OIL STORAGE FACILITIES STUDY KINGSTON, NY

An analysis of the feasibilty of relocating and/or consolidating existing oil storage and distribution facilities in order to recapture valuable waterfront property.

DANIEL SHUSTER, Planning Advisor, Stone Ridge, New York

Olko Engineering, New York, New York
Raymond, Parish, Pine & Weiner, Inc., Tarrytown, New York

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DONALD E. QUICK, MAYOR

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2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

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DANIEL SHUSTER, Planning Advisor, Stone Ridge, New York
Olko Engineering, New York, New York
Raymond, Parish, Pine & Weiner, Inc., Tarrytown, New York

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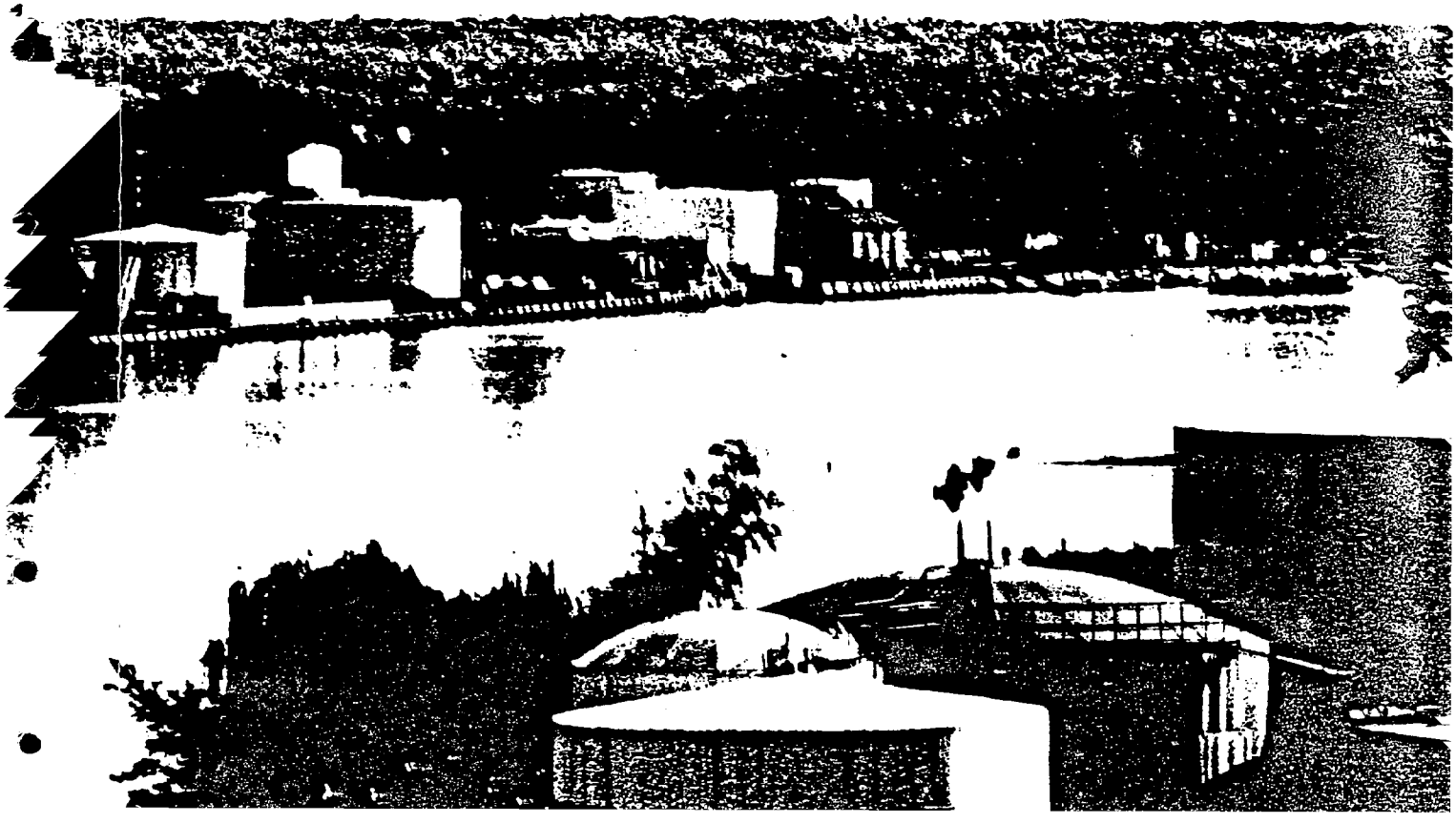

DANIEL SHUSTER

Planning and Community Development Advisor

RD 1, Box 259 Stone Ridge, New York 12484

(914) 687-0758

March 1, 1982

Mayor Donald E. Quick
City Hall
Kingston, New York

Dear Mayor Quick:

We are pleased to submit this final report on the feasibility of relocating and/or consolidating existing oil storage and distribution facilities on the Rondout Creek. My colleagues and I have found the assignment a challenging one and believe it has successfully identified the opportunities and constraints involved in recapturing some of Kingston's valuable waterfront property.

During our work, we received the utmost cooperation from City staff without which we would not have been able to complete our task. We also wish to especially thank the members of the review committee: Mr. Arthur Motzkin of KOSCO; Mr. William Davenport of Walter Davenport Sons; Mr. Abel Garraghan of Garraghan Oil Co.; Mr. Robert Pritchard, City Engineer, and his assistant, Jay Hogan; and Mr. James McGarry, Assistant Corporation Counsel. Their interest, cooperation and contributions of time and knowledge were indispensible. The advice and assistance of Mr. David Buerle, CEIP Coordinator for the New York State Department of State, helped make the work program go smoothly.

We will continue to be available to help you review the study and take appropriate action. It has been a pleasure serving you.

Sincerely,

Daniel Shuster, AICP

DS:nrm
Enclosure

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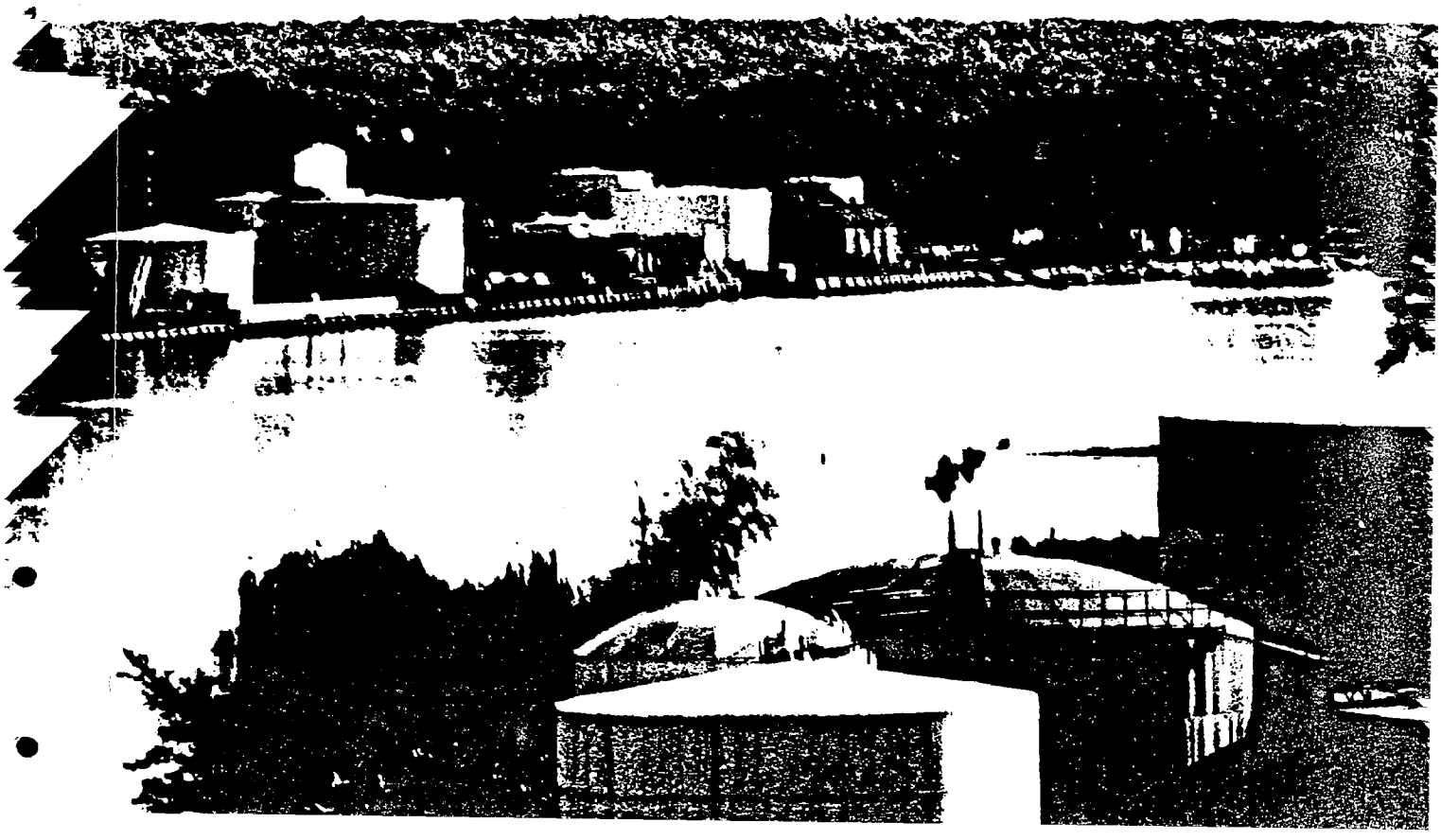


INTRODUCTION

INTRODUCTION

Over the past sixty years, numerous oil storage and distribution facilities have located along Kingston's waterfront. The scattered location of these facilities on the Rondout Creek and Hudson River has resulted in reduced access to the waterfront, adverse impact on the aesthetic environment and lost development opportunities. The community and the surrounding region would benefit from more effective use of this important recreational and economic asset.

The Rondout Creek waterfront is of importance as both a historic and natural resource. The adjacent neighborhoods include a National Register Historic District and several individual historic structures. A number of significant industrial archeological features are part of the waterfront environment, including a suspension bridge, a railroad trestle and a number of brick and cement kilns. The Creek is home to a variety of pleasure and commercial boating concerns. The natural beauty of the wooded slopes above the Creek are a harmonious background. The dominating presence of many oil storage tanks dispersed along the waterfront detracts from the historic and aesthetic ambiance of this area.

The extensive land devoted to oil storage and distribution facilities also diminishes opportunities for investment in water-related commercial and industrial uses as well as detracting from the residential environment. The City has embarked on an effort to encourage such uses and to improve the climate for their development.

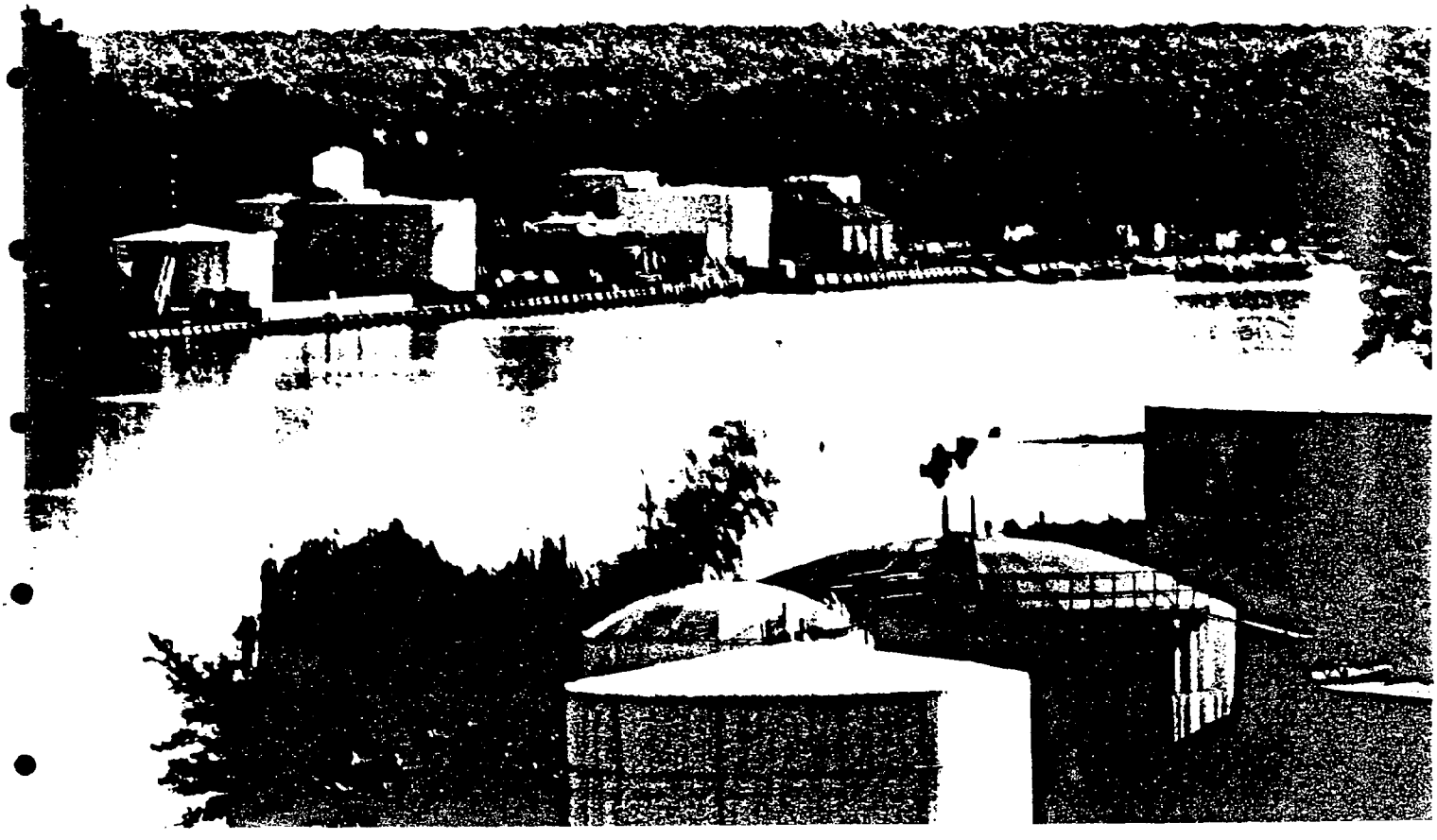
The City of Kingston was awarded a grant under the Coastal Energy Impact Program (CEIP) to study the feasibility of relocating and/or consolidating the existing oil facilities in order to increase public access to the shoreline and ameliorate adverse environmental impacts while increasing economic development potential. The following report analyzes the existing oil storage functions and sites, establishes design and location criteria for new facilities, evaluates alternate sites and development concepts, projects costs and financing programs, compares relative costs and benefits, assesses environmental impacts, and recommends the plan considered most feasible.

OIL STORAGE FACILITIES STUDY, KINGSTON, NY.

NY-582

SHUSTER, DANIEL

I. RECONNAISSANCE AND CONCEPT DEVELOPMENT



A. WATERFRONT RECONNAISSANCE

In order to evaluate the existing oil storage and distribution facilities on the Kingston waterfront it is necessary to analyze the total environment in which they operate. Therefore, a general reconnaissance of land use relationships on the waterfront was conducted. The various uses were identified, their frontage measured and the relationships between each other and the waterfront examined. See Map No. 1.

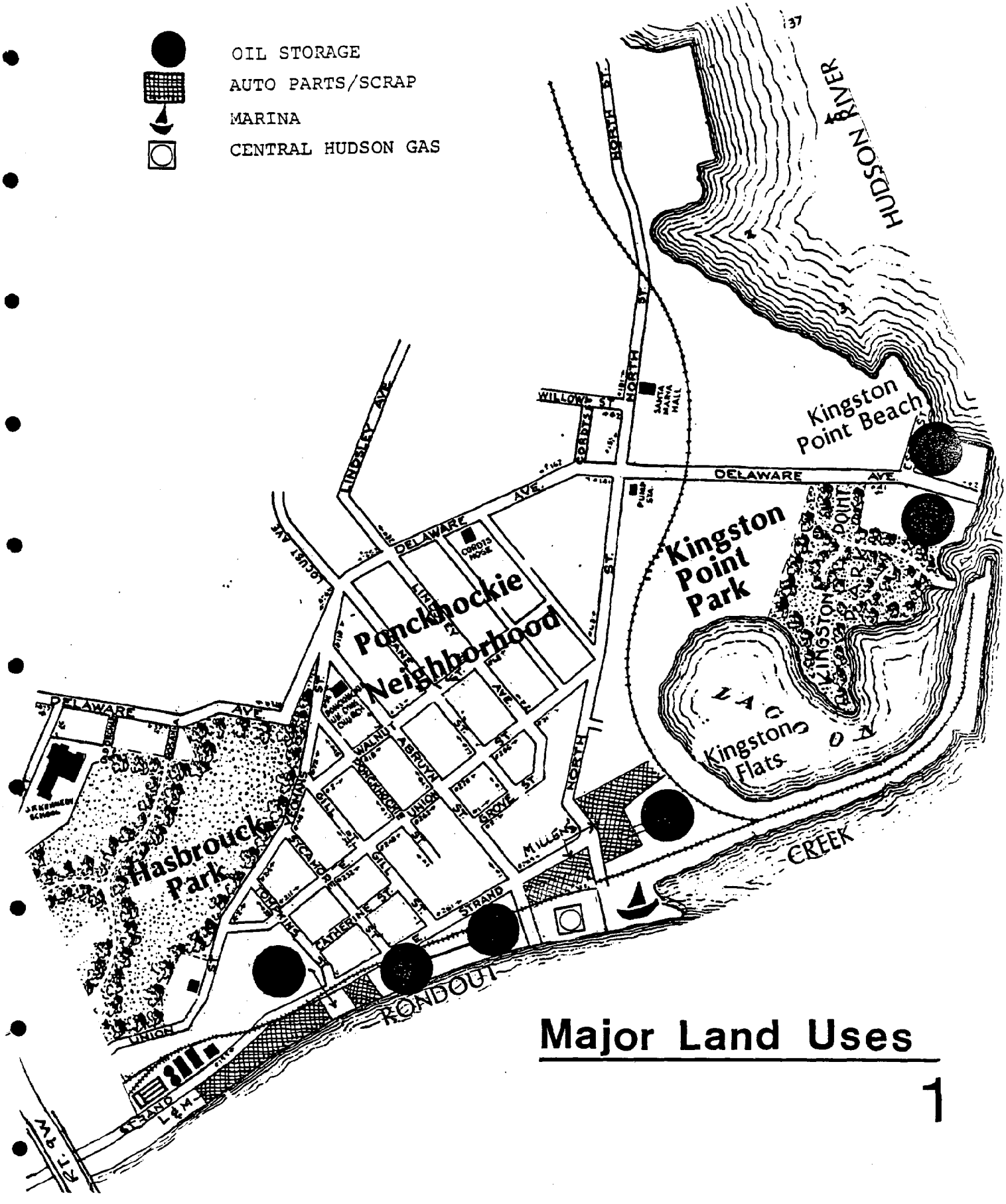
From the new Route 9W Bridge, extending east along the Rondout Creek to Kingston Point, there are 1.3 miles (7,150 feet) of waterfront in the City of Kingston. Within this area, all of Kingston's oil storage and distribution facilities are located.

Approximately one-half mile of this waterfront is occupied by the rail line extending out to the old Hudson River Day Line Dock. Of the remaining 4,650 feet, the oil facilities are the largest single use, some 1,800 feet, or 39% of the total. L & M Auto Parts occupies 1,100 feet of frontage, and the collection of smaller uses between L & M and the new bridge takes up an equal amount of waterfront. The remainder of the frontage is taken up by Central Hudson's gas distribution facility (360 feet) and Creekside Marina (300 feet) which also leases the bulkhead in front of Central Hudson. The above distribution does not include Millens scrapyard or the adjacent oil facility at the intersection of North Street and East Strand, neither of which actually have direct frontage on the water, although quite visible from it.

Waterfront property is a unique resource. Uses located on the waterfront must be evaluated in terms of both their use of the waterfront location and their impact on general use and development of the waterfront.

1. Oil Storage Facilities

The oil facilities depend on a waterfront location in order to receive large volume shipments via barge. However, as long as there is sufficient space for the barge to dock while unloading, there is no advantage to having additional waterfrontage. (In fact there may be some disadvantage since greater care must be taken to prevent accidental pollution of the water body). This condition is illustrated by facility #5 which has only 100 feet of waterfrontage; the actual storage facilities are on the opposite side of East Strand. In contrast, the full 900 foot width of facility #4 is, therefore, not necessary to its function; its shape, long and narrow parallel to the water, is opposite what might be considered the optimum shape.



Major Land Uses

1

The oil tank facilities are by and large, well maintained in accord with their function. The bulk and shape of the storage tanks, however, is a major visual intrusion. From the water, they dominate the shoreline; and from land, they block many views of the water. Thus, in addition to occupying waterfront which might be used by uses requiring proportionally more frontage, the storage facilities may also be considered a minor negative factor for use of other waterfront property.

Each site is examined in further detail in Sections B and C below.

2. Auto Parts/Junk Yards

Two auto related parts and scrap facilities impact the waterfront. L & M Auto Parts occupies a significant length of frontage. Millens scrap metal, although it has no direct access to the water, has a major effect on waterfront development due to its visibility from both land and water.

Neither of these uses makes any use of its waterfront location. Rather, their presence reflects the low value placed on waterfront land in Kingston in the recent past. A total of some five and one-half acres is occupied by these two uses.

The nature and appearance of these uses is a major deterrant to waterfront development. Despite requirements for fencing, neither use is effectively screened from street or water. However, the fencing that does exist obscures the view to the water from East Strand and creates a distinct visual and functional barrier to the waterfront. It would be unrealistic to plan for major land use changes without considering the means to eliminate the negative impacts of these two uses.

3. Miscellaneous Uses

The variety of small uses located immediately east of the new Route 9W Bridge include some uses and buildings which enhance the waterfront and others which are unrelated. As a whole, while not contributing substantially to the waterfront environment at this time, this area does not detract from other development opportunities and can be expected to adapt to more appropriate use as the revitalization effect of the West Strand area expands.

4. Central Hudson Gas Works

While not dependent on its waterfront location, this facility is an important part of the gas distribution system. Virtually all of the above ground structures have been removed; and the property is well maintained and permits views to the water. The bulkhead is already leased to the adjacent marina and its presence is compatible with waterfront use and development.

5. Marinas

Only 300 feet of waterfront is devoted to this most water dependent use of all.

B. INVENTORY OF OIL STORAGE AND DISTRIBUTION FACILITIES

The five oil storage facilities in Kingston contain 39 separate tanks with a total capacity of 13,660,000 gallons. (See Table A). Nearly 80% of this capacity is used for storage of #2 oil for heating while only 10% is used for gasoline. The largest single tank holds 1,300,000 gallons while the smallest has a 12,000-gallon capacity.

Detailed maps of each of the five sites were obtained. See Map No. 2 - Location Map. A thorough field inspection of each site was made by engineers from Olko Engineering and an analysis of the facilities prepared. The following summarizes the findings and conclusions of the preliminary site investigation and inventory of the tank farms, as related to the potential relocation of these facilities. The full report is included in Progress Report No. 1.

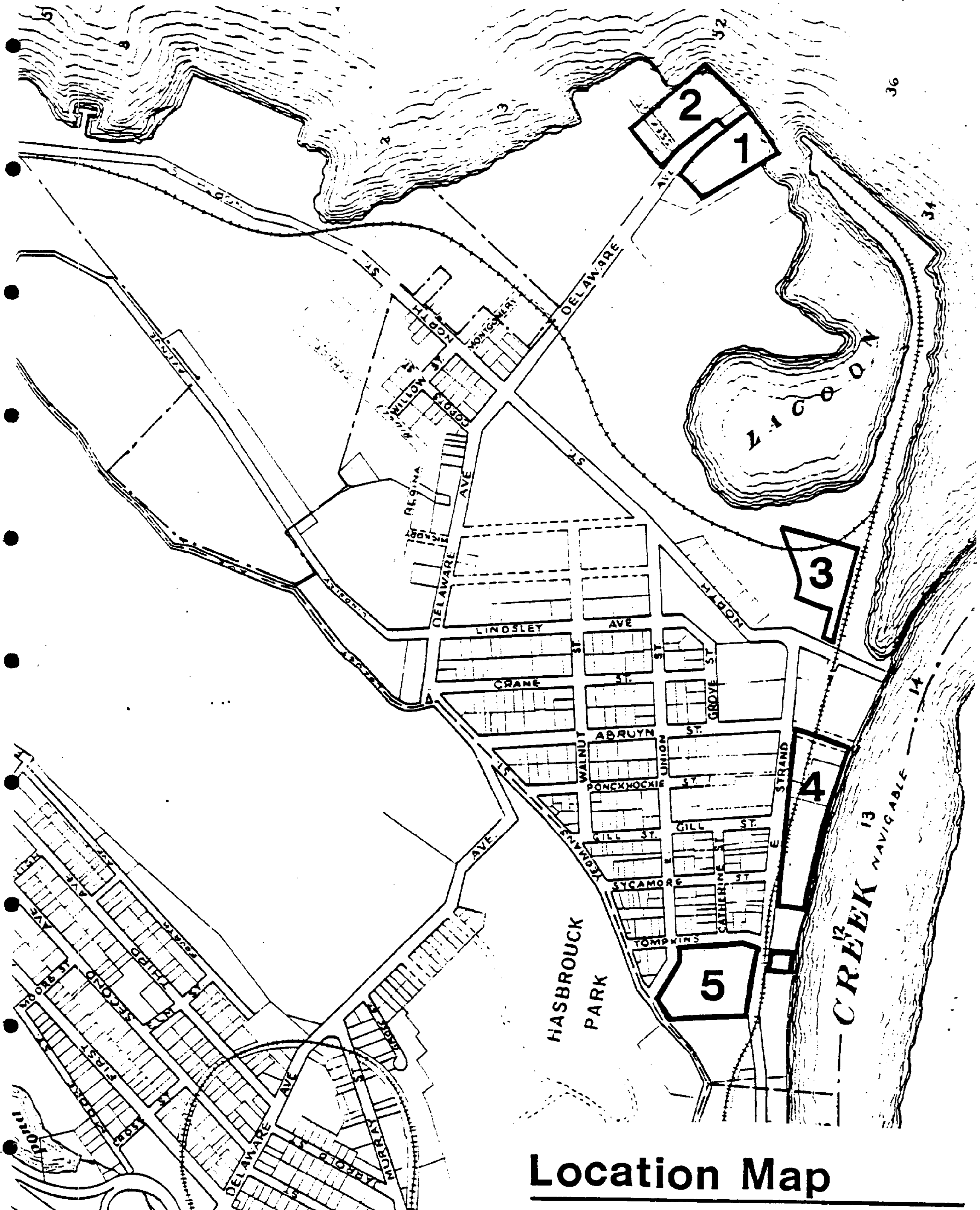
a. With the tank farms presently located at 5 individual sites, there is obvious redundancy of support facilities, such as waterfront facilities (bulkheading and offloading), pumps and piping, loading racks, diking, oil/water separators, buildings, etc. Operation and maintenance of these facilities would be more efficient and less costly if they were consolidated at one or two sites, with a large reduction in the total number of facilities required (see Table B).

b. Similarly, a large number of relatively small capacity tanks are presently being used. Operation and maintenance costs for the tanks could be reduced, using a small number of large diameter tanks.

c. Most likely, a new facility, with a smaller number of tanks and eliminating redundancy of facilities, could be located on a smaller area than is presently being used. Also, the value of the waterfront properties is likely to be higher than the cost of property at a new site with less water frontage. Therefore, it is expected that in terms of the cost of the land, the facilities could be relocated at a net gain to the owners. This would be offset, of course, by the high costs of relocating or building new facilities.

d. While the general condition of the tanks is said to be "good", many of the tanks are quite old (40 to 60 years) and will probably require major reconstruction or replacement in the near future. Several riveted tanks have recently been rehabilitated by welding at substantial cost, and it is likely that similar rehabilitation will be required for other tanks - particularly the old riveted tanks.

e. Rather than rehabilitating such old tanks, it is preferable to replace some or all of these tanks with new tanks, if a suitable location is available. Possibly, it would be practical to relocate a few of the welded tanks that are in good condition to service products



Location Map

with smaller storage requirements, such as gasoline, while providing large capacity, new tanks (say 3,000,000-gallon capacity) for No. 2 Oil. The economic advantage of relocation vs. new tanks does not appear great. Apart from the direct costs, it is important from the owner's viewpoint that the new tanks would have a better resale value, compared to 50-year old rehabilitated tanks, if and when they decided to sell.

f. If the facilities were to be relocated, some of the existing equipment could probably be reused, including some of the piping, pumps, valves, loading rack equipment, and oil/water separators. Other equipment that is not reused could be sold and tanks that are not reused could be sold for scrap metal. Other facilities such as buildings, dikes, and paved areas have no salvage value and are a "liability" in the sense that they would have to be demolished and removed by the new owner, decreasing the net value of the property.

g. Even if all facilities were to be consolidated at a new site, it does not appear practical or desirable to utilize tanker transport, compared to the present system of barge transport. To utilize tankers, even the small T-2 tankers (10,000,000 gals.), which are now becoming obsolete, the tanker delivery would have to be split with another buyer (if one could be located), as the total volume requirements for the tank farms are relatively small. Tanker service would also require new berthing and offloading facilities, which would be extremely costly (assuming their construction would be approved by federal agencies - which is questionable). The price benefit for tanker vs. barge delivery is small (about $0.015 per gallon), and is probably an inadequate incentive to make this type of investment.

h. To comply with current environmental protection and fire protection requirements, any new facility would have to be "upgraded", compared to the existing facilities.

i. Occasional flooding does occur, but apparently is not a problem in terms of structural damage. However, being located within the "flood plain", the costs of flood insurance for these sites is high. The new facility could be located above the flood plain, eliminating occasional flooding and saving the costs of flood insurance.

j. Ice conditions are a continuing problem for barge deliveries at all sites. There does not appear to be a preference for any particular site, in terms of ice conditions. It is a problem both at Rondout Creek and on the Hudson River.

k. Dredging has not been a problem in the past, but is an important consideration in planning for the future, in view of the difficulties in obtaining permission to dredge from Federal and State agencies. In this respect Kingston Point is preferred, as it is probably less prone to siltation.

l. Although it is understood that security and vandalism have not been problems in the past, most of the sites are unmanned and are "wide open" to vandalism and trespassers (such as small children). Consolidation of facilities would improve security and safety conditions, and might also effect a reduction in insurance premiums.

m. There is almost no area available for expansion or consolidation at the existing tank farm sites on the Rondout Creek, although there is some property adjacent to the Kingston Point sites suitable for a few additional tanks.

Summarizing some of the above conclusions from this preliminary site investigation/inventory aspect of the study, Table C lists relative advantages vs. disadvantages for relocating and consolidating the tank farm facilities.

Table A

SUMMARY OF OIL STORAGE FACILITIES

Kingston, New York

Site No.	No. of Gallons Storage by Product							
	# 2 Oil	Reg.Gas	Reg.U.L.Gas	Prem.U.L.Gas	Diesel	Kerosene	Solvent	TOTAL
1 (G/D)	1,550,000				150,000	80,000		1,780,000
2 (K)	3,259,000	83,000				422,000		3,764,000
3 (G/D)	2,816,000							2,816,000
4 A (K)	1,000,000				506,000	270,000		1,776,000
4 B (K)	1,600,000						12,000	1,612,000
5 (K)	500,000	600,000	500,000	302,000	20,000			1,912,000
TOTALS	10,725,000	683,000	500,000	302,000	676,000	772,000	12,000	13,660,000

G/D = Garraghan/Davenport

K = KOSCO

Note: See Appendix A for detailed data for each site.

Source: Field survey by Olko Engineering and data from oil companies.

Table B

INVENTORY OF SUPPORT FACILITIES AT TANK FARMS, KINGSTON, NY

Site No.	Docking Facilities	Diking	Fire Fighting	Loading Arms	Oil Water Separators*	Office Storage Buildings	Manned Office	Parking Garage
1 (G/D)	Yes (new)	Partial	No	3 overhead 2 bottom load	1	Yes	No	No
2 (K)	Yes	Partial	Yes-Foam	8 overhead	1	Yes	No	No
3 (G/D)	No	Yes	No	1 bottom load	None	No	No	No
4A (K)	Yes	Yes	Yes-Foam	4 overhead	2	Yes	Yes	Yes
4B (K)	Yes	Yes	Yes-Foam	3 overhead	1	Yes	No	Yes
5 (K)	Yes	Yes	Yes-Foam	2 overhead	1	Yes	No	Yes

* Oil/water separators - 4,000 gal. capacity.

Source: Field survey by Olko Engineering and data from oil companies.

Table C

ADVANTAGES VS. DISADVANTAGES OF RELOCATING AND CONSOLIDATING TANK FARM FACILITIES

ADVANTAGES	DISADVANTAGES
1. Less redundancy of facilities, more efficient, lower operating and maintenance costs.	1. High costs of relocation and new construction.
2. Smaller area required (?), plus probable net capital gain with sale of land vs. purchase of new land.	2. Comply with current regulations - environmental and fire protection.
3. Room for future expansion.	3. Obtain construction permits from State and Federal Agencies (may be offset by strong local support for the project).
4. Improved resale value of facilities.	
5. Locate above flood plain - no flood insurance required.	
6. Improved security and safety (lower insurance?).	
7. Eliminate future dredging problems at Rondout Creek (?).	
8. Makes available valuable waterfront property for improved land use (Advantage to City - Basic Purpose of Study).	

C. ANALYSIS OF SITE DEVELOPMENT POTENTIAL

Since one major aspect of the study is to determine the alternate use possibilities of the sites now occupied by the oil storage facilities, the development characteristics and potential of each of the five sites was analyzed. Following is the two-part results of this activity. First a general analysis of the development potential of the entire waterfront area, from the new 9W bridge to Kingston Point; and, second, a detailed investigation of each site.

1. General Waterfront Development Potential

Since World War II, with the decline of shipping and deterioration of the Rondout area, waterfront proprty in Kingston has been in low demand. Consequently, it became home to many marginal and/or undesirable uses, which were unrelated to or incompatible with the waterfront setting, as other uses moved out. In the past several years, however, this trend has begun to reverse itself and interest in waterfront property has increased significantly. Recent studies as part of the City's Urban Cultural Park (UCP) program suggest that this potential will expand in future years, particularly if a well planned, coordinated approach to waterfront development is followed.

The economic analysis by the Cross Group, as part of the UCP, projected a demand for 100 new housing units, 40,000 square feet of commercial space, 135 additional marina slips and half a dozen restaurants in the Rondout Corridor. In addition, as the area rejuvenates, other supporting services, particularly those serving boating interests can be expected to develop.

Two factors will have a significant effect on future waterfront development: the future disposition of the rail spur to Kingston Point and the continuing status of the auto parts/junk yard operations.

a. The status of the rail line has been in flux for the past year. The Penn Central Corp. has abandoned the line and will either sell it intact or have the rails removed and sold for scrap. Both the City of Kingston and Ulster County have expressed interest in the line due to its relationship to the City's Urban Cultural Park program and

the County's Catskill Gateway Project -- both of which are intended to generate tourist visitation based, at least in part, on rail transportation themes. A tourist rail connection to the river at Kingston Point is an exciting prospect for both projects.

As of this moment, no agreements on the rail line have been reached. If it is eventually used as part of either project, its presence on the waterfront will generate a potential for a variety of uses. Since the rail line passes through or adjacent to three of the oil facilities, the opportunities for use of these sites would certainly be enhanced. If the line is finally abandoned and removed these opportunities will be lost. However, removal of the barrier now created by the line, in several instances, will expand the sites available for waterfront uses.

b. The two auto parts/junk yard operations not only occupy 1,100 feet of water frontage but also create a visual impact that in itself restricts development opportunities. The ability to work out a feasible plan to remove these two uses will substantially increase development potential on the waterfront.

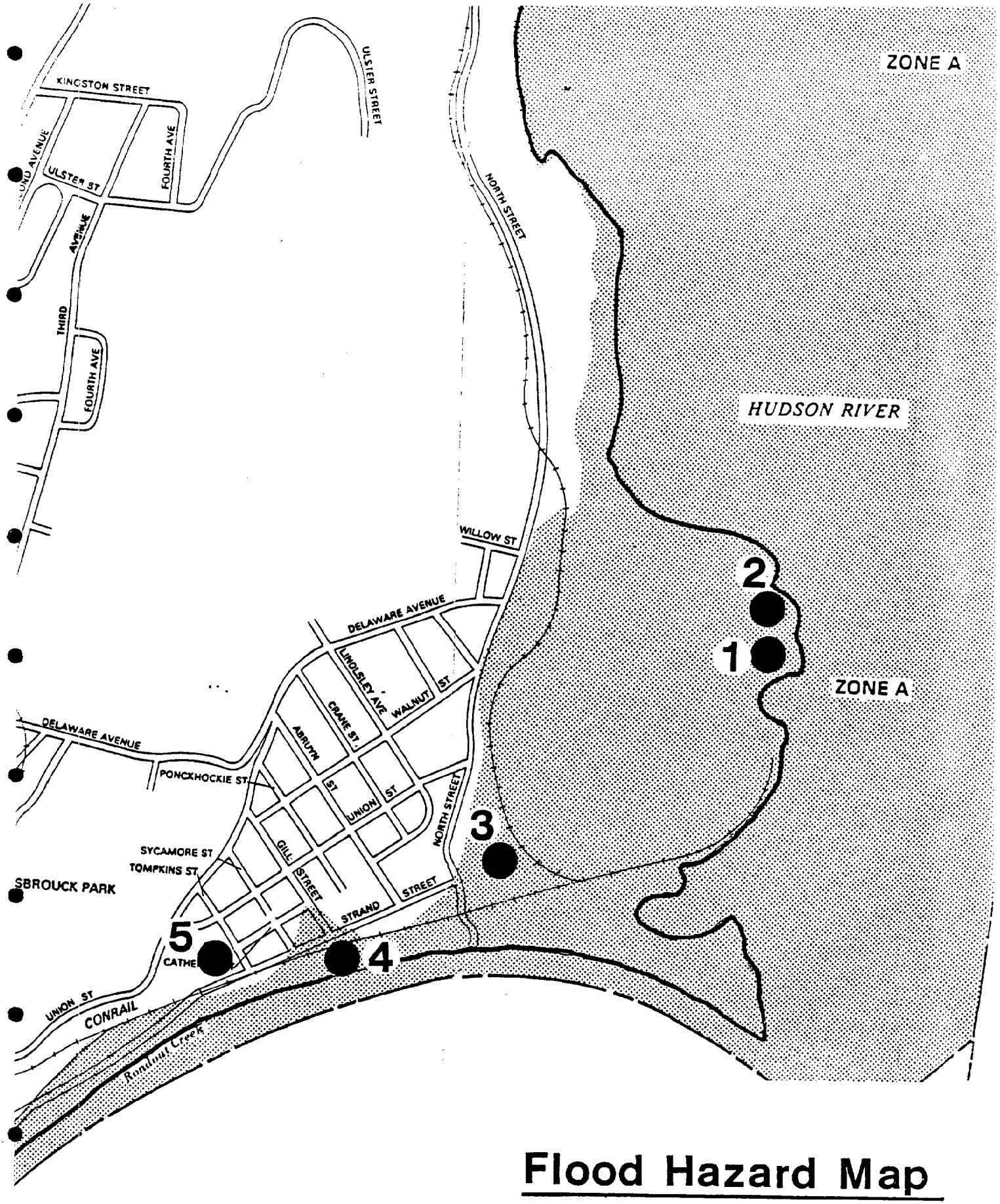
2. Detailed Site Analysis

Each of the five sites has been analyzed in terms of the physical factors which would affect its development if it were available. These factors include: size and shape, flood hazard (see Map No. 3), water frontage, access, utility service, adjacent uses, current zoning and any other unique features A map of each site also follows. (see Maps No. 4a, 4b, 4c and 4d).

Sites #1 and #2

In view of their proximity and interrelationship, both of these sites are considered together in terms of alternate use potential. Use of one for any other use if the other remained in use as an oil facility is considered unlikely.

This combined site is a little over six acres in area and has 800 feet of frontage on the Hudson River at



Flood Hazard Map

an extremely prominent location. Although the entire site is shown to be within the designated flood hazard area (see Flood Hazard Boundary Map) some portions of the site are undoubtedly above the 100 year flood level.

The only access to the site is via Delaware Avenue, from the west, which terminates at the site. Not only is this access one of the most remote in Kingston from the regional highway system, but also Delaware Avenue, at its low point just west of the site, is subject to flooding during periods of heavy rain and high tide.

The site is served by a six inch water line in Delaware Avenue. However, the nearest sanitary sewer line is more than one-quarter mile away at North Street and pumping would be required to connect to it.

The only immediate adjacent uses are vacant land and Kingston Point Park. Any development of this site would have to respect the presence of the existing beach and the major park facility now under construction.

Sites #1 and #2 are currently zoned M-2, General Manufacturing. All of the surrounding land on Kingston Point is zoned RRR, One-Family Residence.

Althouth this site has a unique, spectacular setting, it also has a number of serious draw-backs in terms of alternate development possibilities. Since virtually all the remainder of Kingston Point is owned by the City and permanently reserved for park use, any development on Sites #1 and #2 would always be relatively isolated. Since the area of the sites is not large, it would be difficult for a suitable development of any magnitude to be created. The single access road, subject to flooding, is also an impediment to uses generating frequent or high volumes of traffic. Furthermore, connection to the City's sewer system would require the expense of a new sewer line and pumping station.

Based on the above factors, it appears that this site has relatively limited potential for alternate development and its relatively small size would not warrant the substantial costs necessary to overcome several serious obstacles to development.

Site #3

This two acre site is the only one of the five which does not have direct water frontage, being bounded by two rail spurs and North Street. It has only enough frontage on North Street to permit a roadway entrance and is essentially behind the two buildings which are part of the Millens Scrap Metal operation. Vehicular access from north and west is via either North Street or East Strand. The entire site lies within the designated flood hazard area.

Water service, via a 4" and a 12" line, is available from North Street. A sanitary sewer line also runs down North Street.

In addition to the Millens scrap Metal operation, the site adjoins Creekside Marina and the Central Hudson gas works, both of which are across the rail spur and front on Rondout Creek. The site is a non-conforming use in an RRR One-family Residence District.

Under present circumsrances, the potential uses of this site are limited due to the nature of the adjacent junk yard and the barrier of the rail lines. With no water frontage it is likely that only industrial type uses, dependent on rezoning, would be appropriate.

Should circumstances change, however, this site could become part of a major parcel with substantial development potential. If the rail line were removed, it would be contiguous to Creekside Marina and offer potential for further water related development. Removal of the adjacent junk yard would permit creation of a five acre parcel suitable for residential use and a variety of waterfront commercial and industrial uses.

Although the final development potential of this site depends on resolution of several pending actions, the location, size, access and utility service of Site #3 suggest that it could be used to realize some of the development opportunities projected for the Rondout waterfront.

Site #4

This site of slightly over four acres has the most water frontage of any of the five sites -- 900 feet. it is a long and narrow strip -- a little over 100

feet deep at its western end, widening to nearly 300 feet at the eastern end -- between East Strand and the Rondout Creek. The rail spur cuts across the site diagonally from the East Strand corner at the west to the middle of the site at the east end.

The site is accessible along its entire East Strand frontage from either east or west. It is served by an 8" water line in East Strand as well as a sanitary sewer line. The entire site is within the designated flood hazard area.

Auto parts/scrap metal operations abut this site on both east and west. Across East Strand is a residential neighborhood. The entire site is zoned M-2, General Manufacturing.

Site #4 is well located to accommodate a variety of the potential uses projected for the waterfront area, particularly residential and waterfront commercial activity. The narrow western end presents some development constraints and the adjacent scrap metal uses present a visual problem. If the tourist rail line becomes a reality, this site is one of the few that could be developed with complimentary uses on the water.

Site #5

Some four acres in size, this site has two parts -- one-quarter acre with 100 feet of water frontage between the Rondout Creek and East Strand and the remainder on the opposite side of East Strand.

Access to both parcels is from the East Strand; the larger parcel also can be entered from Tompkins Street. An 8" water line is in both streets as are sanitary sewers. The rail line runs in the south side of East Strand in front of the smaller parcel.

Only the small parcel on the south side of East Strand is within the designated flood hazard area. The northern part of the larger portion is quite steep and undeveloped. Use of this area would require extensive site preparation.

The site abuts residential uses to the north and across Tompkins Street. Across East Strand is L&M auto parts. The entire site is zoned M-2, General Manufacturing.

Use of this site for water related uses would be hampered by its limited frontage and the separation of the larger portion from the water. It would be more appropriate for a use which would be enhanced by proximity to the water without requiring direct access -- such as residential use -- and would also benefit by being above the flood hazard area.

D. ALTERNATE SITE CONCEPTS

The major aspect of this study is to locate, examine and analyze sites which may prove to be feasible alternates to the present oil storage and distribution facilities. Design and location criteria have been developed. It is first, however, useful to examine the range of options which, initially, appear worthy of further study.

The options considered assume that the only feasible entirely new sites are those close enough to the Hudson River to be served by barge. Of equal importance are opportunities involving consolidation and expansion of existing sites.

Four basic concepts have been identified which represent a broad spectrum of possibilities. Set forth below is a brief discussion of each including its rationale and basic pros and cons. Each is also illustrated by an accompanying map.(see Maps No. 5a, 5b, 5c and 5d).

Concept A: Total Relocation

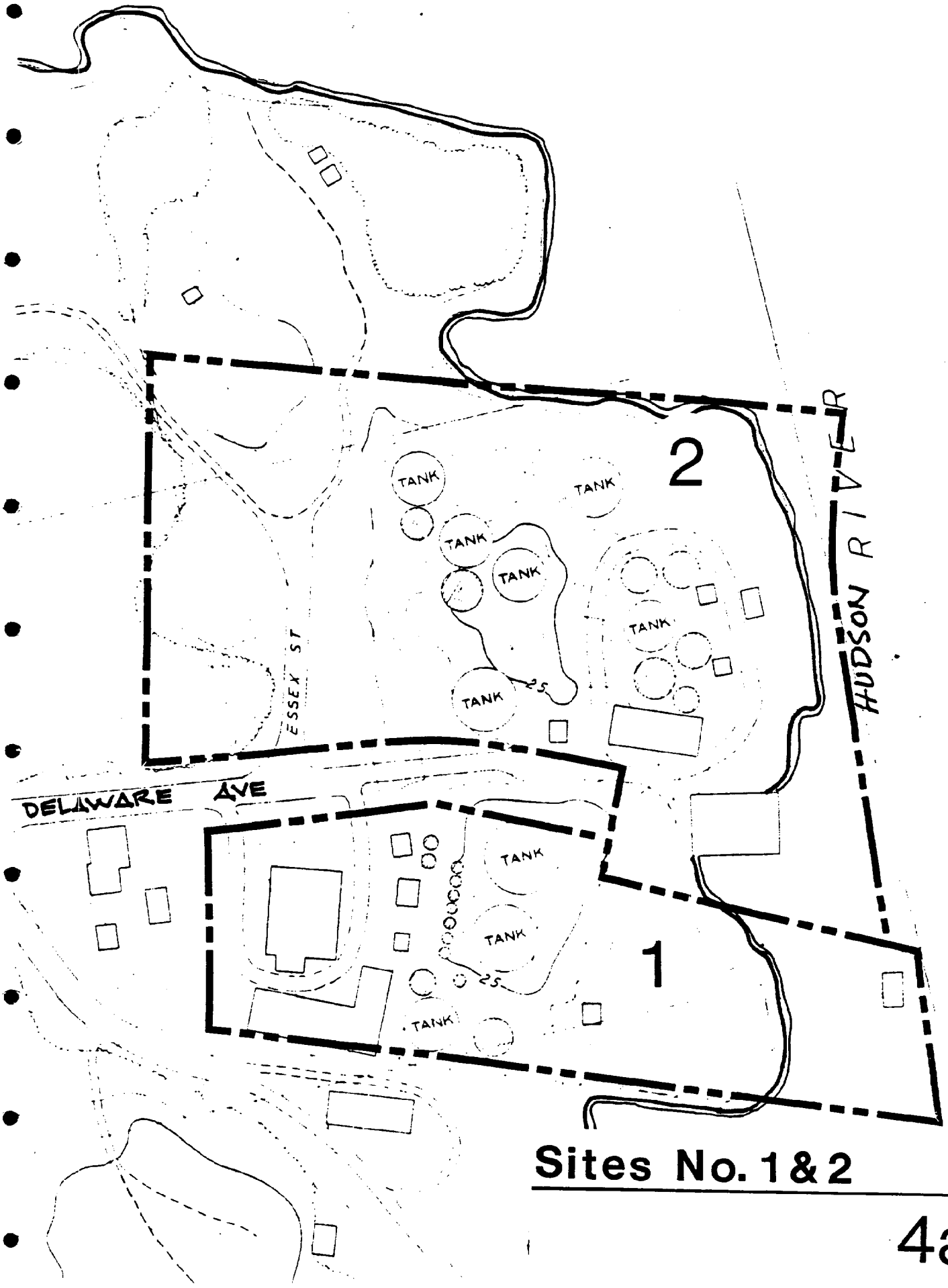
This represents the most dramatic solution. Removal of all current facilities and development of an entirely new facility. The obvious attraction of this solution is that it makes available the greatest amount of water-front property for new uses. Its greatest potential drawback is the cost of the new facility and a new riverfront loading area.

Concept B: Kingston Point Combined With New Facility

This option would retain the existing facilities at Kingston Point and relocate the Rondout Creek facilities to a new Hudson River site served by distribution lines from Kingston Point. The advantage of this concept, is that it would not require a new loading dock and would make all of the sites along the Rondout Creek available for development. It would, however, continue the presence of the dominant oil storage tanks at the mouth of the Creek and require the expense of acquiring and developing a new facility and extending new lines and pumping capacity to serve it.

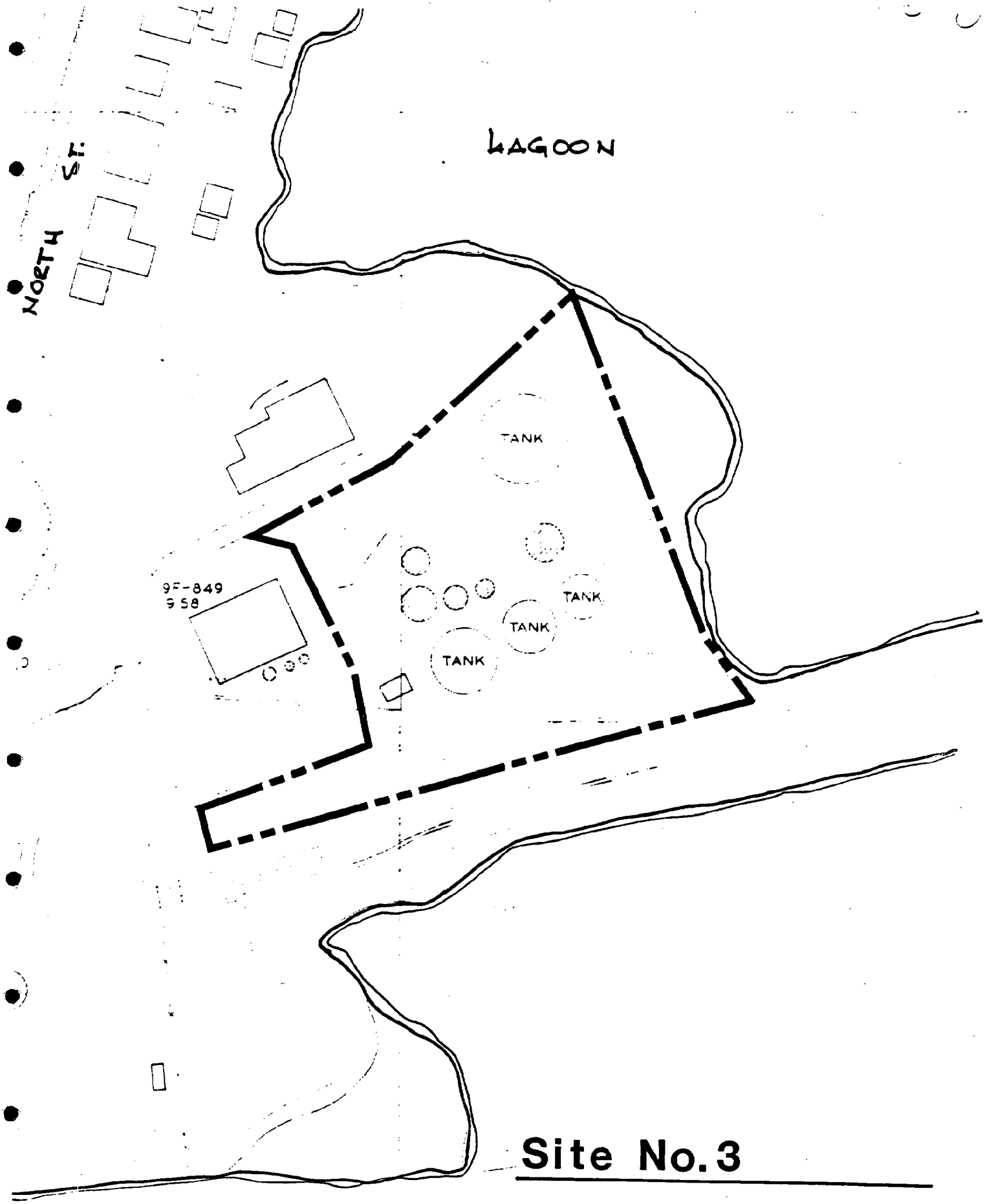
Concept C: Consolidation at Kingston Point

This option would remove the existing facilities on the Rondout Creek and replace them by sufficient expansion of the Kingston Point sites. The advantages of this concept are that no new site is required and that all of the



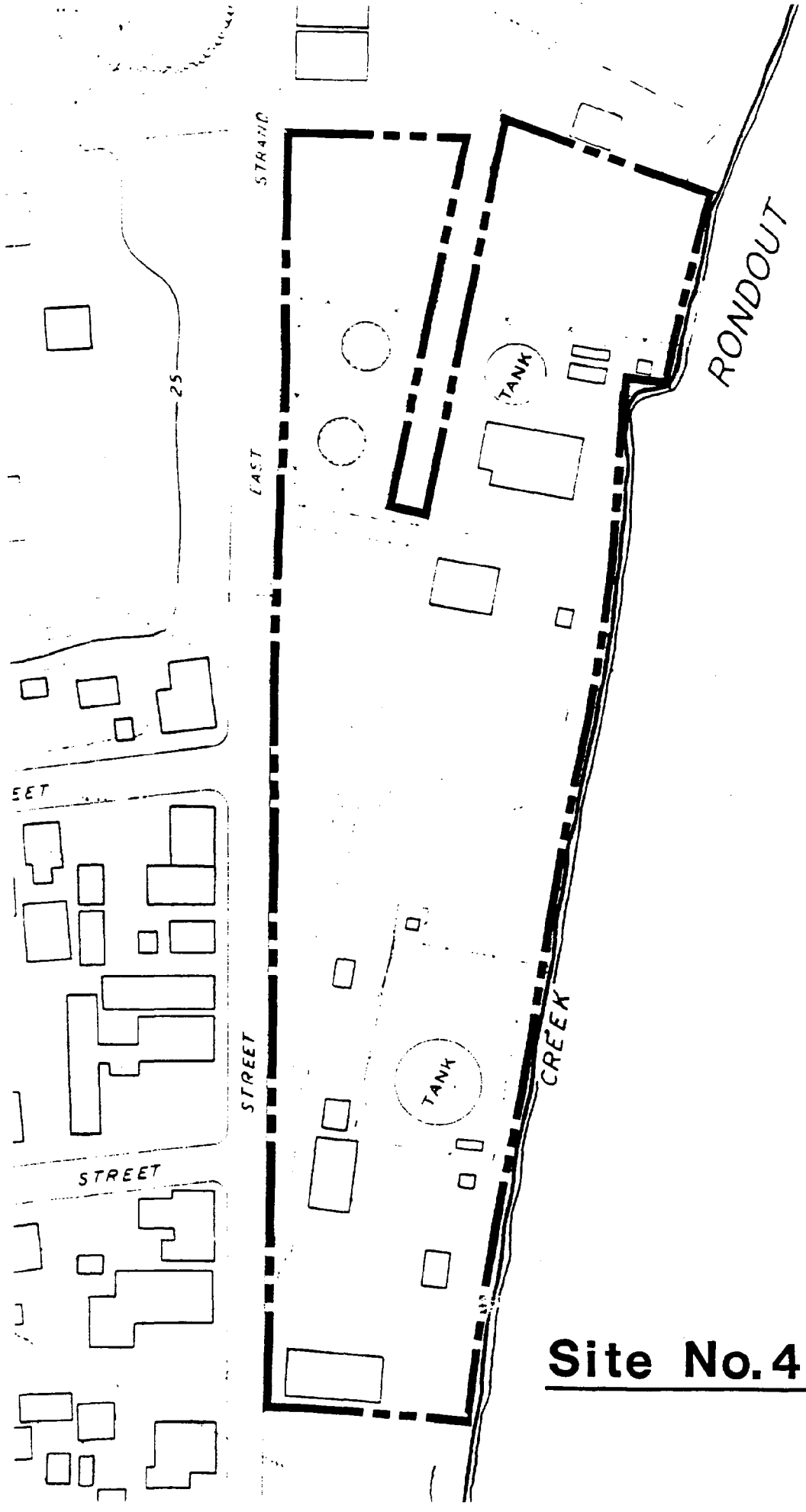
Sites No. 1 & 2

4a



Site No. 3

4b



Site No. 4

4c

TOMPKINS
STREET
EAST UNION
TANKS
WALL
STRAND
RONDOUT
STREET
75
50
25
100
125
150
175
UNION
PLANT
EAST

Site No. 5

4d

existing sites on the Rondout Creek would become available for other development. This concept, however, is dependent on the capacity of the Kingston Point sites to accept increased storage volume and truck traffic. It would also concentrate all oil storage facilities at the most visible site from the river.

Concept D: Kingston Point Expansion/Retain Site 5

The only two, of the five sites, to be removed under this option are sites 3 and 4. Site 3 is not served by water at this time and, if combined with the adjacent Millens junk yard would create one of the largest possible parcels on the creek -- some five and one-half acres. Site 4, although very shallow, occupies more waterfront than any other site -- 900 feet -- which could be used for other purposes. This plan, therefore, has the advantage of creating two significant development opportunities with the least disruption of existing facilities. It does, however, depend on the availability of expansion capacity at Kingston Point. It also concentrates more storage facilities at Kingston Point without eliminating all of those on Rondout Creek.

EXISTING OIL FACILITY TO REMAIN

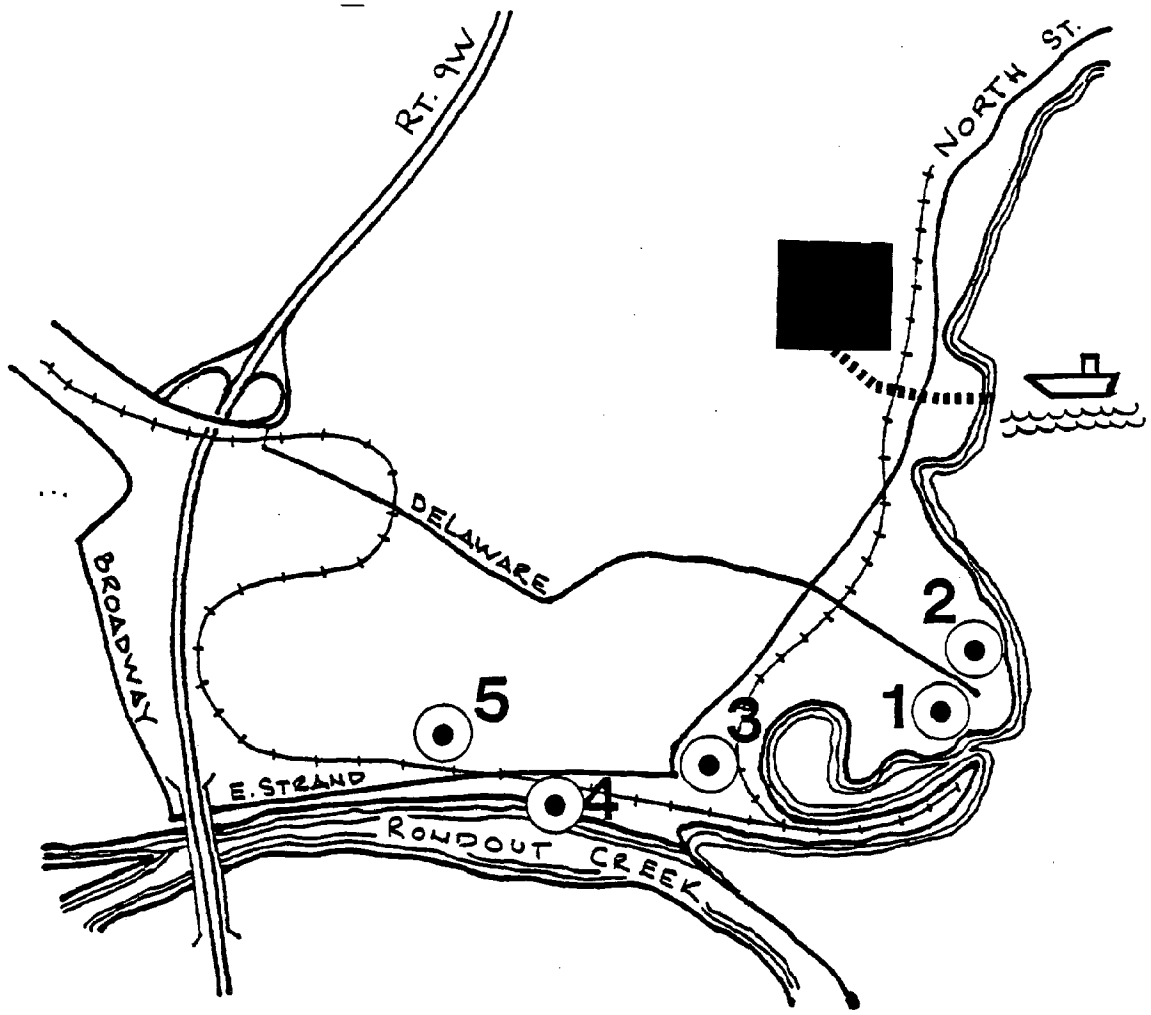
EXISTING OIL FACILITY TO BE REMOVED

NEW OIL FACILITY

EXISTING DOCKING TO REMAIN

NEW DOCKING

NEW PIPELINE



Concept A

5a

EXISTING OIL FACILITY TO REMAIN

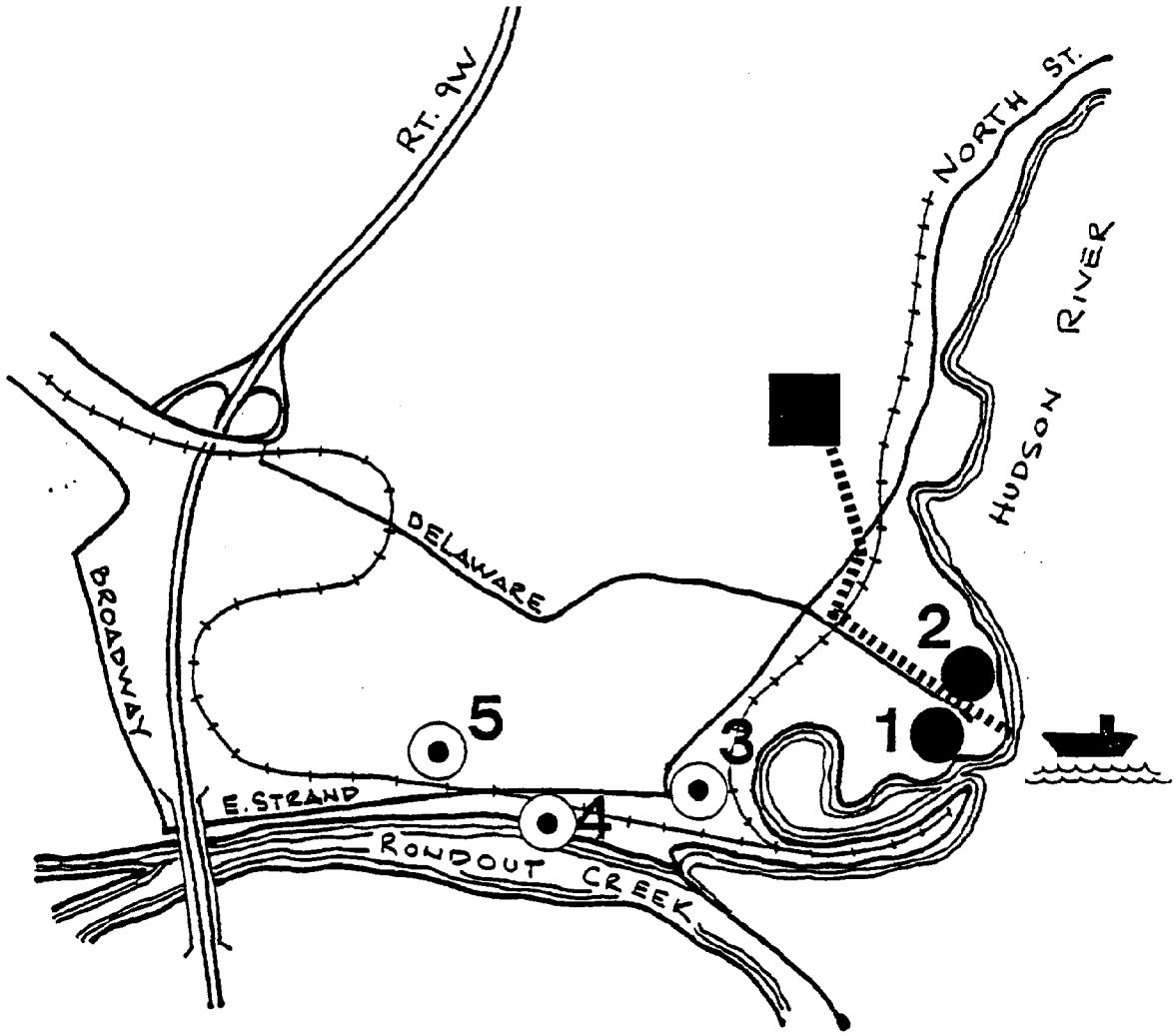
EXISTING OIL FACILITY TO BE REMOVED

NEW OIL FACILITY

EXISTING DOCKING TO REMAIN

NEW DOCKING

NEW PIPELINE



Concept B

5b

EXISTING OIL FACILITY TO REMAIN

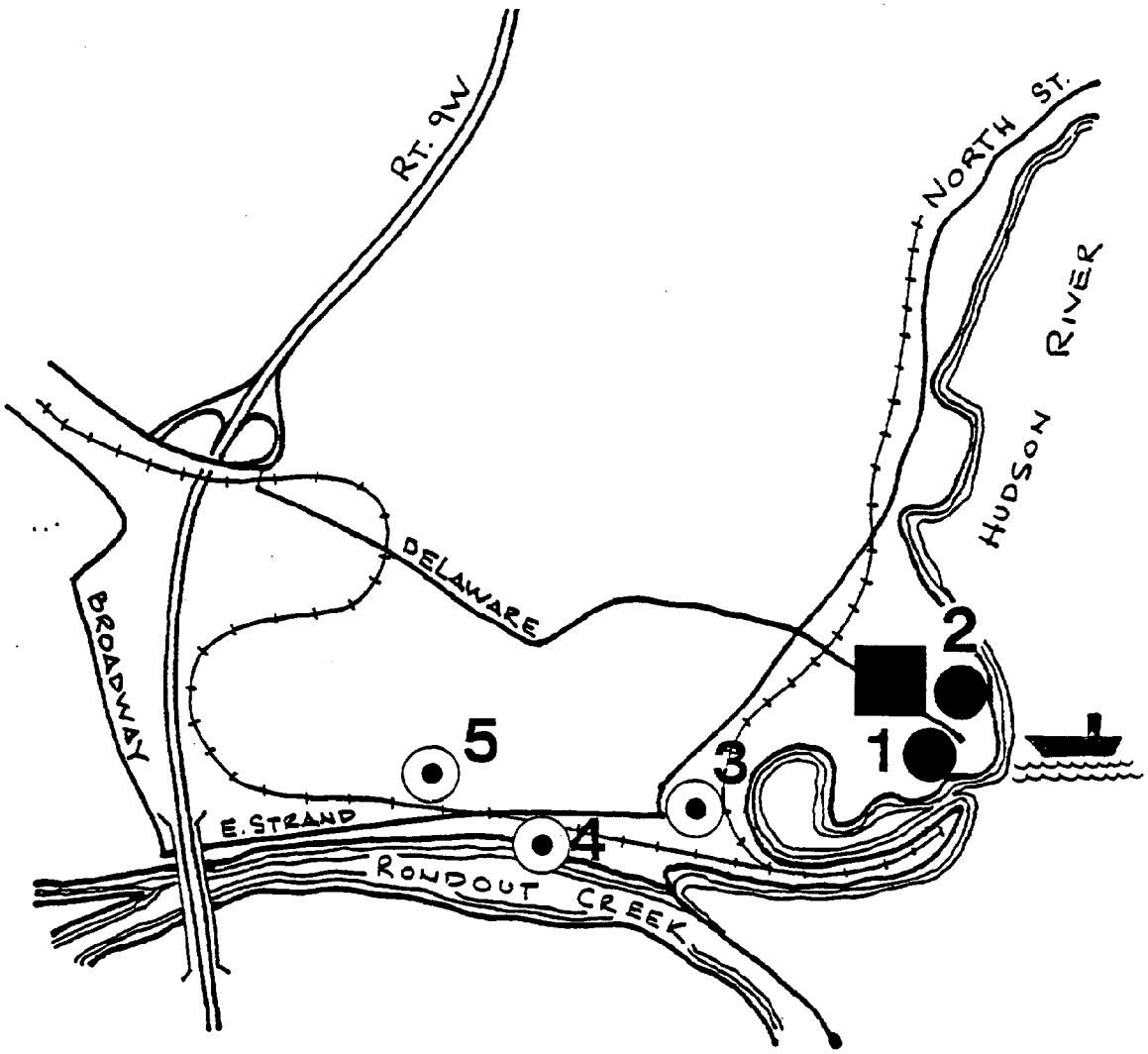
EXISTING OIL FACILITY TO BE REMOVED

NEW OIL FACILITY

EXISTING DOCKING TO REMAIN

NEW DOCKING

NEW PIPELINE



Concept C

5c

EXISTING OIL FACILITY TO REMAIN

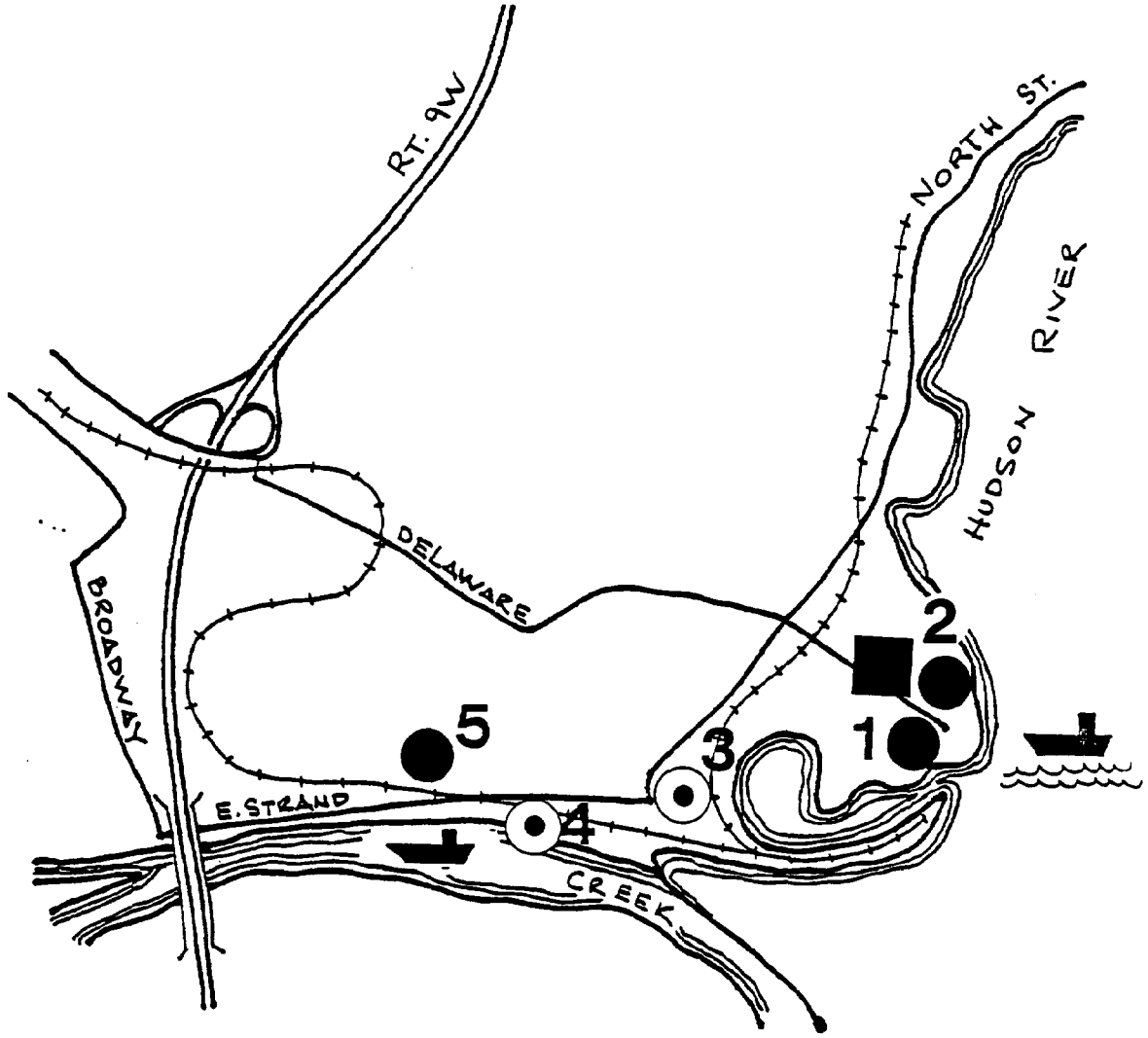
EXISTING OIL FACILITY TO BE REMOVED

NEW OIL FACILITY

EXISTING DOCKING TO REMAIN

NEW DOCKING

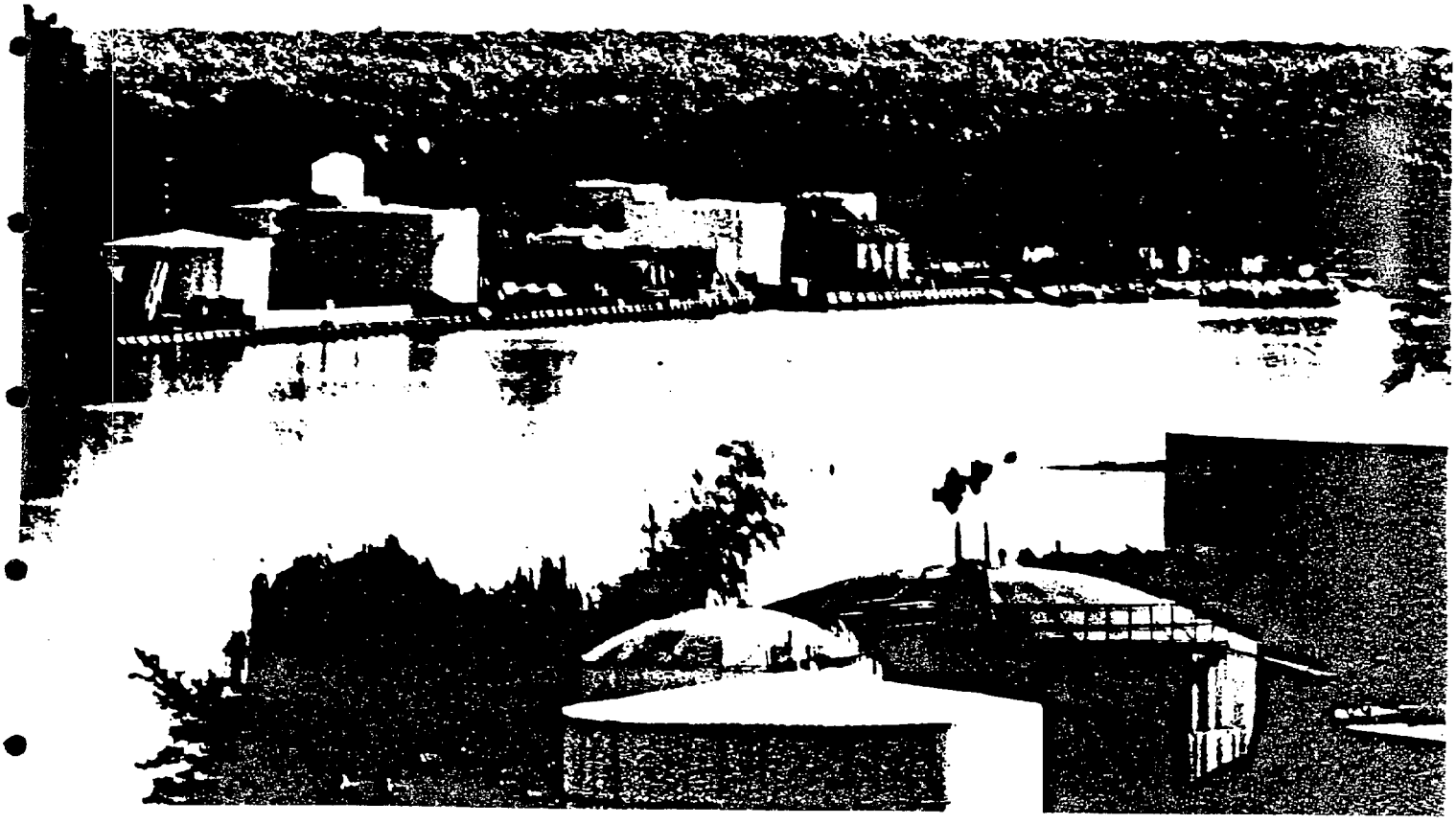
NEW PIPELINE



Concept D

5d

II. DEVELOPMENT PLANNING



A. DESIGN AND LOCATION CRITERIA

Design and location criteria for oil storage and distribution facilities fall into two categories: those related to the construction of the facility itself and those dealing with the design of the facility in relation to the surrounding environment.

1. Design Criteria

The substantial size and potentially prominent location of oil storage facilities requires careful consideration of design criteria to mitigate possible adverse impacts on the surrounding environment. Such criteria, in addition to those standards for environmental protection related to construction and disaster prevention, include visual impacts and land use relationships.

a. Visual Criteria (see illustrations 1-4 also)

(1) Where possible tanks should be completely screened from such major natural features as the Hudson River by topography or vegetation.

(2) Where complete screening is not possible, tanks should be sited so that they do not extend above sight lines to natural features such as hillsides or tree lines.

(3) Tanks should be located so as not to be the dominant element in a prominent vista, such as at the end of a street or on the outside of a curve in a road or a bend in a river.

(4) Groups of tanks should be of the same height and spacing, if at all possible, so as to create rhythmic pattern rather than a variety of discordant elements.

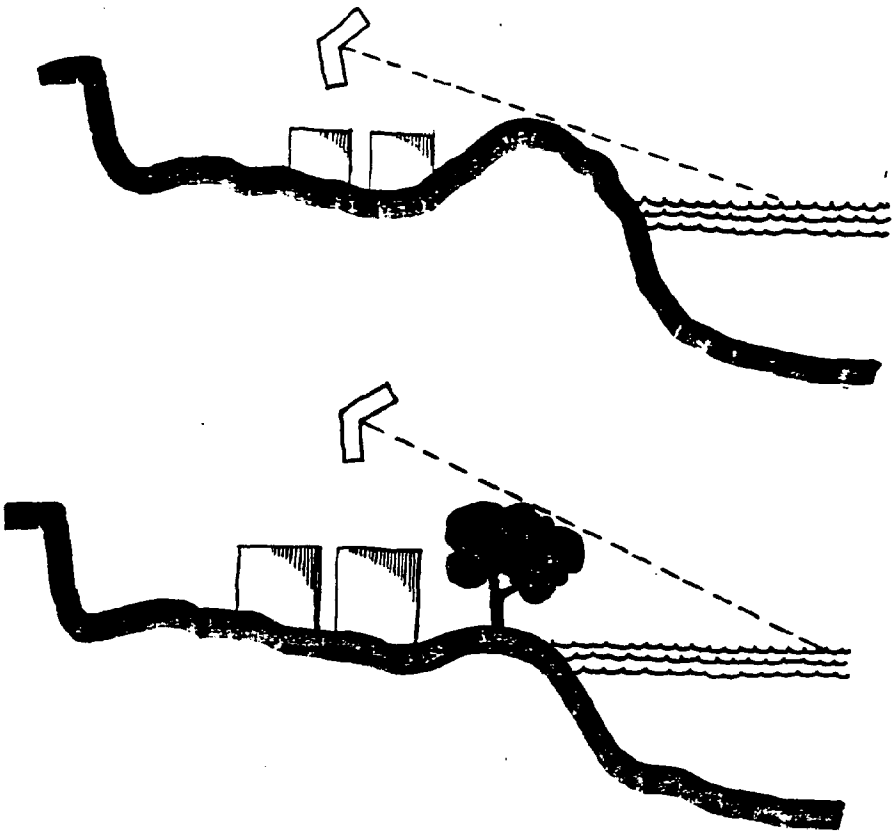
(5) Tanks should be painted in muted colors, preferably earth tones. Groups of tanks should be the same color and any color coding limited to bands at the base of the tank.

b. Land Use Relationships

Oil storage facilities have a number of distinct characteristics which can affect adjacent land uses. However, if planned properly, the oil facilities can be quite compatible neighbors. Following are some criteria:

(1) Since the size and bulk of the storage facilities

1



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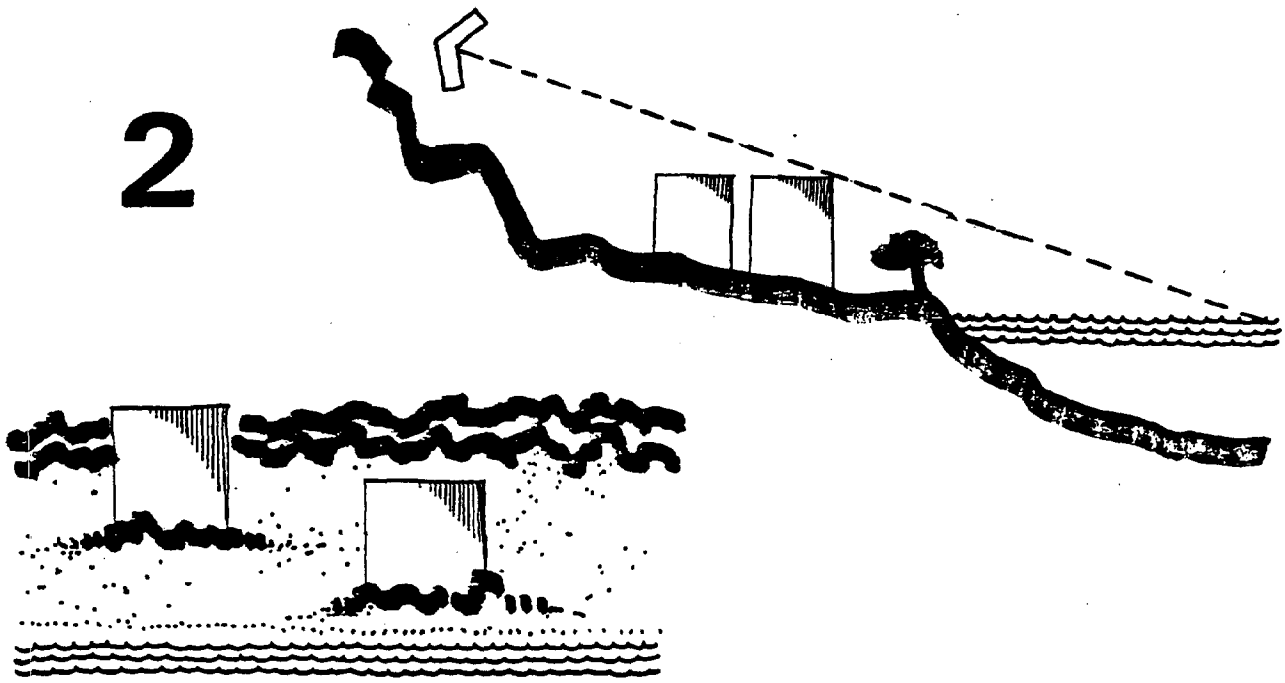

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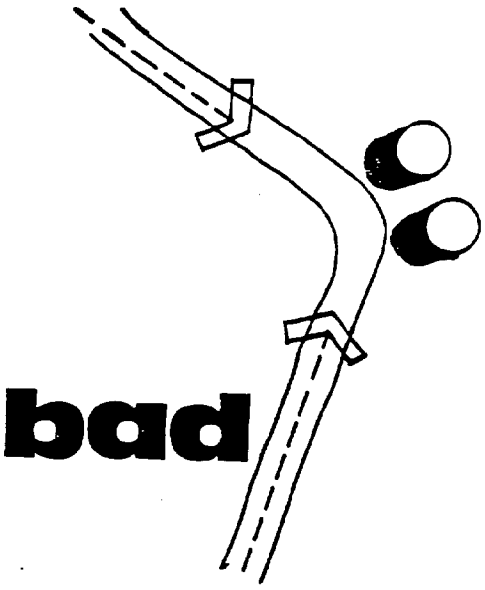

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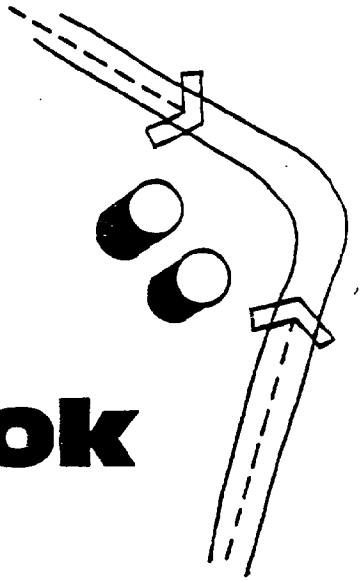

ok

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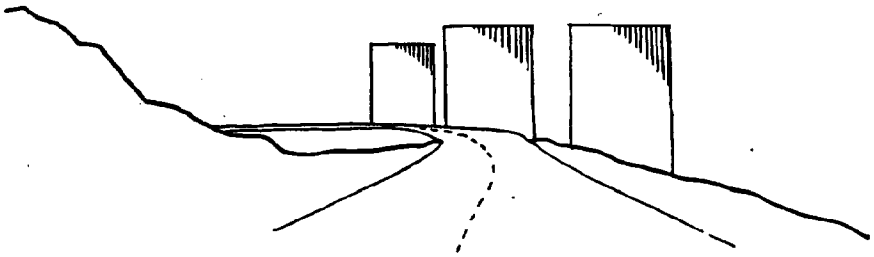

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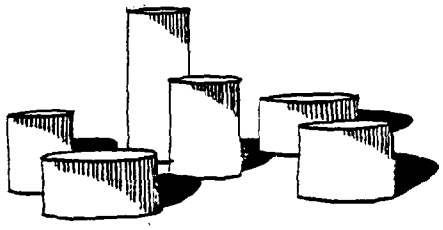
3

4



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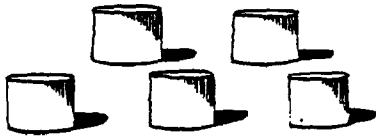


ok

can be quite dominant, set-back and screening from surrounding property lines is important. When located in industrial areas, which is preferable, such set-back is not as critical as when facilities are adjacent to residential, commercial or recreational uses. In such instances, the distance from storage tanks to property lines (including street lines) should be at least twice the height of the tank.

(2) Access to the storage facilities should be via a major collector street which can accommodate the volume of truck traffic. Although such volumes are not as large as some industrial uses, the nature and hours of operation could adversely affect adjacent residential uses.

(3) Waterfront docking is essential for the oil facilities. Such docking areas must be large enough to accommodate delivery barges to prevent conflict with other waterfront uses, particularly docking for pleasure boats.

2. Construction Criteria

Criteria dealing with the functional aspects of oil storage facilities are summarized below and discussed in greater detail in interim Progress Report No. 2.

a. Tank Construction

New tanks are of welded steel construction fabricated in accord with standards established by the American Petroleum Institute. Floating roof tanks are used for gasoline storage while fixed roof tanks (which are much less costly) are used for storage of less flammable products. Buried, lined concrete tanks are sometimes used in unusual circumstances, such as at military installations, but are considered too costly and otherwise impractical at any of the potential sites in Kingston.

b. Tank Layout

Spacing requirements between tanks and from property limits are established by the National Fire Protection Association. Spacing depends on type of tank construction, fire protection facilities, tank size and diking technique. The appropriate standards have been used in the preliminary designs developed for new sites discussed later. (See Appendix B.)

c. Diking Requirements

The basic diking requirement is that the total contents of the largest tank within the diked area can be impounded. This can be achieved by diking around the tanks or by a remote impoundment area. Dikes cannot exceed six feet in height. Earth dikes are most economical, but concrete walls or even steel fire walls around the tank itself can be used when space is a problem.

d. Fire Protection

Fire protection systems are required only when distance from adjacent properties is insufficient. In such cases, the Kingston Fire Department's approval of fire protection measures is required.

e. Access

Access by water is essential to permit volume deliveries. Barges of the size used require a water depth of 12 feet. Vehicular access via major or collector street is essential to accommodate the volume of delivery vehicles and to insure adequate and prompt maintenance and snow clearance.

B. POTENTIAL NEW SITES

A survey was undertaken to identify sites with the apparent potential to satisfy the criteria established for new oil storage and distribution facilities. Sites of sufficient size, with the necessary access via water, are relatively limited in the City of Kingston. The only area in which such sites can be found is along the Hudson River waterfront. The rugged, one and a half miles of shoreline is in only two ownerships--the former Hudson Cement Company and the Jova Brick Company. An analysis of these two sites, located on Map No. 6, follows:

1. Brickyard Site

This site of about 75 acres is just north of Delaware Avenue at Kingston Point and includes some 2,200 feet of waterfront. Some 30 acres are located between North Street and the river, while the remainder of the site is on the opposite side of North Street.

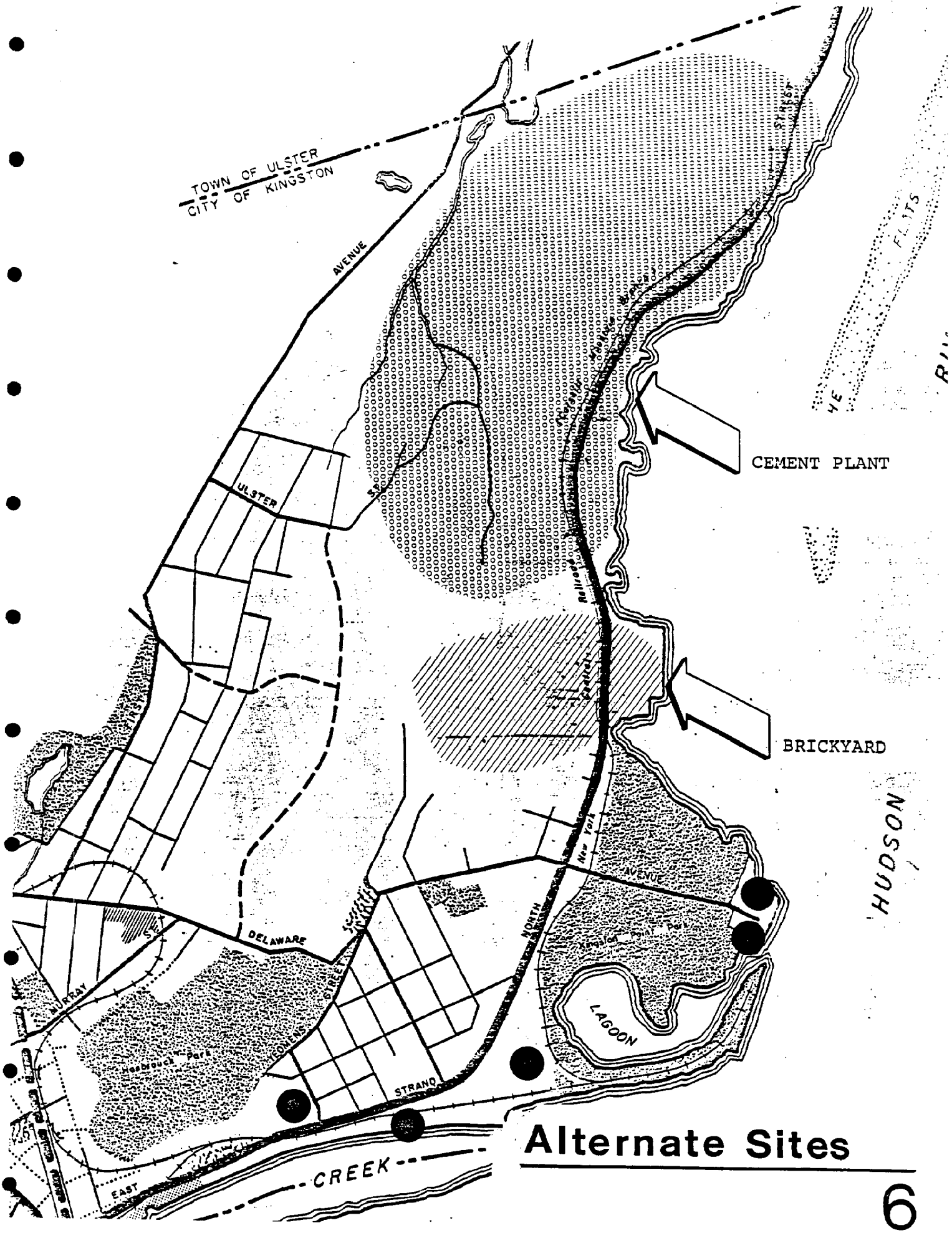
Advantages

The brickyard has several significant advantages as a site for new oil storage and distribution facilities.

a. The larger portion of the site, west of North Street, is a bowl created by many years of excavation as part of the brick operation. This bowl, with steep slopes on three sides at least 50 feet above its bottom, is visible and accessible only from North Street. The flat bottom of the bowl is large enough to accommodate a substantial number of oil storage tanks which would be virtually invisible from the north, west and south due to the steep slopes and be screened from the river by trees along North Street.

b. Although somewhat higher than the tank sites on the waterfront, the base of the bowl is only about 40 feet above sea level, so that new tanks could be served with auxiliary pumps.

c. The site is served by a water line and is within 500 feet of a sewer line. Access is via North Street to the main portion of the site, although it does have a small frontage on Delaware Avenue adjacent to Kingston Point Beach. The rail spur from Kingston Point also extends through the site, providing a possible right-of-way for connecting pipe lines from Kingston Point.



Alternate Sites

Disadvantages

a. A potential disadvantage of this site is that, although it has substantial water frontage, boat access is via channels through shallow flats. It will be necessary to dredge and maintain a 12-14 foot deep channel to permit barges delivering oil to directly serve the site. Such activity is costly and requires a variety of difficult-to-obtain permits.

b. Several hundred feet of North Street at the site are in poor condition and would probably require repair to accommodate increased traffic.

2. Cement Plant Site

Extending from the brickyard north to the City line, this site includes approximately one mile of waterfront and over 300 acres within the City limits. Many years of quarrying as part of cement production have left several vast pits as well as spoils deposits on the already rugged site.

Advantages

The site has several unique characteristics which affect its suitability for use as an oil storage facility.

a. The Hudson River channel passes very close to shore at the northern portion of the site and existing docking facilities have ample water depth to serve oil delivery vessels.

b. Under certain circumstances the extensive excavations on the site could be assets. Tanks located in the larger pits would be virtually invisible, the pits would provide natural oil spill containment facilities, and the rock would provide an excellent foundation.

Disadvantages

This site also has several distinct disadvantages:

a. North Street, which provides access from the city, is in extremely poor condition and requires major reconstruction. Alternate access from Route 32 does exist but requires maintenance of a lengthy stretch of private road.

b. Although the physical features of the site provide

some unique opportunities, they will also undoubtedly result in abnormal construction costs.

c. Any storage facilities would be at least 75-100 feet above water level and would require substantial pumping facilities for barge unloading.

d. The site is served by neither water nor sewer facilities.

C. ANALYSIS OF DEVELOPMENT ALTERNATIVES

Four concepts for relocation/consolidation of the existing oil storage facilities were set forth early in this study. Subsequently, following discussion at a committee meeting, these concepts were examined further based on the criteria established, the potential sites identified, cost factors, functional considerations and possible obstacles.

Based on this analysis, plans for three development alternatives were prepared including preliminary designs and cost estimates. These development alternatives are based on Concept A, two versions of Concept B and Concept D as set forth in Part I of this report. See Appendix C for preliminary detailed plans.

Alternate A (See Map No. 7a) is predicated on relocation of all existing oil storage facilities to the Brickyard site on North Street, including dredging and bulkhead repair necessary to provide barge access.

The obvious major advantage of this alternate is the removal of all storage facilities from the Rondout Creek and Kingston Point waterfront and the availability of all existing sites for alternate use. The new site is isolated and unobtrusive from either land or water.

Development and operations under this alternate requires very close cooperation between the two oil companies since they would be sharing one docking facility and very close knit storage and distribution terminals. The size of the storage facilities on the west side of North Street and the docking area and pipelines on the waterfront may well restrict the development potential of the land between the water and North Street even though it would not actually be used by the new facility.

Alternate B-1 (see Map No. 7b) involves the relocation of the three sites on the Rondout Creek to the brick yard site while maintaining the two existing facilities on Kingston Point. The new facility would be served by pipelines from the present loading docks at Kingston Point.

This alternative has several advantages. (1) It would make all of the Rondout Creek sites available for alternate development opportunities; (2) the new site would be located so as to have minimum visual impact or affect on adjacent properties on the waterfront; (3) there would be ample room for expansion at both the new site and the remaining Kingston Point sites and (4) the two sites may offer more operational flexibility than a single site.

Alternate B-2 (See Map No. 7c) is a modification of the B-1 concept that would place all oil storage facilities at the brick yard site, although pipelines from the existing Kingston Point docks would deliver the oil products to the site.

The advantages of this alternative are that (1) all storage and distribution facilities would be combined on one site, (2) the new site is located so as to have minimal visual impact on adjacent properties on the waterfront, (3) not only the Rondout Creek sites but also the Kingston Point sites would be available for alternate development opportunities, (4) the new site is large enough to permit significant expansion in the future.

Alternate D (See Map No. 7d) would consolidate two of the three existing Rondout Creek sites at Kingston Point. The remaining site, used for gasoline storage, occupies very little water frontage.

The advantage of this plan are related to its relative ease of accomplishment while still achieving several important objectives: (1) the only additional land required are several small parcels, adjacent to the existing Kingston Point sites, which have relatively little development potential, (2) disruption to existing operations in terms of barge delivery and traffic patterns would be relatively minor (3) the two major development opportunities on the Rondout Creek waterfront would be created.

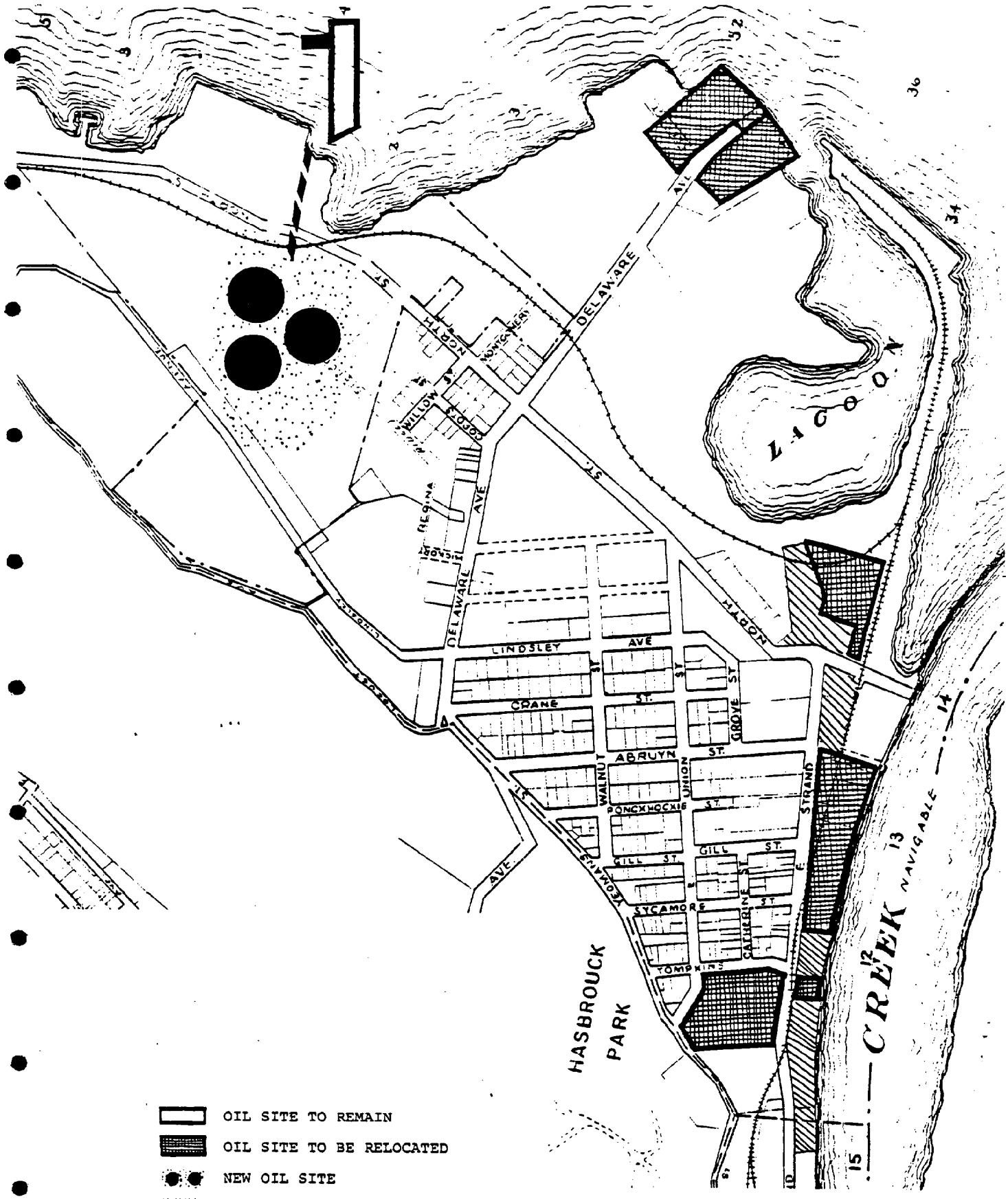
Development Costs

Detailed estimates of the cost to develop each of the selected plans were prepared (see Appendix D) and are summarized in Table D. These include the cost of relocating and constructing the oil storage and distribution facilities and any necessary ancillary facilities. The cost of other related but separate activities, such as acquisition of the existing sites or other property, is not included.

Although the term relocation is used throughout this study, it refers only to the transfer of operations from one site to another. Consideration of factors involved in actually physically moving existing tanks (see Progress Report #1) suggests that it is impractical in most instances. The riveted construction of many tanks would require excessive labor to dismantle; the age and condition of some tanks would not warrant the expenditure for relocation; and the relatively small size of many of the tanks would only perpetuate operational inefficiencies. The only major exception to this premise

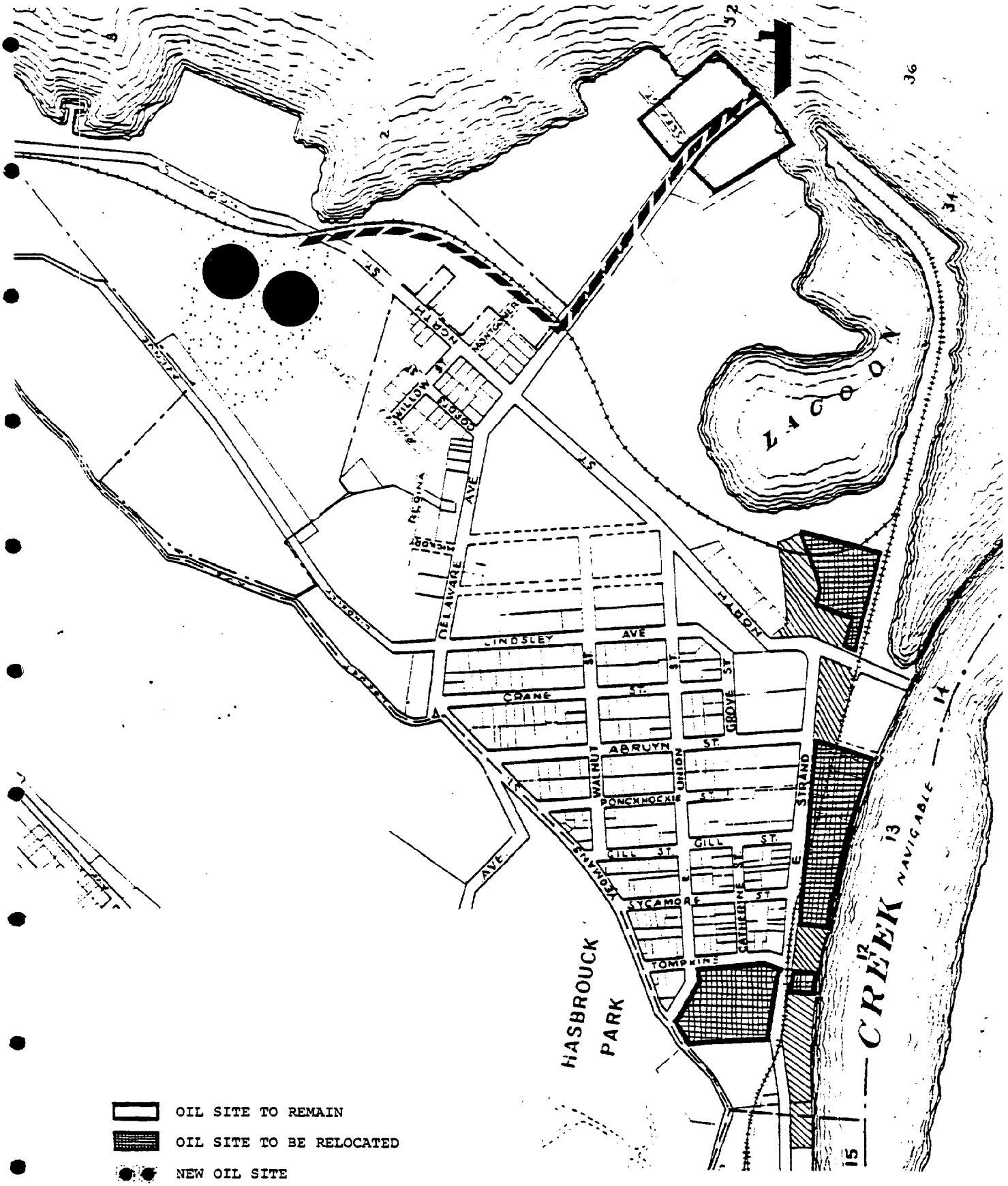
is a tank not presently owned by the oil companies - the 4,000,000 gallon tank on the cement company property. The size of this tank is consistent with the larger, more efficient tanks included in the alternate development plans. The feasibility of relocating this tank in accord with one of the plans will depend on its purchase price and a detailed analysis of the costs to dismantle, move, and reconstruct it.

As indicated in Table D, the development cost of Alternates A, B-1 and B-2 are within 25 percent of each other. Consequently, factors other than cost are likely to determine the preferred solution. Alternate D, however, is only 60 percent of the average cost of the other three - a difference of over $2,000,000. Therefore, as financing opportunities are limited, the relatively low cost of Alternate D may well outweigh any other disadvantages.



Alternate A

7a



OIL SITE TO REMAIN

OIL SITE TO BE RELOCATED

NEW OIL SITE

OTHER LAND TO BE ACQUIRED

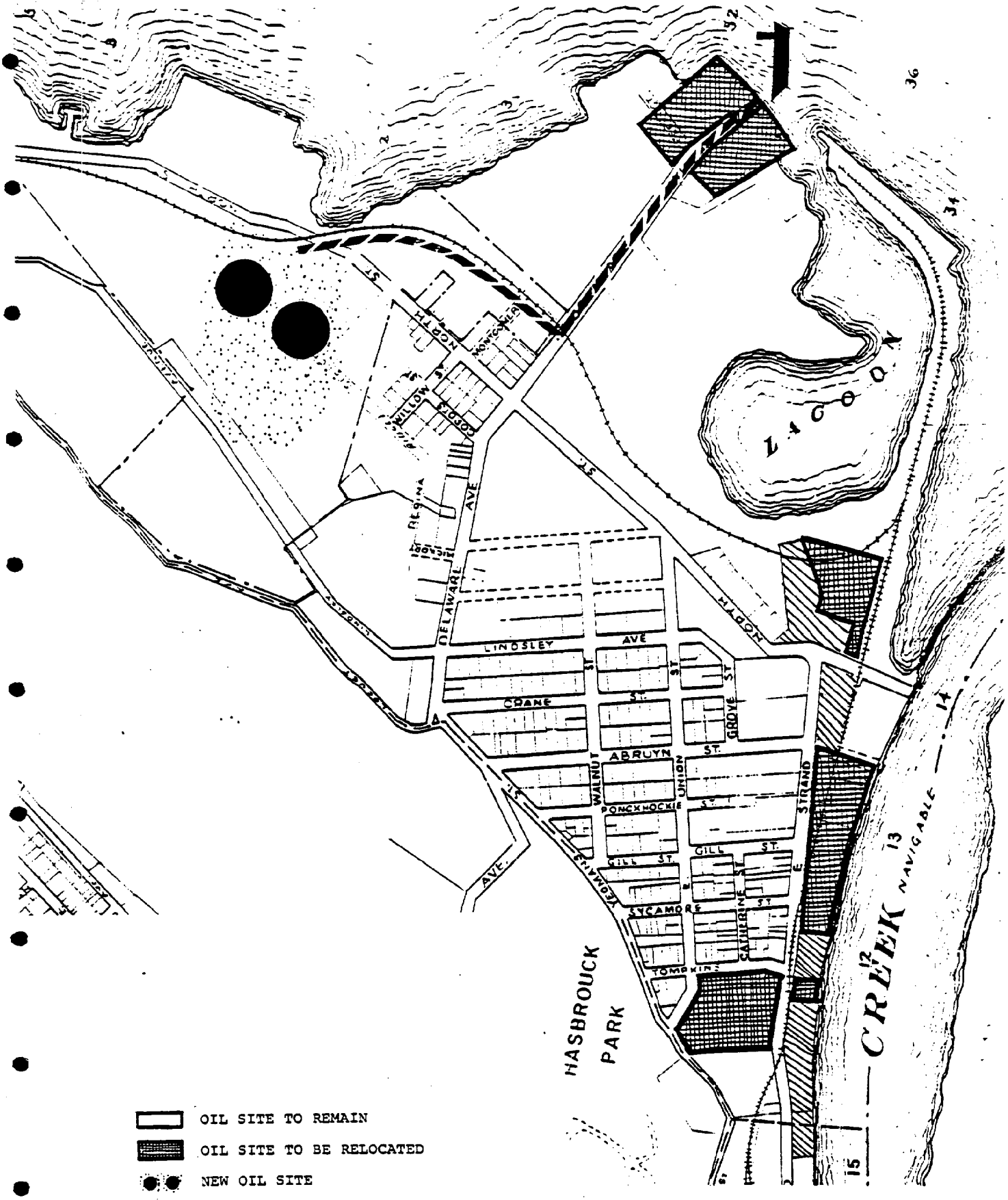
NEW LOADING DOCK

EXISTING LOADING DOCK TO REMAIN

PIPELINE

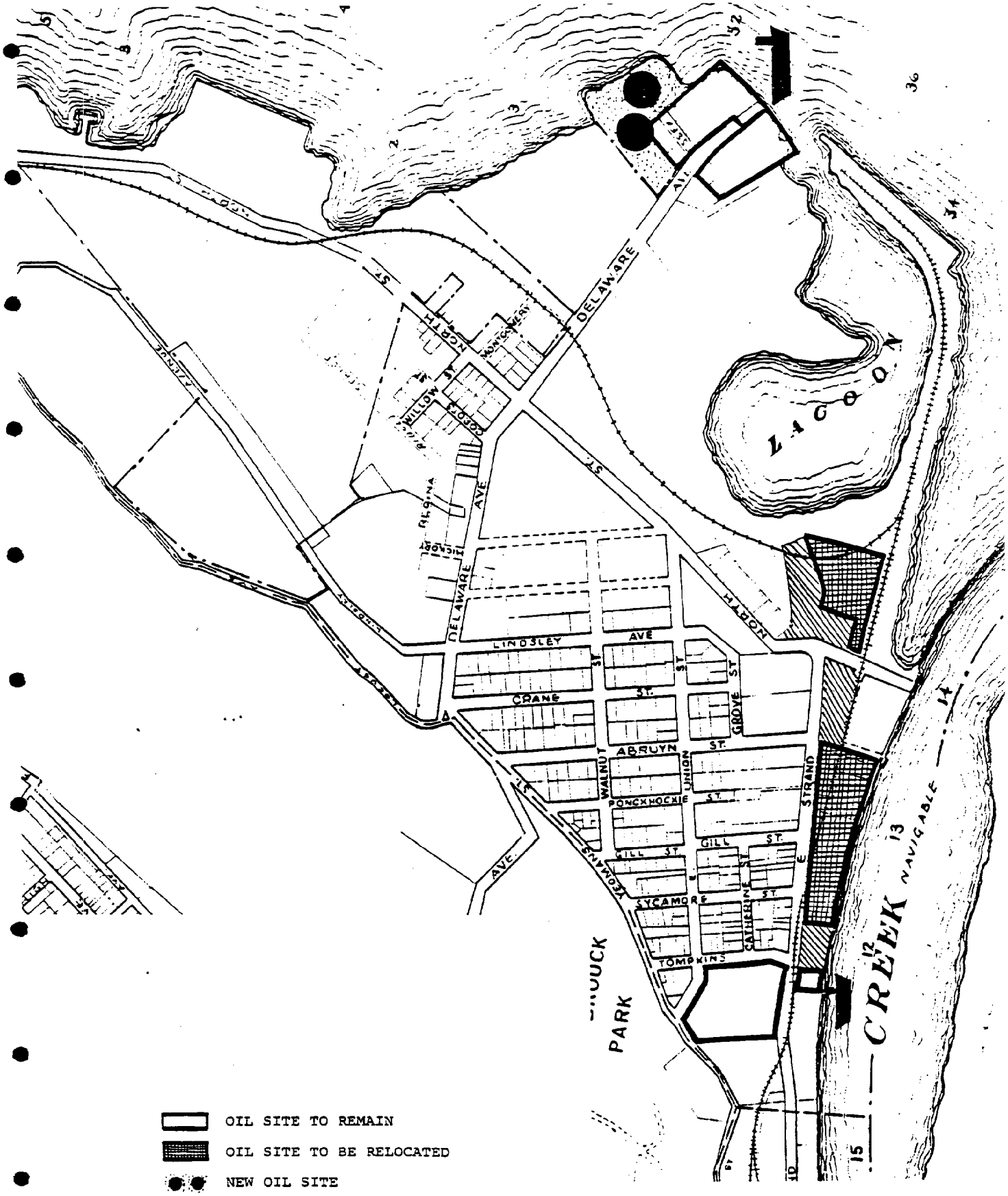
Alternate B-1

7b



Alternate B-2

7c



Alternate D

7d

TABLE D

DEVELOPMENT COST OF SELECTED ALTERNATIVES

		Alt. A	Alt. B-1	Alt. B-2	Alt. D
A.	Land Acquisition*	$ 150,000[1]	$ 100,000[2]	$ 100,000[2]	$ 25,000[3]
B.	Construction				
	Mobilization/Demolization	300,000	280,000	300,000	220,000
	Site work	515,000	434,000	515,000	258,000
	Tanks and Support Facilities				
	- Tanks	1,630,000	1,630,000	2,585,000	840,000
	- Pile Foundations	-	-	-	1,310,000
	- Pipelines to Site	187,500	1,155,000	1,155,000	-
	- Other	1,975,000	880,000	1,020,000	387,000
	Waterfront Improvements	1,210,000	-	-	-
	Engineering, permits, etc.	300,000	270,000	300,000	140,000
	Subtotal:	6,117,500	4,649,000	5,875,000	3,155,000
	Contingency @ 15%	918,000	700,000	881,000	473,000
	Total:	7,035,500	5,349,000	6,756,000	3,628,000
C.	GRAND TOTAL	$7,185,500	$5,449,000	$6,856,000	$3,653,000

*All estimates were derived from the equalized assessed value of the total brick yard site: $275,000

(1) Based on acquisition of western portion of site plus portions of the waterfront.

(2) Based on acquisition of western portion of site only.

(3) Based on estimated value of 25¢ per square foot.

D. IMPLEMENTATION CONSIDERATIONS

Implementation of any one of the development alternatives described in the previous section depends on a variety of factors which will determine the feasibility of the plan. The development alternatives deal only with the physical aspects of developing new sites for the storage and distribution facilities. Equally important are:

(1) Development objectives for the waterfront sites to be made available;

(2) Economic benefits to be gained from development of the oil sites and adjacent waterfront land; and

(3) Availability of financing techniques that will enable both public agencies and private enterprise to undertake their respective roles.

1. DEVELOPMENT OBJECTIVES

Even the most modest alternate plan offers the opportunity to recycle some 2,000 feet of waterfront property. In each case, all or portions of the adjacent junk yards are proposed for acquisition in order to create marketable development parcels (see Maps No. 7a-d). As set forth in the Urban Cultural Park Feasibility Study, "The primary goal of land use development along the Rondout Creek is to maximize its potential as a valuable public amenity, while continuing to provide opportunities for compatible private development along the waterfront."

It is not proposed here that the City create additional public park land by relocation of the oil storage facilities. The facilities being creted at Kingston Point and the West Strand, when completed, will provide a substantial resource of publically owned and operated waterfront parks for both passive and active recreation. Rather, the objectives for use of the sites to be made available fall into two categories as discussed below.

a. Land Use Objectives: Sites should be made available for development of uses which attract visitors and which are dependent on or enhanced by the waterfront setting. Such uses - which may include residences, manufacture and/or sale of marine products and services, restaurants, specialty shops, etc. - should be compatible

with the objectives set forth in the Urban Cultural Park program and should support other related businesses.

b. Functional and Design Objectives

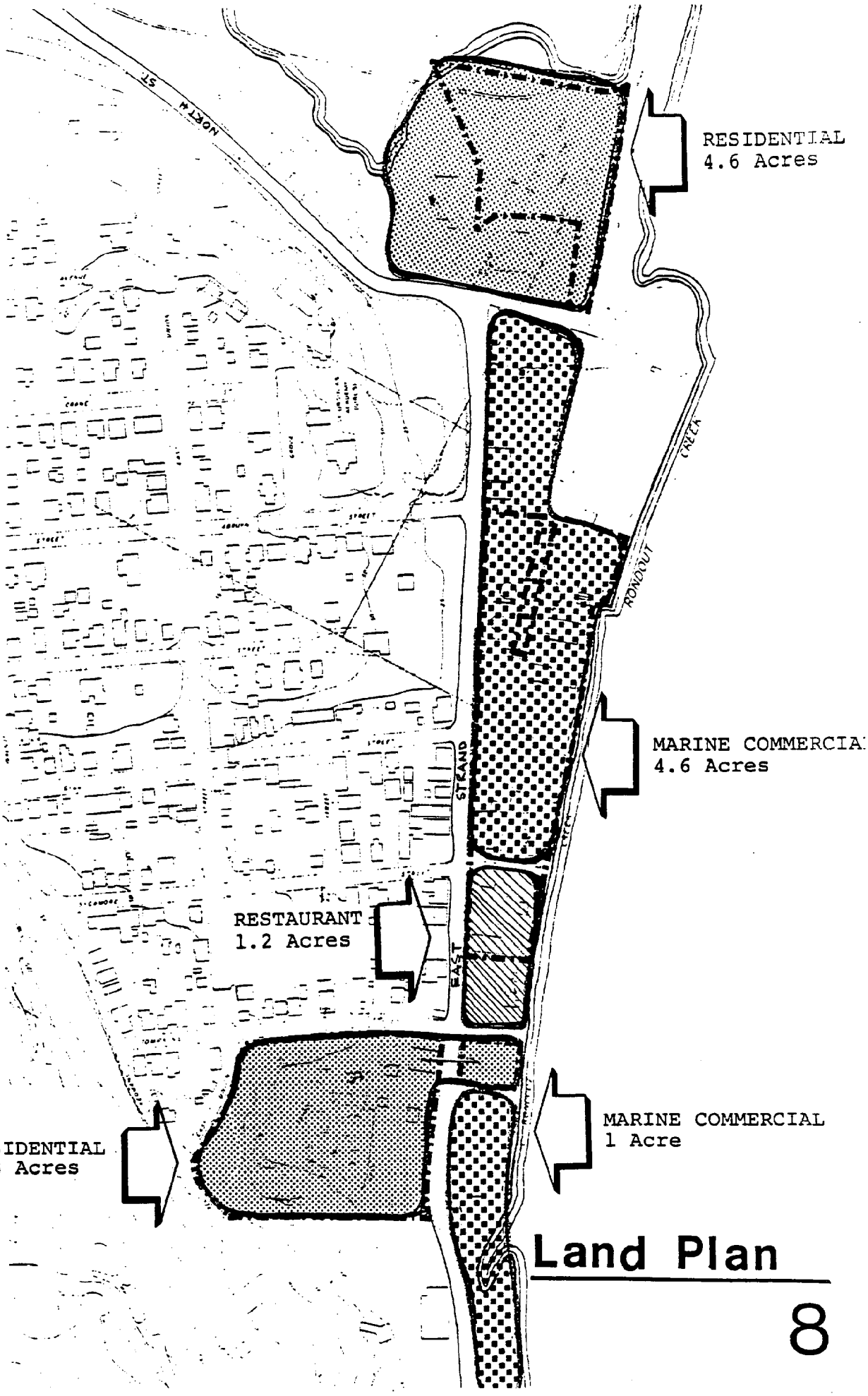
There are presently substantial stretches where waterfront views are completely obscured and where the adjacent uses not only don't use the water but also obstruct any access to it. New uses should be designed to encourage public use of the waterfront while partaking of the services offered. Site design should permit frequent views from the adjacent street through the site to the water beyond. Public easements to the water's edge should be incorporated in new development as should public docking rights.

2. ECONOMIC BENEFITS

Economic benefits to the City from new development include both direct tax revenues and indirect benefits from new jobs created. The type and intensity of new uses will affect the extent of these benefits. In order to provide some estimate of the potential magnitude of these benefits, a hypothetical development program for the land to be made available under one development concept has been prepared.

The program set forth in Table E and illustrated on Map No. 8 was developed from the market demand and construction value projected for new development in the Rondout area by the Cross Group as part of the Urban Cultural Park Feasibility Study. These overall estimates were used as the basis for calculating development potential on the parcels to be made available under Alternate B-1. The results would vary under each of the other alternates, but B-1 represents a middle range option.

As Table E indicates, over $5,000,000 in new construction could result on the 16 acres of waterfront property to be made available. Over $250,000 in tax revenues would be produced and over 200 construction and permanent jobs created.


RESIDENTIAL
4.6 Acres
MARINE COMMERCIAL
4.6 Acres
RESTAURANT
1.2 Acres
MARINE COMMERCIAL
1 Acre
RESIDENTIAL
4.3 Acres
NORTH ST
STRAND
EAST
RONDOUT
CREEK

Land Plan

TABLE E

HYPOTHETICAL DEVELOPMENT PROGRAM
(Alternate B-1)

	USE			
	Residential	Marine Commercial	Restaurant	Total
Acres	8.9	5.6	1.2	15.7
Units	70* du	30,000 s.f. 50 slips	1(60 seats)	
Market Value	$3,500,000	$1,300,000	750,000	$5,550,000
Assessment**	630,000	234,000	135,000	999,000
Real Estate Taxes***				
- City	66,000	24,500	14,000	104,500
- School	79,000	29,500	17,000	125,500
- County	19,500	7,000	4,000	30,500
Jobs Created				
- Construction	116	43	16	175
- Permanent	-	27	16	43

Source: UCP Feasibility Study, Economic Analysis, Cross Group, Inc.
Daniel Shuster, Planning Advisor

*8 dwelling units per acre
**Based on 18 percent equalization rate
***1981 Tax Rates: City $105/1000
School $126/1000
County $ 31/1000

3. FINANCING TECHNIQUES

A variety of activities must be financed in order to realize the proposed development program. Since there is little likelihood of significant public grants to undertake major portions of the program, other financing sources must be employed to maximum advantage to create the necessary incentives. The program will be achieved based primarily on mutual benefit rather than via unilateral government fiat.

Among the cost elements to achieve the various plans are those for the following items:

- Acquisition of new site(s) for the oil storage facilities
- Purchase of existing oil facilities to be removed
- Purchase of adjacent scrap yard sites
- Construction of new oil facilities
- Construction of necessary public infrastructure to serve new oil facility sites
- Construction of new private development on waterfront sites.

a. Sources of Public Funds

(1) UDAG: Virtually the only grant program which may be available for a project such as this is the federal Urban Development Action Grant (UDAG). This program is intended to spur private investment by provision of funds necessary to complete a feasible "development package." Awarded on a competitive basis, such grants must be matched at least 4:1 by private funds. Recent federal policy has been to provide UDAG funds as secondary financing rather than an outright grant. Therefore, a UDAG might be in the form of a low interest second mortgage, possibly with deferred payments, to effectively reduce the cost of other financing.

In this instance, the UDAG might be used toward construction of the new oil storage facilities or to provide necessary public

improvements such as street repair or new utility service. The UDAG funds might also be used to assist new development on the former oil storage sites, although the private funds must be committed before an application for UDAG funds can be processed.

(2) SBA Displaced Business Loan: The Small Business Administration (SBA) makes available direct loans to assist businesses displaced by governmental action. These loans are based on U.S. Treasury Note rates and are currently at 14 percent for a 20 year period up to a maximum of $500,000. In order to be eligible for such a loan, it would be necessary for the City to declare the present oil storage sites as urban renewal projects and mandate removal of the existing facilities. Purchase of the property and relocation payments would have to be based on federal policy and procedures.

(3) Urban Cultural Park (UCP) Program: One of the major objectives of Kingston's UCP is revitalization of the Rondout Creek waterfront for increased commercial and recreational use. Kingston is one of about a dozen communities designated as part of the statewide program. Although no direct funding for the program has been provided, beyond that for the planning already completed, efforts are being made to (1) pass state legislation providing both funding and financing tools and (2) secure federal assistance. Actions to remove the oil facilities and junk yards to expand development opportunities would certainly be consistent with the UCP effort. This potential funding source should not be overlooked.

b. Incentives for Private Investment

A number of tools which have been developed in recent years to spur business growth can be used as an additional incentive to investment in the new oil storage facilities as well as the sites to be made available by relocation of the existing tanks and purchase of the junk yards.

(1) IDA Financing: The cost of financing a major construction project can be reduced substantially through use of tax exempt revenue bonds offered by the Ulster County Industrial Development Agency (IDA). Not only are interest rates on such bonds lower than conventional financing for industrial development projects, but also the IDA, as a tax exempt body which owns the project, is not liable for real estate taxes. By the same token, no sales tax is paid on construction materials for the project.

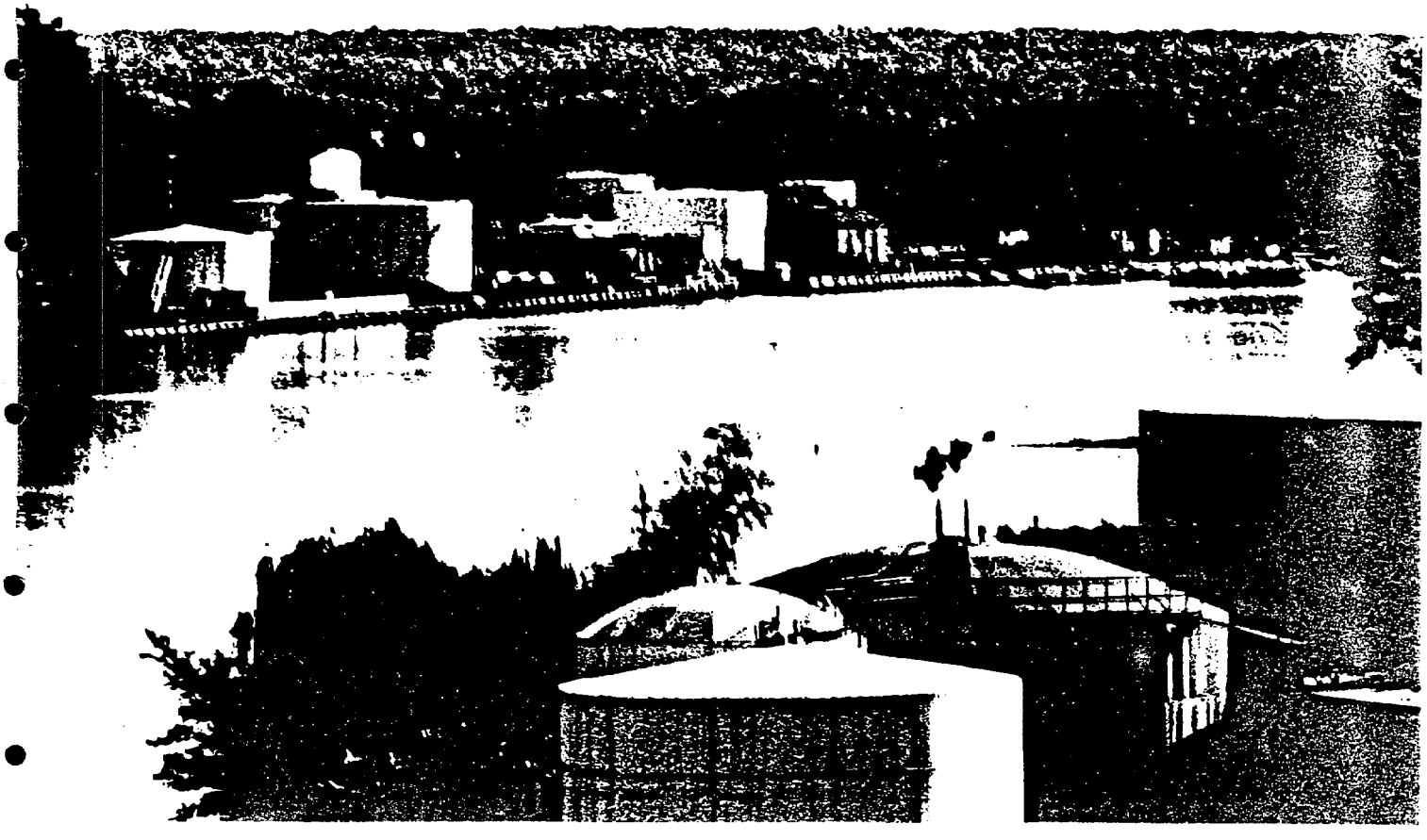
Normally, the IDA enters into an agreement which requires the developer to make payments to the various taxing districts equal to the equivalent real estate tax. With the agreement of the city, however, these payments could be set at a rate below the comparable real estate taxes and could also establish, in advance, the payment schedule for future years. Thus the IDA can be used to reduce financing costs and to stabilize and/or reduce tax payments.

Recently changes have been suggested in federal legislation which would limit the purposes for which such bonds could be sold. Therefore, there will be some uncertainty as to the effectiveness of this technique until the situation is resolved.

(2) Tax Incentives: The Economic Recovery Tax Act of 1981 includes a number of new provisions which may make capital expenditures for new or expanded facilities more attractive than in prior years. Under the new Accelerated Cost Recovery System, depreciation time periods have been reduced to a maximum of 15 years from as much as 40 years under previous regulations. Investment tax credits for machinery and

equipment have also been increased. These incentives may be of importance to the current oil storage facility owners, or may create the necessary climate for syndication of the new facilities. In such case, investors seeking tax shelters would purchase the facilities for lease to the oil companies who would retain an option to buy them later, when the tax incentives have expired.

III. RECOMMENDATIONS AND CONCLUSIONS



A. RECOMMENDED DEVELOPMENT PLAN

All of the previously discussed concepts for relocation and/or consolidation of the oil storage and distribution facilities are generally acceptable in terms of the basic land use and design objectives for the waterfront. Selection of a feasible plan, however, depends on a combination of physical, financial and administrative factors.

The rationale used to select Plan D, the recommended plan, is discussed below, as are the steps necessary to achieve it.

1. Basis for Selection

Plan D is recommended as the most feasible due to its relatively low cost, ease of accomplishment, and minimal impact on other development.

Cost: Plan D is by far the least expensive of the four alternates analyzed. At $3,653,000, it would cost one-third less than Plan B-1, the next highest alternate. Although it is likely that pile foundations will be required, should they not be necessary, the cost of Plan D would be reduced to $2.4 million, or less than half the cost of Plan B-1. In view of the limited availability of financing assistance, this factor is of major importance.

Ease of Accomplishment: Plan D is more easily accomplished for a number of reasons.

a. Unlike the other alternates no land acquisition is required. Ownership of the land on which the new tanks would be constructed is already divided between the two oil companies or their principals.

b. No new docking facilities or major pipelines are required. Therefore, not only are the substantial cost of such facilities unnecessary, but also the lengthy and uncertain process of securing necessary permits and approvals is eliminated.

c. The new facilities can be staged to accommodate the circumstances of the oil companies without serious disruption to their existing operations.

Impact: Plan D does not impose any oil facilities where they do not already exist, nor does it limit any significant development opportunities. It is consistent with the long range Urban Cultural Park plans for the Rondout Corridor.

The development potential for Kingston Point is limited, as discussed previously, due to its size and location. The only alternate use of the oil tank sites would be for expansion of Kingston Point Park. Long range development of the current park site will take many years and substantial funding (from uncertain sources) to complete. However, the brickyard site, common to each of the other alternates has sufficient size and waterfrontage to support major waterfront use. Although there are several substantial impediments to its use, its development potential would not be disrupted under Plan D.

2. Implementation Program

Implementation of the selected plan requires a series of actions by public and private bodies. Realistically, the active cooperation of most participants must be assured if the program is to be carried out.

Urban Renewal Designation: Although no land is to be acquired for the new oil storage facilities, the two existing facilities (Sites 3 and 4) must be acquired as well as the two scrap metal properties. It is recommended that this acquisition be accomplished under the urban renewal provisions (Article 15) of New York State Law for the following reasons:

a. If necessary, condemnation powers can be used to gain possession of the property and/or to establish, through court action, the equitable purchase price.

b. Under urban renewal procedures, the City would be able to establish specific guidelines and priorities for new uses on the sites and could select prospective developer(s) on the basis of the overall merits of their proposal as opposed to just the highest price.

c. More specific land use and development controls can be placed on the properties to be sold than would apply under the normal zoning regulations.

d. If displacement takes place as a result of government action the businesses involved would be eligible for SBA Displaced Business Loans.

UDAG Application: In order to secure a federal Urban Development Action Grant, an application must be submitted by the City after a development program and financing plan has been agreed upon but prior to the start of any actual activities. Both the City and the oil companies must be prepared to make firm commitments for their share of the program, subject to UDAG approval, prior to submission of the application.

Relocation: Not only the oil storage facilities but also the scrap metal yards will be displaced by the program. The entire effort is geared toward providing alternate sites for the oil facilities. The two yards, however, will be difficult to relocate. Although their present location is completely inappropriate with respect to the City's objectives for the waterfront, such uses do perform a useful and necessary function. Therefore, every effort should be made to assist these uses to find suitable new locations. Criteria for such sites should include good vehicular access (also rail access for Millens, if possible), sufficient size to provide ample buffers and screening from adjacent uses and public streets, and compatible neighboring heavy commercial or industrial uses.

Cooperation Agreements: Although each oil company would construct its own tanks and other facilities, under Plan D the close proximity of the facilities will most likely require certain cooperative efforts to permit the most efficient layout and operation of facilities. Both companies own portions of the necessary property; but the configuration of the individual ownerships is not conducive to proper design. Therefore, agreement as to layout of facilities on the combined property is important, particularly to permit shared oil spill containment and traffic flow patterns. Such cooperation agreements should clearly define joint responsiblities as well as individual rights.

B. FINANCING PLAN

In order to develop possible financing plans for Plan D, the least costly development alternative, costs for each of the essential elements have been estimated as follows and a number of potential financing options developed which reflect both public and private expenditures.

1. Costs

a. Acquisition of Existing Sites: Under Plan D, the city would acquire two of the existing oil storage and distribution sites, Sites 3 and 4, one owned by KOSCO and one by Garraghan/ Davenport. Based on assessed value, site area, water frontage, other site features, existing facilities and storage capacity, it is estimated that the combined value of the two sites is approximately $750,000. Prior to any actual acquisition, detailed appraisals by qualified appraisers would be necessary.

b. Construction of New Oil Facility: As indicated previously, construction of new faciliteis on Kingston Point, to replace Sites 3 and 4, are estimated to cost approximately $3,600,000. No cost for land acquistion is involved since the oil companies already control the site.

c. Purchase of Scrap Metal Yards: To realize the full development potential of the waterfront, it will be necessary for the City to acquire the two properties currently used for junk and scrap metal sale and storage. Based on assessed value and various site factors and improvements, the cost of acquisition is estimated at $300,000, subject to detailed appraisal.

d. Street Improvement: Delaware Avenue, between the railroad tracks and the oil storage sites on Kingston Point is subject to occasional flooding. In order to completely eliminate this condition and insure access to the expanded facilities, it would be necessary to raise the road bed some three feet and improve about 1,500 ft. of street. The City Engineer's office estimated that this construction will cost some $160,000 excluding rebuilding of the rail crossing should this line be restored to service. This cost has been included as the City's contribution to the project.

2. Revenues

Both the City and the oil companies will receive revenue from the sale of land which will reduce their total cost. It is estimated that the City will receive $25,000 per acre, or $300,000, from the sale of the 12 acres to be made available by acquisition of the junk yards and Sites 3 and 4. The $750,000 received by the oil companies for Sites 3 and 4 will reduce the net cost of new construction on Kingston Point.

Table I summarizes the above costs and illustrates the off-setting revenues which reduce the total cost to both the City and the oil companies and result in a total net cost to the City of Kingston of $960,000 and to the oil companies of $2,878,000.

TABLE I

	City		Oil Companies	
Cost Item	Cost	Revenue	Cost	Revenue
a. City purchases oil Sites 3 and 4	$750,000			$750,000
b. Oil company constructs new facility			$3,628,000	
c. City purchases junk yards	350,000			
d. City disposes oil/junk sites for development (12 ac. @ $25,000/ac.)		$300,000 *		
e. City rebuilds Delaware Avenue	160,000			
Totals	$1,260,000	$300,000 *	$3,628,000	$750,000
Net Cost	$ 960,000		$2,878,000	

*Interim financing for this revenue will be necessary since it will not be available until after costs have been incurred.

3. Financing

The plan to finance the above costs is based on use of the available financing vehicles, revenue sources and incentives to the fullest extent possible. Set forth below are two variations of the basic financing program based on different assumptions as to financing terms and the size of the UDAG.

		City of Kingston			Oil Companies	
A.	Funding Vehicle & Terms	Total Funds	Annual Cost	Annual Revenue	Total Funds	Annual Cost
	City Bond (8.5%/15 yrs.)	$960,000	$115,000			
	Real Estate Tax on New Development			$ 70,000		
	UDAG (8%/30 yr)			53,000	$ 600,000	$ 53,000
	IDA Bond (10.5%/15 yr)*				1,738,000	235,000
	Sale of Depreciation and Tax Credits				540,000	
	TOTALS:	$960,000	$115,000	$123,000	$2,878,000	$288,000
	NET ANNUAL COST/REVENUE:			8,000		$288,000
B.	City Bond (8.5%/20 yrs)	$960,000	$103,500			
	Real Estate Tax			$ 70,000		
	UDAG (2%/30 yr)			33,000	$ 750,000	$ 33,500
	IDA Bond (10.5%/ 20 yr)				1,588,000	193,000
	Sale of Depreciation and Tax Credits				540,000	
	TOTALS:	$960,000	$101,500	$103,000	$2,878,000	$226,000
	NET ANNUAL COST/REVENUE:		$ 1,500			$226,000

*Assumes that bond rates will decline somewhat from current extremely high rates.

a. City Financing

The financing program assumes that the City will raise the $960,000 necessary for its activities via bonding. Funds for payment of the annual debt service on the bond depend upon estimated real estate taxes generated by new development on the former oil storage/junk yard sites (based on the estimates derived from the Hypothetical Development Program) and repayments of the UDAG by the oil companies. In either case, the terms of the bond have been set so that the City would about "break even" during the life of the bond. After the bonds are retired, the City would benefit by over $100,000 in additional revenues each year.

b. Oil Company Financing

Three funding sources are potentially available to the oil companies. Although each company would finance its own construction, the financing analysis has been developed for the combined private sector investment since the same methods are equally available to both companies.

Under both options, Urban Development Action Grants and Industrial Development Agency revenue bonds are projected. In addition, a third source is available through the incentives provided in the Accelerated Cost Recovery System under the 1981 tax act. The owners of the oil companies can take advantage of the generous depreciation and investment credits offered under the act (five years depreciation of the $3,600,000 cost plus a 10% tax credit in the first year). The extent of these advantages will depend on the individual tax status of each owner. However, incentives of this magnitude have an actual market value as a tax shelter to others if the owners cannot use them. For purposes of this analysis, the market value has been considered as a funding source. Based on actual recent experience, it is estimated that the depreciation, $725,000 for five years,

plus $360,000 in investment tax credits can be "sold"* for between $500,000 and $580,000. For purposes of this analysis, a figure of $540,000 has been used.

Under Option A it is assumed that a $600,000 UDAG can be obtained from the federal government which would be repaid to the City over 30 years at 8%. The UDAG ratio of one dollar of public funds for each five of private funds is likely to be well received by the Department of Housing and Urban Development. The sale of the depreciation and tax credits would generate $540,000 and the remaining $1,738,000 is assumed to be available via an industrial revenue bond at 10.5% over 15 years.

Total cost to the oil companies under this program would be $288,000 per year.

Option B assumes more favorable terms for both the UDAG and IDA bond. The UDAG would be somewhat larger, $750,000, at more favorable terms, 2% for 30 years, thus reducing repayment by $20,000 per year. However, the public-private funding ratio is also reduced making a somewhat less favorable UDAG submission. It is also assumed that IDA financing for the remaining $1,588,000 could be extended to twenty years.

The net affect of these more favorable terms would be to reduce annual costs by over $60,000 to $226,000. Obviously, this option would be more attractive to the oil companies. However, it must be recognized that such terms would depend on realization of a very favorable set of circumstances.

C. COST-BENEFIT COMPARISON

An analysis of the costs versus the benefits of this project must consider both the quantifiable dollar items as well as the more intangible, although equally important,

*The actual practice in such transactions (as dictated under the "safe harbor" provisions of Sec. 168(f)(8) of the Internal Revenue Code) is that the new oil storage facilities would be sold to investors who would pay the oil companies the $3,628,000 construction costs - $540,000 in cash plus a 5-year note for the remaining $3,088,000. The investors in turn would lease the facilities to the oil companies for five years at an annual rental equal to the note payments. At the end of five years, they would sell the facilities back to the oil companies for one dollar.

elements. Following is a summary of this analysis as it pertains to both the City of Kingston and the oil companies.:

City of Kingston

The City of Kingston stands to benefit significantly if the oil facilities are relocated under the program developed herein; the cost is projected to be minimal.

1. Economic Costs and Benefits: The financing program, discussed previously, was designed so that the City's actual annual dollar cost can be virtually off-set by the revenues generated. Following the initial financing period, the City will receive approximately $100,000 from development on the sites directly involved in the program. Some 175 construction jobs and 43 permanent jobs are estimated to result from development of the sites.

   The removal of the oil facilities and scrap metal yards will greatly improve the climate for development of other sites on the waterfront and adjacent property and will enhance the potential success of activities related to the City's Urban Cultural Park program. The economic benefits of the UCP program, which is aimed at capitalizing on the historical and recreational attributes of the waterfront, will be substantial. Housing rehabilitation, new commercial development and tourist spending were projected in the UCP Feasibility Study, to generate $700,000 to $1,000,000 in real estate taxes and $2.4-7.2 million in sales revenue. Removal of major barriers to waterfront views and access will help the City realize this potential.

2. Functional Costs and Benefits

   Removal of the oil facilities on the Rondout Creek, together with the adjacent scrap metal yards, will open up nearly one-half mile of the waterfront property for more appropriate use and dramatically change the ambiance of Kingston's shoreline. Since the recommended plan does not require use of any new site, the development potential of such other waterfront sites as the brickyard or cement plant is kept intact.

The recommended plan will increase the concentration of oil storage facilities at Kingston Point. Such increase will result in somewhat greater visibility from the adjacent beach and river and will also generate more vehicular traffic and barge service. However, unless one of the far more costly alternatives were pursued, the existing Kingston Point facilities will remain. The modest increase in the already existing facilities will be more than offset by the advantages gained from the removal of facilities along the Rondout Creek.

Oil Companies

1. Economic Costs and Benifits

As projected in the above section on financing, the new facilities on Kingston Point would have a net cost to the oil companies of some $2,878,000. The annual cost, over 30 years, would be $226,000 to $288,000, depending on financing terms. To evaluate the magnitude of this expenditure, it is necessary to compare it to the annual cost of the facilities to be replaced.

The present oil facilities were built and/or purchased over many years under a variety of terms; actual costs, if any, are not comparable. However, one means of deriving a cost comparable to the projected financing cost is to estimate the return the capital represented by the value of current facilities could generate if invested to produce income. Based on the estimated $750,000 value of Sites 3 and 4 and assuming a 15% return on invested capital the current facilities are "costing" the owners $112,500 per year.

Maintenance and repair is a necessary cost for any capital equipment. However, the age and type of construction of the present facilities demands more extensive expenditures than would be necessary for the new facilities proposed. It is difficult to estimate this differential, but it must be considered among the current costs. For purposes of discussion, it is assumed that both normal maintenance and periodic major repairs average 5% of total capital value per year, or $37,500. Thus total comparable cost of the existing facilities is approximately $150,000, or $75-138,000 less than the projected cost of the new facilities.

2. Functional Costs and Benefits

New, modern facilities consolidated on one site will increase the operating efficiency of both oil companies. Except for gasoline, all products will arrive at, be stored on, and distributed from one site. This is certain to result in more efficient use of manpower, reduce duplication of equipment and improve site supervision and control.

Development of the new facilities on one site will require cooperation and coordination during construction and operation. This may pose some restraints on the individual operators. However, the history of cooperative efforts between the two companies in the past suggests that this should not be an overwhelming problem.

D. ENVIRONMENTAL ASSESSMENT

ALthough Alternate D is the recommended plan, due to its cost and relative ease of accomplishment, the environmental consequences of Alternate B2 were also considered, since this alternate has several distinct advantages. The purpose of the Environmental Assessment is to review the environmental considerations related to these two plans and any restraints they may present.

1. General Considerations

There is a wide variety of environmental matters to be considered in the planning and design of any tank farm facility, greatly affecting costs.

In general, permits or approvals are required from the following:

a. U.S. Coast Guard

b. U.S. Army Corps of Engineers and related Federal agencies (for dredging or waterfront construction)

c. New York State Department of Conservation (DEC)

d. New York State Department of Transportation

e. City of Kingston - Building Department

f. City of Kingston - Fire Department

Basic environmental considerations, in designing a new tank farm facility, are:

Dredging - A fundamental consideration and potential restraint, particularly in terms of dredge disposal - requires a permit from Army Corps of Engineers, involving a variety of State and Federal agencies (U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service, etc.).

Water Pollution - Drainage discharge must meet water quality criteria, and requires a DEC permit. Oil/water separators required to minimize oil and grease discharge.

Air Pollution - Fumes from gasoline storage tanks are a particular concern. Air quality permit required from the State DEC. Vapor recovery systems may be required in the future - which will be costly.

Oil Spill Control - Oil Spill Control Plan required by Federal Regulations, subject to review by the U.S. Coast Guard. Concerns are potential spills from storage tanks, pipelines, and barge unloading operations.

Fire Protection - Requirements range from tank spacing and layout requirements, to the design of foam systems for gasoline tanks, Approval required from the City of Kingston Fire Department, based, in part, on the requirements of the National Fire Protection Association (NFPA Code 30).

Erosion Control - During site development and construction, erosion from cleared lands must be minimized. A "Site Drainage and Erosion Control Plan" may be required by the DEC or the Soil Conservation Service.

Visual Impact - Although there are no specific criteria, guidelines of the approving agencies (such as the State DEC or City of Kingston) will affect size, location and screening of tanks so as to minimize visual impacts.

Except for dredging which, fortunately, will not be required in either Concept B2 or Concept D, all of the above factors must be considered in the planning, design, and funding of a new facility at Kingston. They do not, however, pose site specific "restraints."

The following sections describe the potential problems for the two proposed schemes, based on their specific conditions.

2. Environmental Aspects

a. Concept B2

In general, the Brick Plant Site, utilized for all tank storage in Concept B2, does not present unusual site specific environmental problems. In fact, Concept B2 was selected, in part, because of favorable natural site conditions and minimum environmental impact.

The tank farm area would have to conform to the usual regulations of tank sizes, spacings, separations, diking, spill recovery, drainage and fire protection.

The major environmental "issue," peculiar to Concept B2, is the construction of connecting pipelines from the waterfront facilites at Kingston Point, to the tank storage facilities at the Brick Plant Site. Realistically, however, the potential impact from pipelines is not very substantial.

Above ground pipelines would be preferred, compared to underground pipelines. Above ground pipelines would be less costly, because of the irregular terrain and surface drainage patterns. Regular inspection and maintenance work would be easier, with access for emergency repairs.

On the other hand, underground pipelines would probably be required in the vicinity of public roads and crossings of small private properties, or wherever above ground lines would be obtrusive, disruptive to movements and subject to damage because of exposure.

In general, the pipeline would cross few private properties, and community opinion would have to evaluate the environmental and aesthetic advantages of eliminating the various individual tank farms vs. the pipeline crossings.

Accordingly, Concept B2 is generally favorable, in environmental terms, and does not appear to have any serious "obstacles" to its implementation.

b. Concept D

Concept D, wherein most storage facilities would be consolidated at Kingston Point, is potentially somewhat less favorable, in environmental terms, than Concept B2. There are two basic drawbacks to more extensive use of Kingston Point - due to: 1) close proximity to the public beach area, and 2) present legal designation of "tidal wetlands" for a portion of the property.

The large tank farm area at Kingston Point, similar to Concept B2, would have to conform to the usual regulations of tank sizes, spacings, separations, diking, spill recovery, drainage and fire protection.

The close proximity to the adjacent public beach area is an important consideration in terms of "visual impact." Adding large, tall oil storage tanks at Kingston Point, without screening by trees or other landscaping, would be objectional, detracting from the "quality" of the beach area. For this reason, relatively low tanks were assumed in masterplanning Concept D, screened by the existing trees, so as to minimize the "visual impact."

The second factor, the DEC designation of a portion of the property as "tidal wetlands," was also taken into account in the masterplanning of Concept D. In laying out the diked area, for the storage tanks, it was conservatively assumed that the "tidal wetlands" area would not be available for development, and it was therefore left "intact." Quite possibly this area could be utilized, although a DEC permit would be required.

3. Summary of Environmental Findings

Both schemes, "Concept B2" and "Concept D," are considered favorable, in environmental terms.

The major environmental questions in Concept B2, with the tank farm at the Brick Plant Site, relate to the connecting pipelines to the waterfront facilities at Kingston Point. However, this is not expected to be a major environmental issue, with the available choice of installing sections of the pipelines above or below ground.

The Kingston Point site (Concept D) is somewhat less favorable, due to the close proximity of the public beach area, and the designation of portions of the site as "tidal wetlands." However, these factors have already been taken into account, to reduce their effects, in the masterplanning of Concept D, which is the favored plan for economic reasons.

In terms of environmental restraints, the most difficult problems are associated with waterfront related construction, such as landfill-bulkheading and dredging. A very important aspect, common to both Concept B2 and Concept D, is that dredging and new waterfront construction, except for minor repairs, etc. - will not be required.

As with any new or expanded tank farm facility, resolving the environmental aspects will be important and costly. However, environmental requirements are not expected to be a major obstacle for either scheme, particularly in view of the positive support for the project, expected from the City of Kingston.

It is possible to cite specific environmenal concerns, at either alternative site. However, the fact is that any negative environmental aspect, with either Concept B2 or D, is minimal compared to the present situation wherein several tank farms are spread along Rondout Creek. The environmental advantages of concentrating the facilities at one or two locations, outweigh the disadvantages of the status quo.

E. CONCLUSIONS

This study has documented the impact of the oil storage facilities on the Rondout Creek waterfront and the potential benefits of their relocation. It has also indicated the practical considerations involved in the relocation. Various options have been explored and evaluated, costs estimated and the most feasible plan recommended. A financing program has been proposed for the recommended plan as has an implementation program.

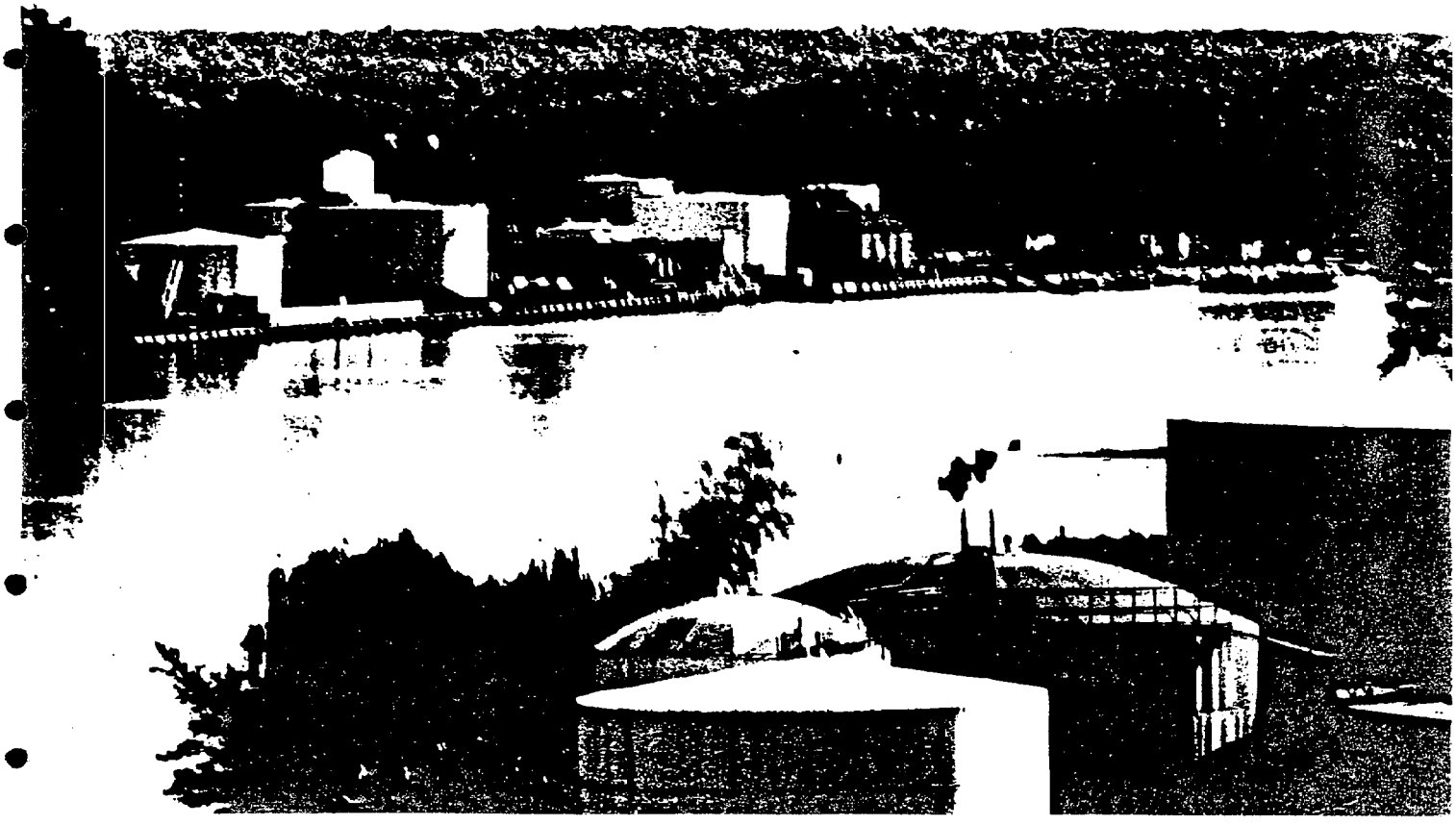
The ultimate conclusion is that relocation would have substantial benefits. It must also be concluded that the feasibility of even the least costly and most conservative plan - the recommended Plan D - is dependent on realization of a favorable set of financing terms and programs and upon the continued joint cooperation of the City and the oil companies.

In order to achieve costs within the net annual range projected in the financing plan, it will be necessary for the City to secure a UDAG grant and to realize the estimated tax revenues from new development on the oil facility sites. The oil companies must be able to arrange IDA financing, at the terms projected, and utilize the tax incentives identified. While all of these sources are definitely possible, a favorable economic climate and unchanged governmental regulations are essential to their availability.

Should all of the necessary financing mechanisms not be realized, or should the incentives not prove sufficient, assistance from the State should be sought to fill the gap. This project is consistent with the objectives of the State-sponsored Urban Cultural Park Program to develop the City's waterfront and expand related economic opportunities. An appropriation in the Supplemental Budget may well provide the final ingredient to a successful financing plan.

Therefore, this study should be used as a benchmark to determine when the necessary components for implementation are in place and as a basis for evaluating new programs or funding sources which may replace or supplement those utilized here. By undertaking this study and identifying the most feasible plan and program, the City is in a position to act quickly when the necessary conditions are present - either immediately or in the future.

APPENDICES



APPENDICES

A. Detailed Site Inventory

B. Standards for Oil Tank Spacing

C. Preliminary Plans for Development Alternatives

D. Detailed Cost Estimates for Development Alternatives

APPENDIX A

Detailed Site Inventory

TABLE 1

INVENTORY OF OIL STORAGE TANKS, KINGSTON, N. Y.

SITE NO. 1 - KINGSTON POINT (GARRAGHAN/DAVENPORT)

Tank No.	Storage (gal.)	Dimensions (ft.)	Product	Construction
1	750,000	60'Dx35'H	No. 2 Oil	Welded*
2	500,000	50'Dx35'H	No. 2 Oil	Welded*
3	300,000	40'Dx35'H	No. 2 Oil	Welded*
4	150,000	30'Dx30'H	Diesel	Riveted**
5	80,000	20'Dx25'H	Kerosene	Riveted
-	-	10'Dx12'H	Waste Oil	Riveted
Total:	1,780,000			

* Originally riveted, reconstructed by continuous welding of all rivets and seams.

**Planned to be reconstructed by welding.

All tanks originally constructed in 1920's.

TABLE 2

INVENTORY OF OIL STORAGE TANKS, KINGSTON, N. Y.

SITE NO. 2 - KINGSTON POINT (KOSCO)*

Tank No.	Storage (gal.)	Dimensions (ft.)	Product	Construction
1	250,000	35'Dx35'H	No. 2 Oil	Riveted
2	328,000	40'Dx35'H	"	"
3	184,000	30'Dx35'H	"	"
4	83,000	20'Dx37'H	Gasoline	"
5	221,000	32.5'Dx36'H	No. 2 Oil	"
6	189,000	30'Dx36'H	"	"
7	541,000	48'Dx40'H	"	"
8	330,000	37'Dx41'H	"	"
9	400,000	40'Dx43'H	"	"
10	252,000	32'Dx42'H	"	"
11	125,000	22.5'x42'H	"	"
12	422,000	42'Dx42'H	Kerosene	"
13	-	-	-	-
14	433,000	45'Dx36'H	No. 2 Oil	"
Total	3,758,000 gal.			

* 6-8 Delaware Avenue, formerly owned by A. R. Newcombe & Co., Inc., was purchased by KOSCO in 1981.

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TABLE 3

INVENTORY OF OIL STORAGE TANKS, KINGSTON, N. Y.

SITE NO. 3 - RONDOUT CREEK (GARRAGHAN/DAVENPORT)*

Tank No.	Storage (gal.)	Dimensions (ft.)	Product	Construction
6	158,000	25'Dx30'H	No. 2 Oil	Riveted
7	327,000	42'Dx35'H	"	"
8	510,000	45'Dx35'H	"	"
9	250,000	25'Dx35'H	"	"
10	186,000	23'Dx35'H	"	"
11	1,300,000	75'Dx40'H	"	"
12	55,000	18'Dx20'H	Waste Oil	"
13	55,000	17'Dx30'H	"	"
-	30,000	15'Dx20'H	"	"
Total	2,731,000**			

* Also referred to as "former Mobil" site.

** No. 2 oil only; does not include waste oil.

TABLE 4

INVENTORY OF OIL STORAGE TANKS, KINGSTON, N. Y.

SITE NO. 4A - RONDOUT CREEK (KOSCO)*

Tank No.	Storage (gal.)	Dimensions (ft.)	Product	Construction
1	253,000	21'Dx36'H**	Diesel	Welded (?)
2	253,000	35'Dx36'H	"	"
3	1,000,000	68'Dx37'H	No. 2 Oil	"
4	270,000	43'Dx25'H	Kerosene	Riveted
	Four at 9,000	10'Dx15'L	Not used	
Total	1,776,000	(excluding 9,000 gal. tanks not used)		

* 274 East Strand Street, formerly owned by Ballard Oil Co., Inc.

**Enclosed by 35'Dx18'H fire wall.

TABLE 5

INVENTORY OF OIL STORAGE TANKS, KINGSTON, N. Y.

SITE NO. 4B - RONDOUT CREEK (KOSCO)*

Tank No.	Storage (gal.)	Dimensions (ft.)	Product	Construction
-	1,000,000	68'Dx40'H	No. 2 Oil	Welded
-	600,000	60'Dx30'H	"	Riveted
-	12,000	10'Dx20'L	Solvent	"
	Two at 17,000	10'Dx20'L	Not used	
Total	1,612,000 (excluding 17,000 gal. tanks not used.)			

* 224 East Strand Street, formerly owned by Phelan & Cahill, Inc.

TABLE 6

INVENTORY OF OIL STORAGE TANKS - KINGSTON, N. Y.

SITE NO. 5 - RONDOUT CREEK (KOSCO)*

Tank No.	Storage (gal.)	Dimensions (ft.)	Product	Construction
20	212,000	35'Dx30'H	Prem. UL Gas	Riveted
21	500,000	50'Dx35'H	Reg. UL Gas	"
22	500,000	50'Dx35'H	No. 2 or Diesel	"
23	600,000	32'Dx66'H**	Reg. L Gas	Welded
24	90,000	25'Dx24'H	Prem. UL Gas	"
-	20,000	11'Dx32'L	Surplus	"
Total	1,922,000			

* 207 East Strand Street, also referred to as "former Exxon" site.

**Enclosed by fire wall, 50'Dx18'H.

Note: UL = Unleaded, L = Leaded Gasoline.

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TABLE 7

INVENTORY OF SUPPORT FACILITIES AT TANK FARMS, KINGSTON, NY

Site No.	Docking Facilities	Diking	Fire Fighting	Loading Arms	Oil Water Separators*	Office Storage Buildings	Manned Office	Parking Garage
1 (G/D)	Yes (new)	Partial	No	3 overhead 2 bottom load	1	Yes	No	No
2 (K)	Yes	Partial	Yes-Foam	8 overhead	1	Yes	No	No
3 (G/D)	No	Yes	No	1 bottom load	None	No	No	No
4A (K)	Yes	Yes	Yes-Foam	4 overhead	2	Yes	Yes	Yes
4B (K)	Yes	Yes	Yes-Foam	3 overhead	1	Yes	No	Yes
5 (K)	Yes	Yes	Yes-Foam	2 overhead	1	Yes	No	Yes

* Oil/water separators - 4,000 gal. capacity.

TABLE 8

EXPANSION CAPACITY AT EXISTING SITES

SITE NO.	LARGEST TANK	SPILL CAPACITY	FUTURE TANKS	ADD'L CAP. AVAILABLE BBL. (GALLONS)
1 & 2			See "Concept D"	> 10,000,000 (See text - Sect. 2.2)
3	31,000 bbl.	50,000 bbl.	A - 21,150 bbl. (60'D.) B - 7,200 bbl. (35'D.) C - 14,690 bbl. (50'D.)	43,040 (1,808,000)
4A	24,000 bbl.	37,000 bbl.	A - 11,900 bbl. (45'D.) B - 11,900 bbl. (45'D.) C - 11,900 bbl. (45'D.) D - 7,200 bbl. (35'D.)	42,900 (1,802,000)
4B	25,000 bbl.	29,000 bbl.	A - 21,150 bbl. (60'D.) B - 14,690 bbl. (50'D.)	35,840 (1,505,000)
5	12,000 bbl.	50,000 bbl.	A - 28,790 bbl. (70'D.) B - 28,790 bbl. (70'D.)	50,580 (2,418,360)

NOTES:

1. Assumes area maximized at each site, with the earth dikes or concrete walls constructed 6 feet above interior grade.
2. Tank height = 42 feet for all tanks, limited by "visual" restrictions.
3. Tank designation A, B, C, etc., refers to layouts which are not included as part of this report.

APPENDIX B

Standards for Oil Tank Spacing

2. A fixed metal roof with ventilation at the top and roof eaves in accordance with API Standard 650 and containing a metal floating roof or cover meeting any one of the following requirements:

a. A pontoon or double deck metal floating roof meeting the requirements of API Standard 650.

b. A metal floating cover supported by liquidtight metal pontoons or floats which provide sufficient buoyancy to prevent sinking of the cover when half of the pontoons or floats are punctured.

(b) An internal metal floating pan, roof or cover which does not meet the requirements of (a) 2., or one which uses plastic foam (except for seals) for flotation even if encapsulated in metal or fiber glass shall be considered as being a fixed roof tank.

2-2.1.2 Vertical tanks having a weak roof-to-shell seam and storing Class IIIA liquids may be located at one-half the distances specified in Table 2-1, provided the tanks are not within a diked area or drainage path for a tank storing a Class I or Class II liquid.

2-2.1.3 Every aboveground tank for the storage of Class I, Class II or Class IIIA liquids, except those liquids with boil-over characteristics and unstable liquids, operating at pressures exceeding 2.5 psig (17.24 kPa) or equipped with emergency venting which will permit pressures to exceed 2.5 psig (17.24 kPa), shall be located in accordance with Table 2-2.

2-2.1.4 Every aboveground tank for storage of liquids with boil-over characteristics shall be located in accordance with Table 2-3.

(a) Liquids with boil-over characteristics shall not be stored in fixed roof tanks larger than 150 ft (45.7 m) diameter, unless an approved inerting system is provided on the tank.

2-2.1.5 Every aboveground tank for the storage of unstable liquids shall be located in accordance with Table 2-4.

2-2.1.6 Every aboveground tank for the storage of Class IIIB liquids, excluding unstable liquids, shall be located in accordance with Table 2-5 except when located within a diked area or drainage path for a tank or tanks storing a Class I or Class II liquid. When a Class IIIB liquid storage tank is within the diked area or drainage path for a Class I or Class II liquid, 2-2.1.1 or 2-2.1.2 shall apply.

Table 2-1

Stable Liquids (Operating Pressure 2.5 psig or Less) (17.24 kPa)

Type of Tank	Protection	Minimum Distance in Feet from Property Line Which Is or Can Be Built Upon, Including the Opposite Side of a Public Way and Shall Be Not Less Than 5 Feet	Minimum Distance in Feet from Nearest Side of Any Public Way or from Nearest Important Building on the Same Property and Shall Be Not Less Than 5 Feet
Floating Roof [See 2-2.1.1(a)]	Protection for Exposures*	½ times diameter of tank	⅙ times diameter of tank
	None	Diameter of tank but need not exceed 175 feet	⅙ times diameter of tank
Vertical with Weak Roof to Shell Seam (See 2-2.1.1)	Approved foam or inerting system on tanks not exceeding 150 feet in diameter**	½ times diameter of tank	⅙ times diameter of tank
	Protection for Exposures*	Diameter of tank	⅛ times diameter of tank
	None	2 times diameter of tank but need not exceed 350 feet	⅓ times diameter of tank
Horizontal and Vertical with Emergency Relief Venting To Limit Pressures to 2.5 psig	Approved inerting system on the tank or approved foam system on vertical tanks	½ times Table 2-6	½ times Table 2-6
	Protection for Exposures*	Table 2-6	Table 2-6
	None	2 times Table 2-6	Table 2-6

SI Units: 1 ft = 0.3048 m.

*See definition for "Protection for Exposures."

**For tanks over 150 ft in diameter use "Protection for Exposures" or "None" as applicable.

Table 2-5 Class IIIB Liquids

Capacity Gallons	Minimum Distance in Feet from Property Line Which Is or Can Be Built Upon, Including the Opposite Side of a Public Way	Minimum Distance in Feet from Nearest Side of Any Public Way or from Nearest Important Building on the Same Property
12,000 or less	5	5
12,001 to 30,000	10	5
30,001 to 50,000	10	10
50,001 to 100,000	15	10
100,001 or more	15	15

SI Units: 1 ft = 0.3048 m; 1 gal = 3.785 L.

Table 2-6

Reference Table for Use in Tables 2-1 to 2-4

Capacity Tank Gallons	Minimum Distance in Feet from Property Line Which Is or Can Be Built Upon, Including the Opposite Side of a Public Way	Minimum Distance in Feet from Nearest Side of Any Public Way or from Nearest Important Building on the Same Property
275 or less	5	5
276 to 750	10	5
751 to 12,000	15	5
12,001 to 30,000	20	5
30,001 to 50,000	30	10
50,001 to 100,000	50	15
100,001 to 500,000	80	25
500,001 to 1,000,000	100	35
1,000,001 to 2,000,000	135	45
2,000,001 to 3,000,000	165	55
3,000,001 or more	175	60

SI Units: 1 ft = 0.3048 m; 1 gal = 3.785 L.

2-2.1.7 Where two tank properties of diverse ownership have a common boundary, the authority having jurisdiction may, with the written consent of the owners of the two properties, substitute the distances provided in 2-2.2.1 through 2-2.2.6 for the minimum distances set forth in 2-2.1.

2-2.1.8 Where end failure of horizontal pressure tanks and vessels can expose property, the tank shall be placed with the longitudinal axis parallel to the nearest important exposure.

2-2.2 Spacing (Shell-to-Shell) Between Any Two Adjacent Aboveground Tanks.

2-2.2.1 Tanks storing Class I, II or IIIA stable liquids shall be separated in accordance with Table 2-7, except as provided in 2-2.2.2.

2-2.2.2 Crude petroleum tanks having individual capacities not exceeding 126,000 gal (3,000 barrels), when located at production facilities in isolated locations, need not be separated by more than 3 ft (0.91 m).

2-2.2.3 Tanks used only for storing Class IIIB liquids may be spaced no less than 3 ft (0.91 m) apart unless within a diked area or drainage path for a tank storing a Class I or II liquid, in which case the provisions of Table 2-7 apply.

2-2.2.4 For unstable liquids, the distance between such tanks shall not be less than one-half the sum of their diameters.

2-2.2.5 When tanks are in a diked area containing Class I or Class II liquids, or in the drainage path of Class I or Class II liquids, and are compacted in three or more rows or in an irregular pattern, greater spacing or other means may be required by the authority having jurisdiction to make tanks in the interior of the pattern accessible for fire fighting purposes.

Table 2-7

Minimum Tank Spacing (Shell-to-Shell)

	Floating Roof Tanks	Fixed Roof Tanks	
		Class I or II Liquids	Class IIIA Liquids
All tanks not over 150 feet diameter	⅙ sum of adjacent tank diameters but not less than 3 feet	⅙ sum of adjacent tank diameters but not less than 3 feet	⅙ sum of adjacent tank diameters but not less than 3 feet
Tanks larger than 150 feet diameter			
If remote impounding is in accordance with 2-2.3.2	⅙ sum of adjacent tank diameters	⅙ sum of adjacent tank diameters	⅙ sum of adjacent tank diameters
If impounding is around tanks in accordance with 2-2.3.3	¼ sum of adjacent tank diameters	⅓ sum of adjacent tank diameters	¼ sum of adjacent tank diameters

SI Units: 1 ft = 0.3048 m.

ATTACHMENT NO. 2

APPENDIX C

Preliminary Plans for Development Alternatives

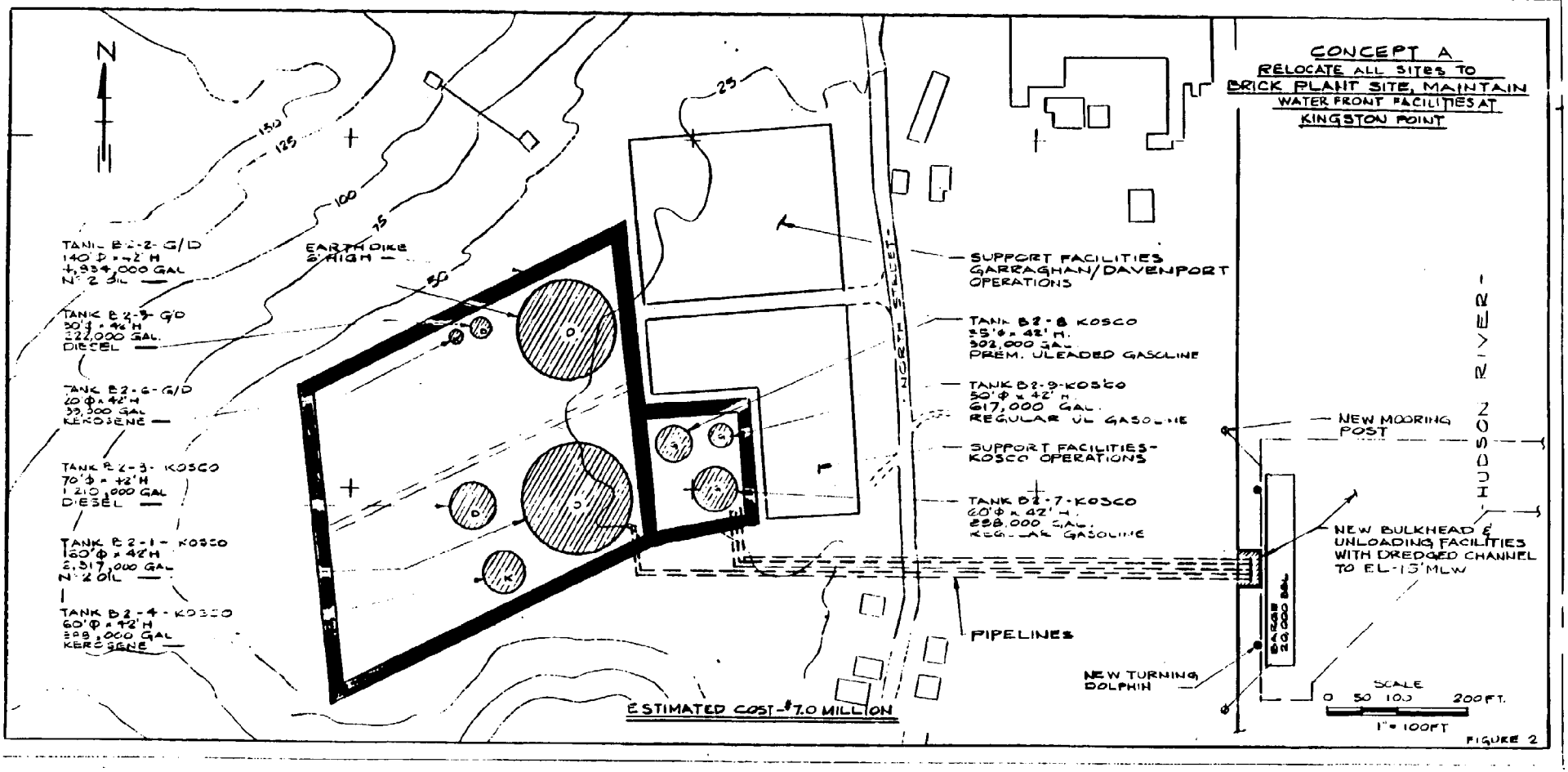
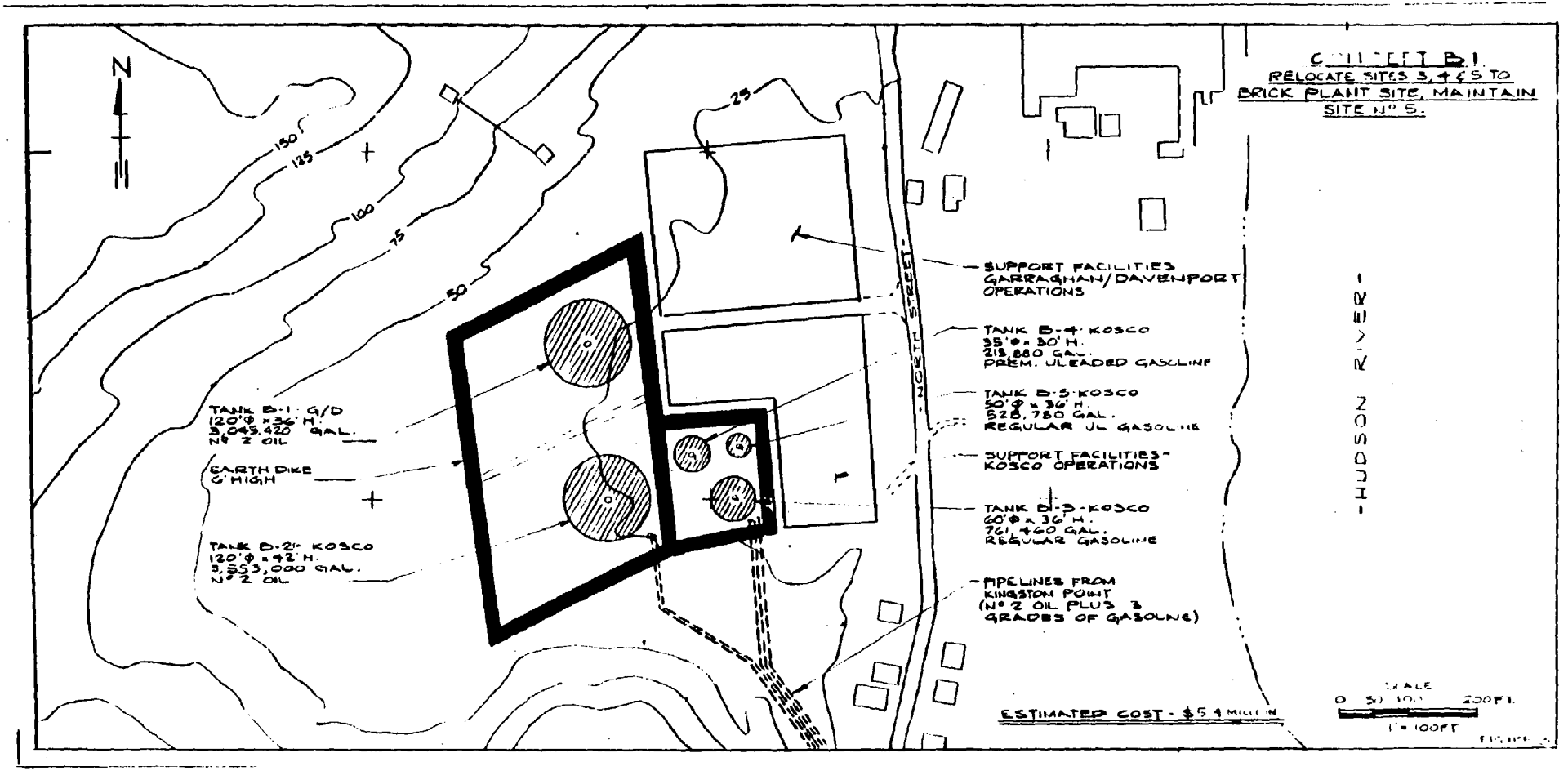

CONCEPT A
RELOCATE ALL SITES TO BRICK PLANT SITE, MAINTAIN WATER FRONT FACILITIES AT KINGSTON POINT
N
150
125
100
75
50
25
TANK B2-2-G/D
140'Φ x 42'H
1,934,000 GAL
N° 2 OIL
EARTH DIKE 6' HIGH
TANK B2-5-G/D
90'Φ x 42'H
322,000 GAL.
DIESEL
TANK B2-6-G/D
60'Φ x 42'H
99,300 GAL
KEROSENE
TANK B2-3-KOSCO
70'Φ x 42'H
1,210,000 GAL
DIESEL
TANK B2-1-KOSCO
160'Φ x 42'H
2,317,000 GAL
N° 2 OIL
TANK B2-4-KOSCO
60'Φ x 42'H
208,000 GAL
KEROSENE
NORTH STREET
SUPPORT FACILITIES GARRAGHAN/DAVENPORT OPERATIONS
TANK B2-8 KOSCO
55'Φ x 42' H.
302,000 GAL.
PREM. UNLEADED GASOLINE
TANK B2-9-KOSCO
80'Φ x 42' H.
617,000 GAL.
REGULAR UL GASOLINE
SUPPORT FACILITIES-KOSCO OPERATIONS
TANK B2-7-KOSCO
60'Φ x 42' H.
298,000 GAL.
REGULAR GASOLINE
PIPELINES
NEW TURNING DOLPHIN
NEW MOORING POST
NEW BULKHEAD & UNLOADING FACILITIES WITH DREDGED CHANNEL TO EL-15' MLW
GARAGE 20,000 SQ.
HUDSON RIVER
SCALE
0 50 100 200 FT.
1" = 100FT
ESTIMATED COST-$7.0 MILLION

FIGURE 2


OPTION B-1
RELOCATE SITES 3, 4 & 5 TO BRICK PLANT SITE, MAINTAIN SITE No 5.
N
150
125
100
75
50
25
NORTH STREET
HUDSON RIVER
TANK B-1 G/D
120'Φ x 36' H.
3,043,420 GAL.
No 2 OIL
EARTH DIKE
6' HIGH
TANK B-2 KOSCO
120'Φ x 42' H.
3,553,000 GAL.
No 2 OIL
SUPPORT FACILITIES
GARRAGHAN/DAVENPORT
OPERATIONS
TANK B-4 KOSCO
35'Φ x 30' H.
218,880 GAL.
PREM. UNLEADED GASOLINE
TANK B-5 KOSCO
50'Φ x 36' H.
528,780 GAL.
REGULAR UL GASOLINE
SUPPORT FACILITIES -
KOSCO OPERATIONS
TANK B-3 KOSCO
60'Φ x 36' H.
761,460 GAL.
REGULAR GASOLINE
PIPELINES FROM
KINGSTON POINT
(No 2 OIL PLUS 3
GRADES OF GASOLINE)
ESTIMATED COST - $5.4 MILLION
SCALE
0 50 100 200 FT.
1" = 100FT

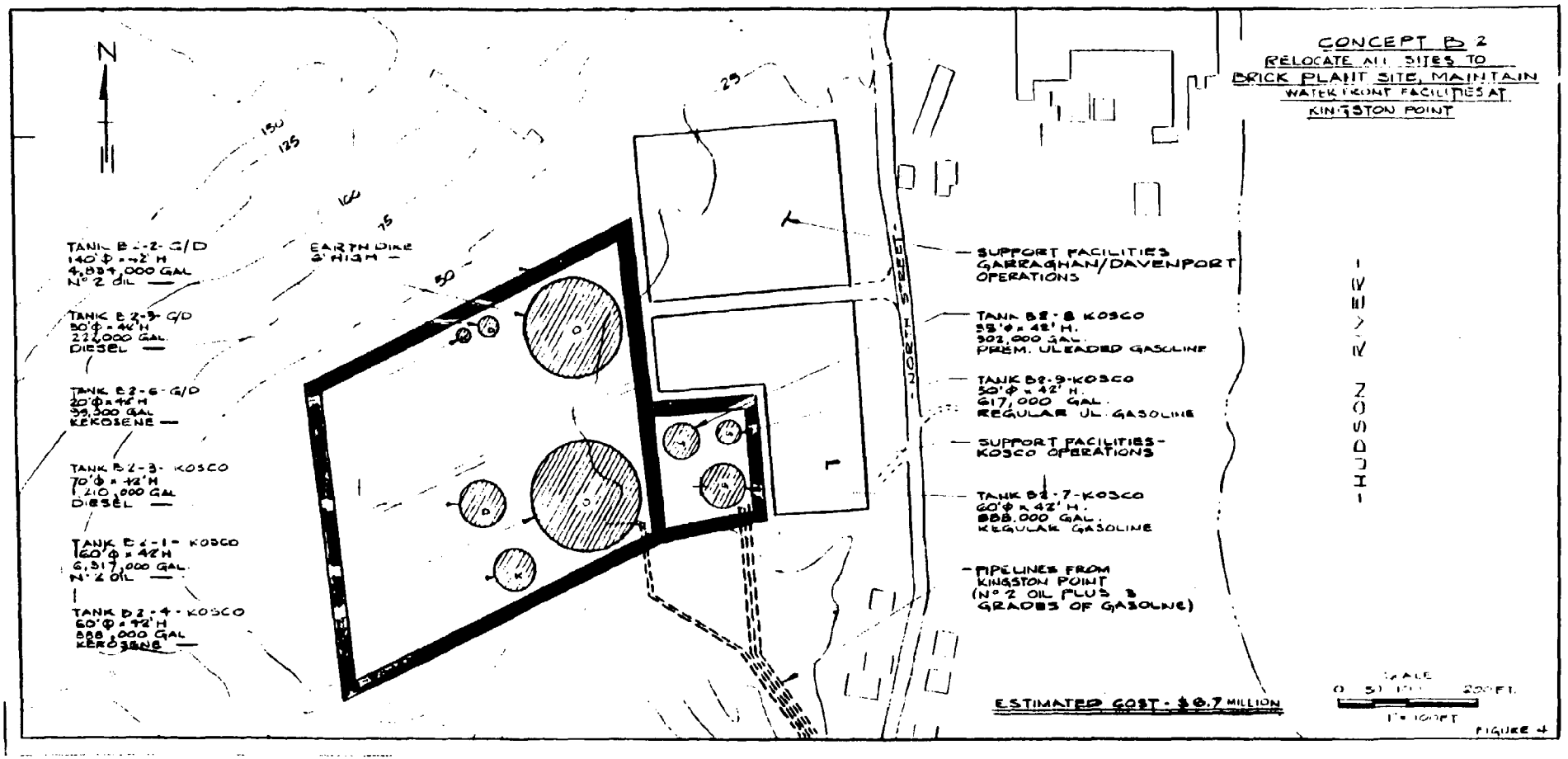
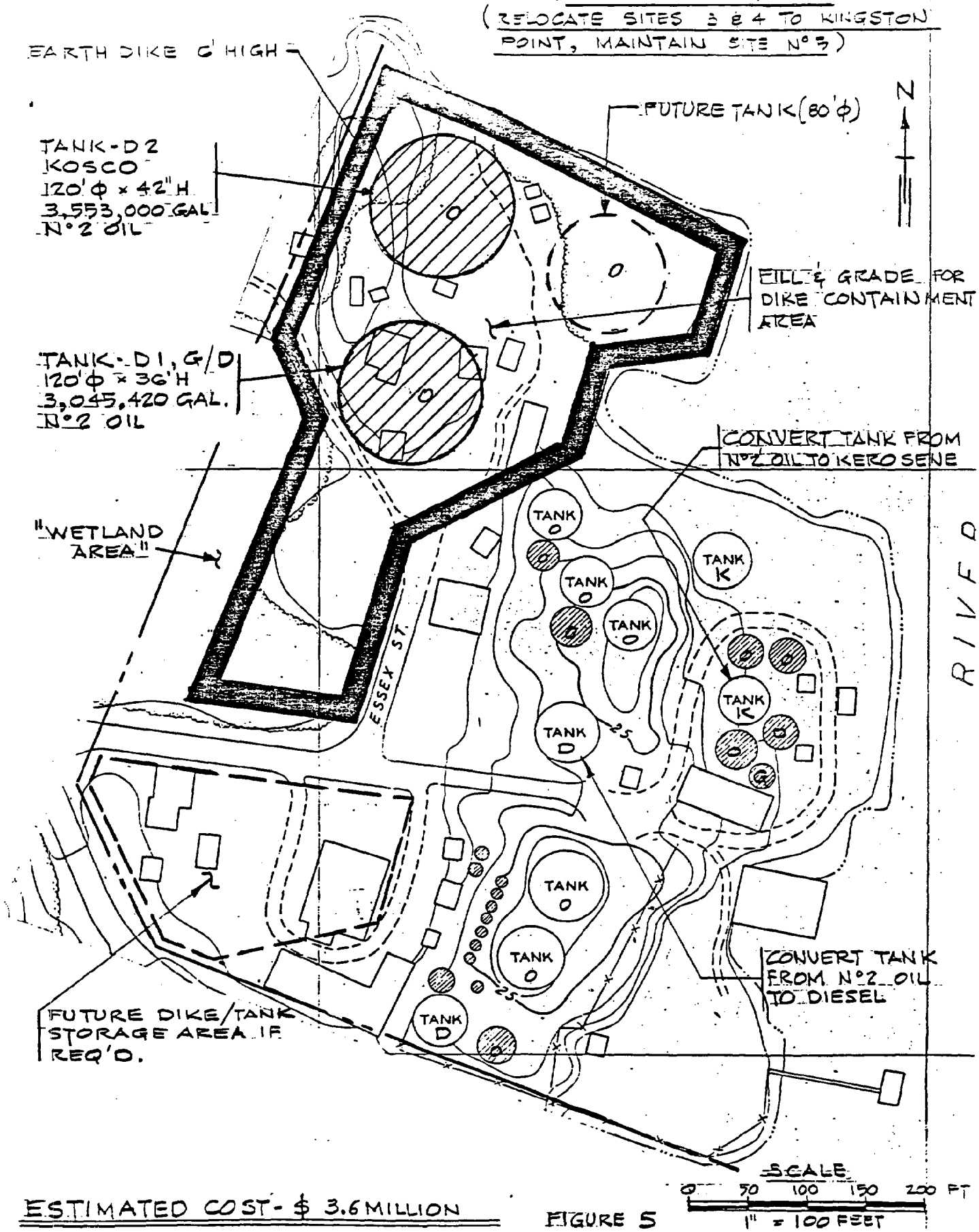

CONCEPT B 2
RELOCATE ALL SITES TO BRICK PLANT SITE, MAINTAIN WATERFRONT FACILITIES AT KINGSTON POINT
N
TANK B 2-2 G/D
140'Φ x 42'H
4,834,000 GAL
N° 2 OIL
EARTH DIKE 2' HIGH
TANK B 2-5 G/D
80'Φ x 40'H
227,000 GAL
DIESEL
TANK B 2-6 G/D
20'Φ x 40'H
99,500 GAL
KEROSENE
TANK B 2-3 KOSCO
70'Φ x 42'H
1,210,000 GAL
DIESEL
TANK B 2-1 KOSCO
160'Φ x 42'H
6,517,000 GAL
N° 2 OIL
TANK B 2-4 KOSCO
60'Φ x 72'H
888,000 GAL
KEROSENE
NORTH STREET
SUPPORT FACILITIES GARRAGHAN/DAVENPORT OPERATIONS
TANK B 2-8 KOSCO
55'Φ x 42' H.
502,000 GAL.
PREM. UNLEADED GASOLINE
TANK B 2-9 KOSCO
50'Φ x 42' H.
617,000 GAL.
REGULAR UL GASOLINE
SUPPORT FACILITIES - KOSCO OPERATIONS
TANK B 2-7 KOSCO
60'Φ x 42' H.
888,000 GAL.
REGULAR GASOLINE
PIPELINES FROM KINGSTON POINT (N° 2 OIL PLUS 3 GRADES OF GASOLINE)
INDUSTRIAL ZONE
ESTIMATED COST - $6.7 MILLION
SCALE
0 100 200 FT.
1" = 100 FT

FIGURE 4

CONCEPT D

(RELOCATE SITES 3 & 4 TO KINGSTON POINT, MAINTAIN SITE N°3)



ESTIMATED COST - $ 3.6 MILLION

FIGURE 5

APPENDIX D

Detailed Cost Estimates
for
Development Alternatives

CONSTRUCTION COST ESTIMATE NO. 1

(Sheet 1 of 3)

CONCEPT A

	Item	Unit Cost	Quantity	Subtotal	Total
1.	MOBILIZATION/DEMOBILIZATION		L.S.	$ 300,000	$ 300,000
2.	SITE WORK				
	a. Borings and Soil Testing		L.S.	20,000	
	b. Clearing, Grubbing and Disposal	$1,500	12 Acres	18,000	
	c. Erosion Control		L.S.	9,000	
	d. Earthwork	$5	25,000 CY	125,000	
	e. Grading	$1	40,000 SY	40,000	
	f. Drainage System		L.S.	25,000	
	g. Earth Dikes and Facing	$60	2,500 LF	150,000	
	h. Pavement	$12	10,000 SY	120,000	
	i. Landscaping		L.S.	8,000	
					$ 515,000

CONSTRUCTION COST ESTIMATE NO. 1

CONCEPT A

Item	Unit Cost	Quantity	Subtotal	Total
3. TANKS AND SUPPORT FACILITIES				
a. Tank 1 (6,317,000 gal.)		L.S.	$ 750,000	
b. Tank 2 (4,834,000 gal.)		L.S.	590,000	
c. Tank 3 (1,210,000 gal.)		L.S.	225,000	
d. Tank 4 (888,000 gal.)		L.S.	180,000	
e. Tank 5 (222,000 gal.)		L.S.	80,000	
f. Tank 6 (99,000 gal.)		L.S.	50,000	
g. Tank 7 (888,000 gal.)		L.S.	290,000	
h. Tank 8 (302,000 gal.)		L.S.	180,000	
i. Tank 9 (617,000 gal.)		L.S.	240,000	
j. Piping and Valves		L.S.	400,000	
k. Fire Protection		L.S.	150,000	
l. Environmental Protection (Oil/Water Sep., etc.)		L.S.	40,000	
m. Loading Racks (Relocate)		L.S.	30,000	

(Continued)

CONSTRUCTION COST ESTIMATE NO. 1

(Sheet 3 of 3)

CONCEPT A

Item	Unit Cost	Quantity	Subtotal	Total
n. Miscellaneous (Utilities, etc.)		L.S.	$400,000	
o. Pipelines	$250	$750/L.F.	187,500	
p. Bulkheading/Dock Facilities)		L.S.	360,000	
q. Dredging	$10	85,000 CY	850,000	
				$5,002,500
4. OTHER				
A. Engineering Fees, Environmental Impact, Permits, etc.		L.S.	$300,000	$300,000
				$6,117,500
				918,000
				$7,035,500

TOTAL COST - SAY $7.0 MILLION

CONSTRUCTION COST ESTIMATE NO. 2

(Sheet 1 of 3)

CONCEPT B1

	Item	Unit Cost	Quantity	Subtotal	Total
1.	MOBILIZATION/DEMOBILIZATION		L.S.	$ 280,000	$ 280,000
2.	SITE WORK				
	a. Borings and Soil Testing		L.S.	16,000	
	b. Clearing, Grubbing and Disposal	$1,500	10 Acres	15,000	
	c. Erosion Control		L.S.	5,000	
	d. Earthwork	$5	20,000 CY	100,000	
	e. Grading	$1	30,000 SY	30,000	
	f. Drainage System		L.S.	20,000	
	g. Earth Dikes and Facing	$60	2,000 LF	120,000	
	h. Pavement	$12	10,000 SY	120,000	
	i. Landscaping		L.S.	8,000	
					$ 434,000

CONSTRUCTION COST ESTIMATE NO. 2

(Sheet 2 of 3)

CONCEPT B1

Item	Unit Cost	Quantity	Subtotal	Total
3. TANKS AND SUPPORT FACILITIES				
a. Tank B1-1 (3,045,000 gal.)		L.S.	$ 440,000	
b. Tank B1-2 (3,553,000 gal.)		L.S.	480,000	
c. Tank B1-3 (888,000 gal.)		L.S.	290,000	
d. Tank B1-4 (302,000 gal.)		L.S.	180,000	
e. Tank B1-5 (617,000 gal.)		L.S.	240,000	
f. Piping and Valves		L.S.	350,000	
g. Fire Protection		L.S.	120,000	
h. Environmental Protection (Oil/Water Sep., etc.)		L.S.	35,000	
i. Loading Racks (Relocate)		L.S.	25,000	
j. Miscellaneous (Utilities, etc.)		L.S.	350,000	
k. Pipelines	$350	3,300 LF	$1,155,000	
				$3,665,000

CONSTRUCTION COST ESTIMATE NO. 2

(Sheet 3 of 3)

CONCEPT B1

Item	Unit Cost	Quantity	Subtotal	Total
4. OTHER				
a. Engineering Fees, Environmental Impact, Permits,-etc.		L.S.	$ 270,000	$ 270,000
				$4,649,000
Contingency				700,000
				$5,349,000

TOTAL COST - SAY $5.4 MILLION

CONSTRUCTION COST ESTIMATE NO. 3

(Sheet 1 of 3)

CONCEPT B2

	Item	Unit Cost	Quantity	Subtotal	Total
1.	MOBILIZATION/DEMOBILIZATION		L.S.	$ 300,000	$ 300,000
2.	SITE WORK				
	a. Borings and Soil Testing		L.S.	20,000	
	b. Clearing, Grubbing and Disposal	$1,500	12 Acres	18,000	
	c. Erosion Control		L.S.	9,000	
	d. Earthwork	$5	25,000 CY	125,000	
	e. Grading	$1	40,000 SY	40,000	
	f. Drainage System		L.S.	25,000	
	g. Earth Dikes and Facing	$60	2,500 LF	150,000	
	h. Pavement	$12	10,000 SY	120,000	
	i. Landscaping		L.S.	8,000	
					$ 515,000

CONSTRUCTION COST ESTIMATE NO. 3

(Sheet 2 of 3)

CONCEPT B2

Item	Unit Cost	Quantity	Subtotal	Total
3. TANKS AND SUPPORT FACILITIES				
a. Tank B2-1 (6,317,000 gal.)		L.S.	750,000	
b. Tank B2-2 (4,834,000 gal.)		L.S.	590,000	
c. Tank B2-3 (1,210,000 gal.)		L.S.	225,000	
d. Tank B2-4 (888,000 gal.)		L.S.	180,000	
e. Tank B2-5 (222,000 gal.)		L.S.	80,000	
f. Tank B2-6 (99,000 gal.)		L.S.	50,000	
g. Tank B2-7 (888,000 gal.)		L.S.	290,000	
h. Tank B2-8 (302,000 gal.)		L.S.	180,000	
i. Tank B2-9 (617,000 gal.)		L.S.	240,000	
j. Piping and Valves		L.S.	400,000	
k. Fire Protection		L.S.	150,000	
l. Environmental Protection (Oil/Water Sep., etc.)		L.S.	40,000	
m. Loading Racks (Relocate)		L.S.	30,000	
n. Miscellaneous (Utilities, etc.)		L.S.	400,000	
o. Pipelines	$350	3,300 LF	$1,155,000	
				$4,760,000

CONSTRUCTION COST ESTIMATE NO. 3

(Sheet 3 of 3)

CONCEPT B2

Item	Unit Cost	Quantity	Subtotal	Total
4. OTHER				
a. Engineering Fees, Environmental Impact, Permits, etc.		L.S.	$ 300,000	$ 300,000
				$5,875,000
Contingency (15%)				870,000
				$6,755,000

TOTAL COST - SAY $6.7 MILLION

CONSTRUCTION COST ESTIMATE NO. 4

(Sheet 1 of 3)

CONCEPT D

	Item	Unit Cost	Quantity	Subtotal	Total
1.	MOBILIZATION/DEMOBILIZATION		L.S.	$ 220,000	$ 220,000
2.	SITE WORK				
	a. Borings and Soil Testing		L.S.	12,000	
	b. Clearing, Grubbing and Disposal	$3,000	4 Acres	12,000	
	c. Erosion Control		L.S.	3,000	
	d. Demolition and Removal		L.S.	30,000	
	e. Earthwork	$5	5,000 CY	25,000	
	f. Grading	$1	15,000 SY	15,000	
	g. Drainage System		L.S.	28,000	
	h. Earth Dikes and Facing	$60	1,900 LF	114,000	
	i. Pavement	$12	500 SY	6,000	
	j. Landscaping		L.S.	4,000	
	k. Fencing	$14	650 LF	9,100	
					$ 258,100

CONSTRUCTION COST ESTIMATE NO. 4

(Sheet 2 of 3)

CONCEPT D

Item	Unit Cost	Quantity	Subtotal	Total
3. TANKS AND SUPPORT FACILITIES				
a. Tank D1 (3,553,000 gal.)		L.S.	$ 440,000	
b. Pile Foundations - Tank D1		L.S.	670,000	
c. Tank D2 (3,045,000 gal.)		L.S.	400,000	
d. Pile Foundations - Tank D2		L.S.	640,000	
e. Piping and Valves		L.S.	60,000	
f. Fire Protection		L.S.	70,000	
g. Environmental Protection (Oil/Water Sep., etc.)		L.S.	20,000	
h. Loading Racks (relocate)		L.S.	17,000	
i. Miscellaneous (Utilities, etc.)		L.S.	220,000	
				$2,537,000

CONSTRUCTION COST ESTIMATE NO. 4

(Sheet 3 of 3)

CONCEPT D

Item	Unit Cost	Quantity	Subtotal	Total
4. OTHER				
a. Engineering Fees, Environmental Impact, Permits, etc.		L.S.	$ 140,000	$ 140,000
				$3,155,100
Contingency (15%)				473,000
				$3,628,100

TOTAL COST - SAY $3.6 MILLION

DATE DUE

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