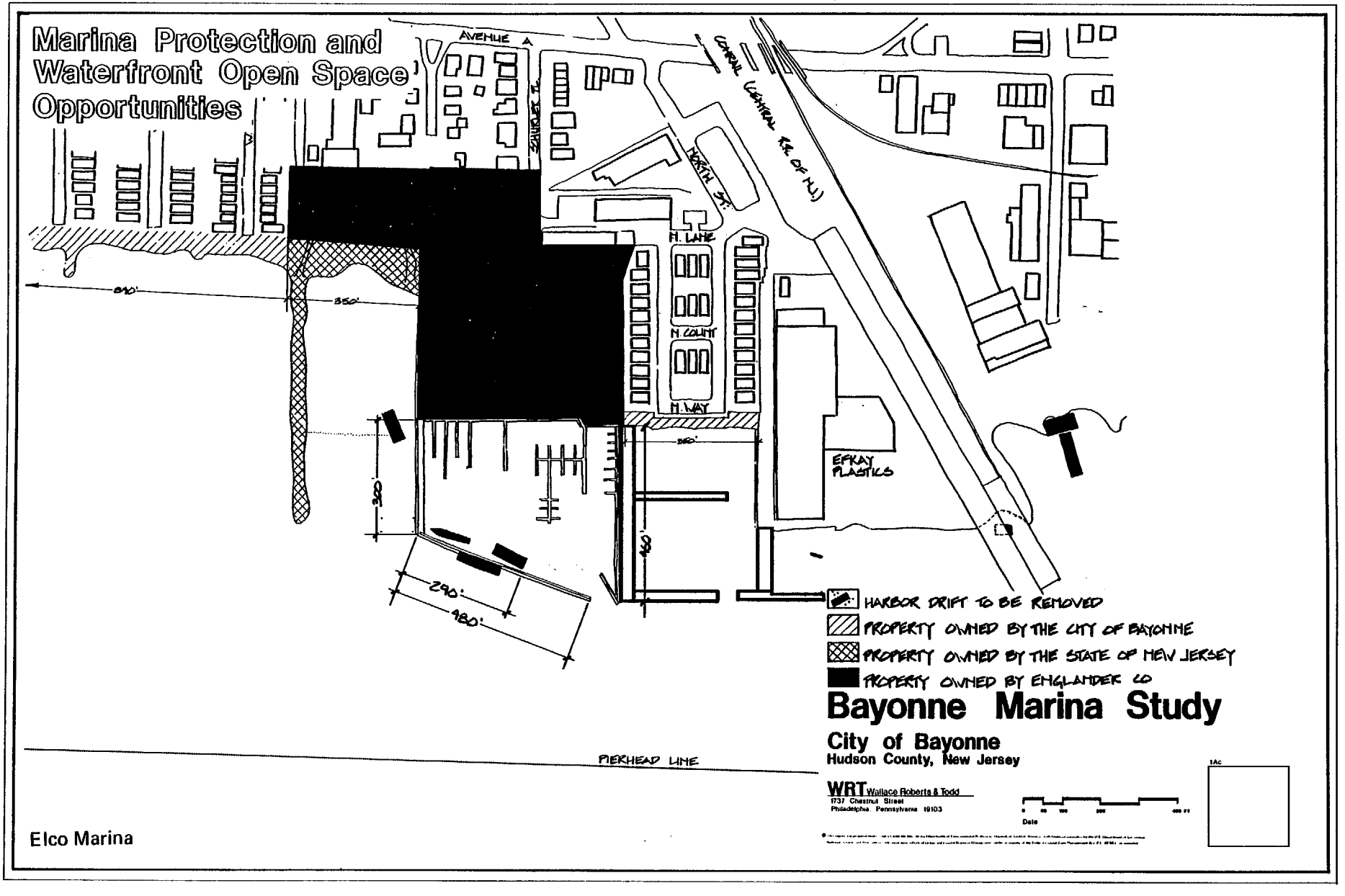
Date

1Ac

PIERHEAD LINE

Robbin's Reef Yacht Club


Marina Protection and Waterfront Open Space Opportunities
AVENUE A
SCHUYLER TL
CONRAIL (CENTRAL RR OF N.J.)
NORTH ST.
N. LANE
N. COUNT
N. WAY
EFKAY PLASTICS
890'
350'
350'
300'
460'
290'
480'
PIERHEAD LINE
HARBOR DRIFT TO BE REMOVED
PROPERTY OWNED BY THE CITY OF BAYONNE
PROPERTY OWNED BY THE STATE OF NEW JERSEY
PROPERTY OWNED BY ENGLANDER CO
Bayonne Marina Study
City of Bayonne
Hudson County, New Jersey
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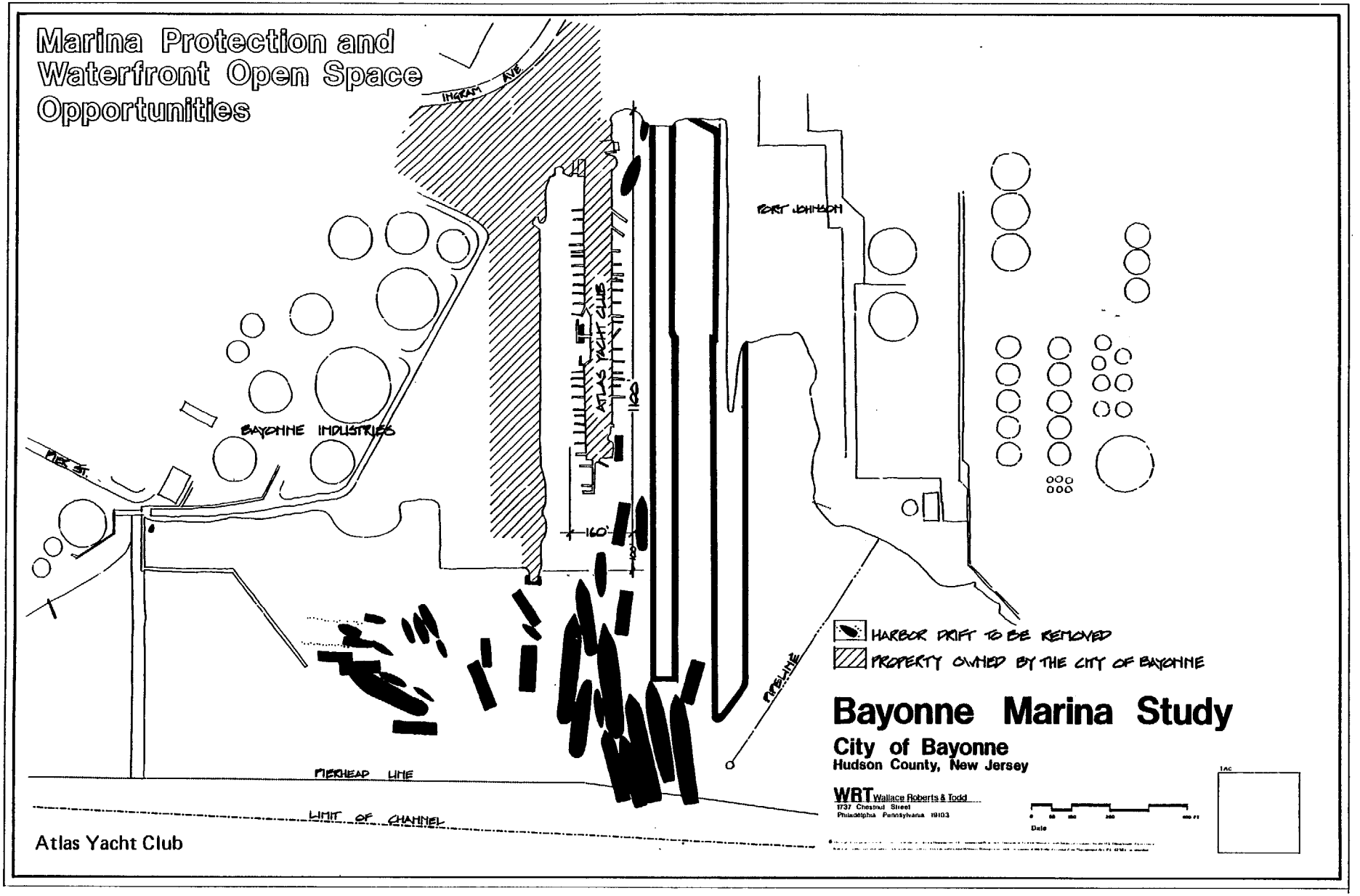
Philadelphia, Pennsylvania 19103
Date
1Ac
Elco Marina


Marina Protection and Waterfront Open Space Opportunities
INGRAM AVE
FORT JOHNSON
ATLAS YACHT CLUB
BAYONNE INDUSTRIES
160'
100'
HARBOR DRIFT TO BE REMOVED
PROPERTY OWNED BY THE CITY OF BAYONNE
PIPELINE
PIERHEAD LINE
LIMIT OF CHANNEL
Atlas Yacht Club
Bayonne Marina Study
City of Bayonne
Hudson County, New Jersey
WRT Wallace Roberts & Todd
1737 Chestnut Street
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Date