NOAA Technical Memorandum

# PLANNING AND REGULATING THE FUTURE OF THE HUDSON-RARITAN ESTUARY

R. Zimmerman, Ph.D.
Associate Professor of Planning



Graduate School of Public Administration
New York University
New York, NY
April 1982



U.S. Department of Commerce, National Oceanic and Atmospheric Administration,
Office of Marine Pollution Assessment, Northeast Office,
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April 30, 1982

Joel O'Connor
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Dear Joel,

I am pleased to submit the final report prepared under my grant. The report is entitled, "Planning and Regulating the Future of the Hudson-Raritan Estuary. I have enclosed a photocopy of the original report for your review. If you have no changes to suggest based on your review of this copy, I will forward the original to you for publication as a NOAA Technical Memorandum.

In revising the original report submitted in January 1981, I have addressed the comments you forwarded to me in your recent letters and did some updating of the material as well. I very much appreciate the thoroughness of your review.

Sincerely,

Rae Zimmerman

Rae Zimmerman
Associate Professor

## ABSTRACT

The hydrologic and ecological complexity of the Hudson-Raritan Estuary is matched by the complexity and size of the urban-industrial concentrations that border it. The interaction between the activities that go on in and around the estuary and the quality of the estuary as an ecosystem is sizable.

This report brings together the major environmentally related plans and regulatory activities developed by the public sector which have or could influence the relationship between human activities and the Hudson-Raritan Estuary. The plans and regulations covered are those that have emerged primarily over the last decade or so, and incorporate the areas of water resources and water quality, solid wastes, recreation, energy resource development and the protection of environmentally sensitive areas. Geographically, these programs cover national, state, regional, local and site-specific concerns.

The report is intended to be a resource document for policy makers, planners, and regulatory officials directly involved with those aspects of land development that interact with the Estuary and its environs.

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# INTRODUCTION

The Hudson-Raritan Estuary (HRE) has long been thought of as a highly contaminated coastal waterway as a result of over a century of exposure to dense population and economic activity and an associated high level of waste generation and disposal into these waters. The HRE has recently been identified as an area of high priority for environmental management studies by the Hudson-Raritan Estuary Project (HREP) conducted by the National Oceanic and Atmospheric Administration's Office of Marine Pollution Assessment. The HREP is an outgrowth of a number of pieces of legislation and its precedent, the Marine EcoSystems Analysis (MESA) New York Bight Project.

The Hudson-Raritan Estuary primary area, as defined by the HREP, roughly encompasses the waters between Piermont, New York on the north and Sandy Hook on the south, and the northeastern New Jersey coast on the west and the East River, Jamaica Bay and Long Island Sound on the east. The geographic extent of this primary area is shown in Figure 1. A secondary area has been defined by the HREP to take in adjacent areas that significantly impact the primary area.

A major impediment to effective HRE environmental management is the vast number of jurisdictional agencies and associated programs that dominate activities in the Estuary. Robert Wood's notion of the "1400 governments" for New York City certainly carries over into the area of environmental control. Recent inventories of agency jurisdictions in New York City alone identified more than a hundred separate organizational subunits involved in environmental regulation of New York City waters that comprise the estuary (New York City Department of City Planning, 1977). Those areas of New Jersey that abut the waters of the HRE add other jurisdictional agencies (Louis Berger, 1973), and regional jurisdictions generate still another level of complexity (Hubbard, 1977). These jurisdictions are responsible for an even greater number of planning and regulatory programs, aimed at guiding both public and private activities ultimately affecting the quality and use of the Estuary. The purpose of this report is to identify some of the major plans and regulations that have been developed over the last two decades specifically focusing on the environmental implications of land-based and marine activities for the Estuary. Environmental programs are broadly interpreted in this report to include energy programs, recreation programs, and land development programs that incorporate substantial strategies for environmental protection.

## PLANNING PROGRAMS

### Water Resources Planning

The management of water resources has been influenced by a proliferation of planning programs at the federal, state and local levels. The major federally initiated programs implemented in water resources planning over the last decade are listed in Table 1 by type of legislation. This listing reflects the variability in the legislative sources of these programs and the coverage and degree of specification in the plans. The water resources planning programs generally comprise an hierarchical ordering of planning efforts ranging from the multi-state planning mandated in Level B plans and the Northeastern U.S. Water Supply Plan to the service area or site specific plans reflected in wastewater treatment and flood plain management plans. The potential geographic scope of these planning efforts is given in Table 2. Any given planning program can be applied to a wide range of types of geographic areas (see Table 2). For instance, in the HRE while Level B studies can theoretically span several states, the Hudson River Level B study is contained within one state, while the Long Island Sound Study actually covers several states. Similarly, "201" planning areas range in size from the large service area of the Passaic Valley Sewerage Commission spanning several municipalities and counties to smaller service areas covering only parts of municipalities in other parts of the HRE region. New York City, for instance, is composed of several 201 areas.

A number of water resource management policy documents are expected to strongly influence the content and direction of the various water quality management planning programs discussed below. A major one is the "State-EPA Agreement" which is defined in the 1979 regulations for water quality management. This agreement, updated annually, serves to integrate a variety of environmental legislation. Plans currently exist for New York and New Jersey which border the HRE. Another such document is the state strategy, prepared for a five year period, but submitted annually to the U.S. EPA. It proposes a strategy for delineating point and nonpoint sources of pollution, setting priorities for them and controlling them (44 Federal Register (May 23, 1979), p. 30028, Sec. 35.1511-2). Other strategies appear intermittently, such as the U.S. EPA 1990 Construction Grants strategy which will direct the funding of waste treatment works for the next ten years. Finally, the National Groundwater Protection Strategy recently prepared by the U.S. EPA describes coordination and priorities for groundwater management. Many of the provisions of these policy documents are incorporated into one or more of the planning programs that are described below.

### Level B Plans

Level B studies were initiated under the Water Resources Planning Act of 1965 (P.L. 89-80) and cross-referenced under Section 209 of the Federal Water Pollution Control Act Amendments of 1972, as amended by the Clean Water Act of 1977. These plans potentially cover the broadest geographic area of any water resources planning category. The purpose of these "Water and Related Land Resources" studies is to plan simultaneously for environmental quality and economic development objectives within river basins. The studies are administered and funded by the U.S. Water Resources Council (WRC). The WRC is an independent federal executive agency that has in the past consisted of representatives of such federal agencies as Interior, Agriculture, Army, Health, Education and Welfare, Transportation, and the Federal Power Commission

(as they were titled during the 1970's). Many other agencies are participating members. The purpose of the WRC is to coordinate, develop and conserve the use of water and related land resources through a set of evaluation and planning programs (U.S. Water Resources Council, April 1975).

Each plan is developed in accordance with the "Principles and Standards for Water and Related Land Resources" (U.S. Water Resources Council, 1973). As part of the plan, an analysis of the beneficial and adverse effects its recommendations must be considered. This impact analysis must be made according to three types of accounting systems: National Economic Development (NED), Environmental Quality (EQ) and Social Well-Being (SWB). "Principles and Standards" calls for the independent display of each of these accounts but, while it generally rests heavily on cost-benefit analysis, it does not suggest a specific way of combining the various accounts for an ultimate decision (Cicchetti, et al., 1973).

The Level B studies that are relevant to the Hudson-Raritan Estuary are the Long Island Sound Study, spanning New York and Connecticut (NERBC, 1975) and the Hudson River Basin Study whose geographic area is wholly within New York State (NYSDEC, 1979). The geographic extent of the portion of these plans in the HRE is shown in Figure 2, and the total areas of each are shown in Figures 3 and 4. The management organization, including all agencies involved in the planning process, are given in Figures 5 and 6. While the substantive areas covered by the two plans are similar, the approach taken by each has been quite different. The Hudson River Basin plan is more conceptual and programmatic in its issues and plans, while the Long Island Sound Study makes very specific recommendations on a site-by-site basis. This may partly be a function of the relative sizes of the two areas. The Hudson River Basin Study covers 13,500 square miles, and the Long Island Sound Study covers 1,300 square miles of water surface and 600 miles of coastline.

### Statewide Water Resource Planning ("303(e)" Plans)

Statewide planning efforts for water resources began long before any of the other planning efforts. These were originally conducted under legislation that preceeded Section 303(e) of P.L. 92-50. The planning activities have generally been organized functionally within state governments, accompanied by a geographic breakdown into watersheds or basins. These basins are determined hydrologically based on the distribution of surface waters.

The plan mandated under Section 303(e) is in actuality a continuous planning process rather than a discrete plan, and incorporates elements of other plans such as those prepared under Sections 208 and 209 of the Clean Water Act. State planning is funded on an annual basis under section 106 of the Act.

### Coastal Management Plans

Another major state planning program initiated by federal legislation is the coastal management plan provided for under the Coastal Zone Management Act of 1972 (CZMA). The CZMA calls for the preparation of a coastal management plan for those states which contain coastal areas. The plans consist of a delineation of the coastal zone boundary, an enumeration of the problems of the coastal zone, procedures for guiding its use in light of environmental and economic objectives, and a management plan to implement these procedures. The CZMA includes a wide

range of policy areas from which planning objectives can be drawn, evaluating environmental, economic and energy resource development areas. While the coverage of all objectives by state plans is not mandatory, a number of financial incentives encourage such consideration. Section 305 of the CZMA provides grants through the Department of Commerce, NOAA, to coastal states for plan preparation covering 80% of the total cost of the plan. Section 306 provides grants for the administration of implementation programs. The 1976 amendments to CZMA provide resources for further coastal planning and impact assessments under the Coastal Energy Impact Program (CEIP) in those states impacted by offshore oil exploration and development.

While state government has the prime responsibility for conducting coastal management planning, other levels of government participate in substantial ways. The federal government through the Office of Coastal Zone Management reviews the management plans produced on an annual basis by the states for the administration grants. Under Section 307 of the Act the federal government has to ensure that its own actions will be, to the maximum extent possible, consistent with the mandates of the state plans. Local governments are also supposed to be involved in the programs, and in particular, can be delegated the responsibility for preparing part of the plan.

The two major programs in New York and New Jersey that affect the Hudson-Raritan Estuary area were developed in different ways. In New Jersey, the State's Department of Environmental Protection and the Division of Marine Resources (now the Division of Coastal Resources) within that Department were given the prime responsibility for developing the state's program. While geographic sub-regions were identified, including the Northern Waterfront Area, the Delaware River Area, the Bay and Ocean Segment and the Hackensack Meadowlands, the state still prepared the plans for the entire area.

In New York State, the Department of State, rather than the Department of Environmental Conservation, was given the responsibility for developing the Coastal Management program. This department in turn, divided the plan geographically into five elements, and took advantage of the subcontracting provisions of the Act, subcontracting to the following local areas that surround the HRE area: New York City (Department of City Planning) and Nassau and Suffolk Counties (the Long Island Regional Planning Board). The other parts of the state plan that affect the Estuary, namely the Lower Hudson and Mid-Hudson area appeared in a separate element for the Hudson Valley Region (which includes the Westchester County share of Long Island Sound). This section was done directly by the NYS Department of State. An additional requirement was imposed within the State of New York on the coastal management plan by the State Environmental Quality Review Act (SEQRA). Under SEQRA, an environmental impact statement had to be prepared for the plan.

The plans for both states were completed in 1979. The substate geographic components of the plans that surround the Hudson Raritan Estuary are Long Island, New York City and the Hudson River Valley in New York State, and the Northern Waterfront Area, the Hackensack Meadowlands District, and some of the northern parts of the Bay and Ocean Shore Segment in New Jersey. The planning area boundaries for coastal management planning in the HRE are shown in Figure 7, along with the detailed boundary designations in both states. The coastal management components of the two states surrounding the Hudson Raritan Estuary have substantially different characteristics, as shown in Table 3. New York

State has substantially more miles of shoreline and drainage area in the coastal zone surrounding the HRE than New Jersey does, as well as a larger number of political jurisdictions.

As mentioned above, a wide range of policy options were examined for coverage in coastal management plans. New York and New Jersey selected different areas of emphasis in their respective plans. Table 4 gives a comparison of the issue areas chosen in each state. While the major areas emphasized in the legislation inevitably appear, some of the more specific areas differ. For instance, the New York plan emphasizes agricultural resources, while this is not mentioned in the New Jersey plan, primarily because the agricultural resources of that state are concentrated further inland. The coastal flooding and erosion problem is specifically singled out in New York because of many of the problems on Long Island. This is not a specific issue in the New Jersey plan. The New York plan singles out water quality, and in that sense provides a connection with "208" planning. The New Jersey plan includes this under the general category of resource protection.

A major purpose of the coastal management plan is to balance economic and environmental concerns in the coastal zone. In this capacity many of the plans prepared under CZMA did in fact initially identify areas of conflict among the various uses of the coastal zone. In both New York and New Jersey these areas of conflict were delineated in the draft plans, and were generally described as "Geographic Areas of Particular Concern" or were given other types of management area designations. In New York State a decision was made in the early 1980's to remove these site specific designations from the coastal management plans. It was felt that the coastal management plan itself could not provide any implementation devices over and above those already in place at various levels of government. Nevertheless, the identifcation of these sites provides some insights into the priorities set for implementation under the coastal zone management act by the states and localities in and around the HRE as well as the policies underlying these priorities. The priority areas originally identified under the plans are described below for each of the geographic components of the state coastal management plans applicable to the HRE.

- Long Island component (New York)

In the Long Island component of the New York State plan, locational conflicts primarily center around energy development, particularly the risks associated with oil facilities. To a lesser extent the plan discusses conflicts in coastal erosion. The conflicts identified in the context of oil transport and storage systems are:

a. Oil storage facilities are located in shallow bays. This necessitates "the use of small and partially loaded barges, which in turn often necessitates lightering operations and an increased number of barge trips" (LIRPB, 1979:196);

b. Oil storage facilities are highly decentralized into small facilities increasing the number of sites at risk;

c. The connection between oil distribution systems and oil storage facilities is not well coordinated: "Only two of the nearly two dozen shorefront oil terminals on Long Island are connected to an oil

pipeline distribution network. Lack of a coordinated oil pipeline distribution network causes both increased oil truck traffic and increased distances trucks must travel to make deliveries" (LIRPB, 1979:196). In addition, this kind of transportation aggrevates the congestion of the downtown village areas, since many of the facilities have waterfront locations along with the villages.

Since OCS oil and gas production was being considered as a serious option for energy development, the Long Island plan considered feasible locations for on-shore development activity related to the Outer Continental Shelf (OCS). The plan specifically recommended the following sites to accommodate the onshore effects of OCS development (LIRPB, 1979:200): Fort Pond Bay, Village of Greenport, Village of Port Jefferson, Village of Freeport, Oceanside, Yaphank and Shirley.

Shipping was another major area of conflict identified in the Long Island Plan. Activities dependent on the maintenance of adequate navigation channels were identified, namely transshipment of sand, gravel, crushed rock, and petroleum and commercial fisheries, and recreational boating. The Plan suggests concentrating the location of shipping channels in order to concentrate the adverse effects of dredging on the marine ecosystem.

Finally, the coastal erosion issue on Long Island was addressed in terms of whether or not to replenish the shoreline through artificial sand nourishment techniques conducted by the U.S. Army Corps of Engineers. The response of the coastal management plan to this issue has been extensive: certain areas have been designated where natural processes of shoreline erosion and rebuilding should be allowed to occur, such as the north shore, Peconics shore, and the south shore's headlands section. Nourishment of Southampton and Fire Island should be minimized. Others should be stabilized and maintained such as the south shore inlets of Shinnecock, Moriches, Fire Island, Jones, East Rockaway, the entire south shore of Nassau County and Jones Beach, and the Westhampton Barrier Island. All high density public beaches and recreation areas should employ sand nourishment techniques (LIRPB: 1979:206).

A detailed listing of these conflict areas as "Geographic Areas of Particular Concern" (GAPC) is given in Table 5 (LIRPB, 1979: 225-231).

o Hudson Valley component (New York)

The specific sites mentioned as priority areas in the mid-Hudson counties south of Dutchess and Ulster (the ones most clearly contiguous with the HRE) emphasized a number of different areas of concern.

Aesthetics were considered a major area of conflict in the Hudson Highlands from proposed new steam-electric generating facilities. Deteriorating urban waterfronts were another area in which aesthetic problems were identified.

In the area of agriculture, the pressures associated with residential development impinging on prime agricultural land were cited in southern Ulster County (Lloyd and Marlboro Towns), Orange County (Town of Newburgh, northern part), and Dutchess County (Towns of Red Hook and Rhinebeck).

In the area of economic development the departure of industry from the river cities of Rensselaer, Newburgh, Albany, Yonkers, Troy, and Kingston was cited.

In energy development the Con Edison nuclear facility proposed in Red Hook, Dutchess County and the high voltage transmission lines in Westchester County (between Buchanan and Millwood), crossing the Hudson north of the study area, and from Cornwall to Kent accompanying the proposed Storm King project were identified as areas of conflict. Many of these issues have been addressed in the Hudson River Power Plant Settlement Agreement of December 19, 1980 discussed in the section on Energy Resource Development Plans (Sandler and Schoenbrod, 1981).

In the area of fish and wildlife preservation the dredging associated with the PCB Hudson River Reclamation Project and the renovation of Constitution Marsh across the Hudson from West Point contaminated with cadmium were specifically cited as areas of conflict.

Other issue areas were cited as sources of potential conflict in the coastal zone, including flooding and erosion, public access (e.g., railroad lines extending up and down the Hudson shoreline), recreation, and water quality. No specific sites were mentioned, however. A general listing of these conflict areas as "GAPC" is given in Table 6. In the entire corridor some 97 specific sites were identified as having statewide significance for coastal management planning (NYSDOS, 1979: V-5), but in particular the Hudson Highlands and the Palisades were given special emphasis.

o New York City component (New York)

In New York City the areas of conflict were initially identified as four Special Management Areas: Erosion/Flood Hazard, Shorefront Access, Geographic Areas of Particular Concern (GAPC), and Selected Special Zoning Districts contained in the zoning ordinance (NYC DCP, 1979: 4-1).

- Erosion/Flood Hazard Areas: These areas were subdivided into exposed shorelines and physically built up shorelines. The exposed shorelines identified were:

  Staten Island: Fort Wadsworth to Arthur Kill (affected beaches are Tottenville, Wolfe's Pond Park, Great Kills Park, Miller Field, Oakwood and Graham Beaches);

  Coney Island: Rockaway Inlet to Norton Point

  The Rockaways: East Rockaway Inlet to Rockaway Inlet

  Western Long Island Sound: Eastern Bronx Shore and nearby islands

  Physically built up shorelines posing a problem were the shoreline along the East River from Battery Park to East 96th Street in Manhattan and the Staten Island shoreline from St. George to the Verrazano Narrows Bridge.

- Shorefront Access Areas: These areas are detailed in Table 7. Several of these shorefront areas were selected for detailed study, including, the Fulton Ferry area, the Soundview Peninsula (Soundview Park, Pugsley Creek and the Park), and the Queens North Shore.

- Geographic Areas of Particular Concern: These areas are shown in Figure 8. The particular problems associated with each of these areas were identified as follows:

  Bronx-Bronx River Valley : Water pollution problems and erosion.

  Brooklyn-Spring Creek : Landfill problems, stormwater runoff pollution problems, airport noise.

  Queens-Eastern shore: wetlands problems, water quality, illegal dumping, combined sewers (Alley Creek and park; Udalls Cove); South shore: stormwater drainage problems, water quality problems in Jamaica Bay, conflicts between air freight industry and residential use, poor quality of the wetlands; Northwest Waterfront.

  Staten Island-South Richmond Natural Drainage Basins (five drainage areas including Lemon Creek) : conflict identified between the proposed 201 plan and the need to preserve wetlands and break away from the grid pattern of streets and the destruction of wetlands that this implies (NYC DCP, 1979:4-195); conflict identified between dredge and fill projects to promote tidal flushing and possible flooding that might result along with its affect on natural marshlands; Other areas were Fresh Kills/Richmond Creek Drainage Basin and Raritan Bay.

  Manhattan-Westway: conflicts identified between transportation, air quality and water quality (from dredging).

  City-wide-East River/Upper Bay (includes Gowanus Canal, Fulton Ferry, Brooklyn Port Authority Facilities and three other subareas, and Buttermilk Channel)

- Special Zoning Districts: Those identified were immediately adjacent to the waterways in the HRE and included -

  - Special South Street Seaport District
  - Special Battery Park City District
  - Special Scenic View District
  - Riverdale Special Natural Area District
  - Special Staten Island Natural Area District
  - Special South Richmond Development District
  - Special Sheepshead Bay District

o Northern Waterfront Area component (New Jersey)

The major substantive areas of conflict in New Jersey's coastal management area immediately adjacent to the HRE, i.e., in the Northern Waterfront Area involved energy and transportation facilities. With respect to energy facilities it was felt that there had been a lack of a clear policy in decisions regarding the siting of energy facilities. Most recently siting decisions for petroleum and chemical storage tanks in Jersey City and Bayonne were the subject of controversy. They were ultimately abandoned because of public opposition (NJDEP, 1979:62).

Major proposals for transportation additions that were under review as of 1980 in areas surrounding the HRE were (Hudson River Waterfront Study, Planning and Development Commission (HRWSPDC), Sept. 1980):

- Hudson River route between Jersey City and Bayonne (Hudson County): so far the FHA has approved it for inclusion in the Federal highway program;
- Connecting route between Linden (Union County) and Carteret (Middlesex County);
- Linkage between the New Jersey Turnpike, Elizabeth, New Jersey and Newark Airport (Union County);
- Completion of Route 21 along the Passaic River and its connection with I-80 (Bergen County). Construction of this roadway will begin in 1980;
- Extension of Route 18 to Piscataway (Middlesex County), currently under construction;
- Extension of I-95 to connect with I-287 (Middlesex County), under discussion;
- Widening of the Garden State Parkway between the Raritan River Bridge north to Route 22, under construction.

Areawide Water Quality Management Plans ("208" Plans)

As a means of comprehensively addressing water quality problems, an areawide planning process was initiated under Section 208 of P.L. 92-500. These plans set out to identify and describe, on a region-by-region basis, the state of water resources, their quality and the sources of any quality problems. The means for implementation were built into the planning process via a management program for the plans once they were accepted by state government.

Many critiques have been aimed at 208 planning - its goals, the nature of the planning process, and its objectives in terms of implementation and financial feasibility (e.g., see Lienisch, 1976; Lustig, 1978; Zimmerman, 1980). The operation of the process in the Hudson-Raritan Estuary is described below. Its interaction with other planning programs is described in the conclusion.

Status of 208 Planning in the HRE:

The U.S. EPA administered a number of grants during the middle to late 1970s to states and areawide planning agencies designated by the federal and state government to undertake the 208 planning process. The agencies designated in areas contiguous with the Hudson-Raritan Estuary (within its primary and secondary areas) are listed in Table 8. The boundaries of the 208 planning areas within the HRE are shown in Figure 9.

As of November 1980 all of the plans for the "208" planning areas were completed at least in draft form and submitted to the appropriate states for certification. Many have added addenda or supplements as a result of recommendations by government or the public. Practically all have received formal action by the governors, and have been submitted to the U.S. EPA for review. Table 9 gives the current status of these plans. As shown in the Table, all the plans for which state action has been taken have received conditional state certification, which has been followed by a conditional approval by the U.S. EPA. The conditional certification and approval usually consists of complete approval of certain elements and conditional action on others.

In order to put these administrative actions into perspective it is important to understand the review and approval process for 208 plans.

The Plan Review and Approval Process:

The review process consists of an adoption and certification process by the governors of the states in which the 208 plans are undertaken. This is followed by a submission to the Regional Administrator of the U.S. Environ-mental Protection Agency, who then reviews the plan and commences an approval process. The alternative courses of decisions in this process are outlined in Figures 10A and B. Which system applies depends on when the plans were certified. Criteria for evaluating the plans for both certification and approval were outlined in regulations (44 Federal Register 3001 6, Part 35. 1523-2(b), 1979), and included consistency with water quality goals and standards and legal, financial, administrative requirements for the designated management agency.

Selected Plan Components:

1. Subarea Delineation

At the outset of the planning process subareas within designated "208" areas were defined primarily on the basis of hydrologic criteria. This was done so that the "208" planning agencies could realistically take into account many of the local areas within their boundaries, and for the purpose of problem identification and formulation of area-specific solutions where needed.

While a drainage basin criterion was almost always applied in the selection of these subareas, the "208" planning areas generally did not provide consistent coverage of water quality needs across all subareas. This occurred for two reasons. First, data availability varied considerably from location to location, and resources and time available for collecting new data were limited (Zimmerman, 1980). Second, these inconsistencies were a function of the way in which priorities were defined and problems identified in the initial stages of the planning process - the subject of the next section.

The correspondence between the geographic areas defined under 208 planning and those defined under coastal management and Level B planning is shown in Table 10. Where the planning areas overlap, there is generally a progression

from smaller to larger areas when one proceeds from "208" to coastal management to Level B plans.

2. Problem Identification and Setting of Priorities for Management

Most planning programs begin with the identification of problems. The ultimate aim of the plans is to solve problems. Problems cannot be identified without some clear-cut criteria upon which to base problem selection.

In "208" planning, the problem areas to be investigated in light of the goals of P.L. 92-500 were generally prescribed by the legislation itself (P.L. 92-500, Section 208(b)(2)), and expanded in the regulations (44 Federal Register 30033, Part 35.1521-4). Within these constraints the planning agencies were able to set priorities among the areas according to a number of implicit criteria, namely, monitoring data, public input, their own general knowledge of the area, and the requirements or other parts of P.L. 92-500 and other environmental legislation that interfaced with "208" planning.

Table 11 summarizes the way various problem areas investigated under 208 planning were identified in each of the planning areas within the HRE. The weight given to a particular problem area appears to be a function of the extensiveness of legislation in that problem area. For instance, municipal discharges covered under the National Pollutant Discharge Elimination System (NPDES) and the construction grants program, which are well developed programs with clear legislative mandates are given a high priority, as are industrial discharges covered under the NPDES program. Other areas such a silviculture, mining, animal feedlots, acid rain, snow removal, and deicing that have not generally been explicit in specific regulatory programs are given medium to low priorities. Little justification of the selection of problem areas is given within the "208" plans themselves.

A second observation is that problems identified in adjacent or contiguous geographic areas are not always given the same priority. For instance, while a high priority was given to urban storm runoff, in the Nassau-Suffolk and the Westchester "208" areas, New York City, which is adjacent to both of these areas (and has a greater paved area and hence, more runoff) did not. A similar lack of consistency in adjacent areas occurred for oil and hazardous material spills and toxic substances. A similar pattern of inconsistency occurred in New Jersey, but to a lesser extent (probably due to the fact that the same agency prepared three of the four plans in the HRE area in that state).

3. Procedures for Implementing 208 Plans

The procedures for "208" planning established under the FWPCAA of 1972 and revised under the Clean Water Act of 1977 called for the designation of management agencies to implement the recommendations in the plans (P.L. 92-500 and the CWA of 1977, Sec. 208(b)(1)(D) and 208 (c)(1)). The authority that these management agencies were to have are outlined in Section 208(c)(2). As the plans emerged, several levels of managerial responsibility were identified to encompass all of the functions that were required under the Act. Two basic levels were: a <u>managerial</u> or overseer role to make sure that the recommendations of the Plan were <u>in fact</u> implemented, and an <u>operational</u> role which would involve the day to day implementation of the recommendations. The first level of overseer in New York and New Jersey has been undertaken by the states, i.e., each state has been designated the Water Quality Management Agency. The second level, the operational role, is the responsibility of a number of organizations in

concert with one another at several levels of government, with a mix of public and private sector responsibility. Tables 13 and 14 give some examples of these arrangements.

While the "208" plans identified agencies, levels of government or sectors of society (e.g., homeowners) that would undertake the operational functions to implement the plan, there was often no attempt within the context of the plan to get the concurrence of these agencies or entities with the requirements of the plan (Zimmerman, 1980). These concurrences, called letters of commitment were the objective of the continuing planning process, and according to the most recent regulations should accompany the submission of the plan itself (44 CFR Part 35.1521-3(c)(2)).

In New York State, the Department of Environmental Conservation was given a two year grant for $112,000 by the U.S. EPA to develop these letters of commitment to enhance the implementation of the "208" plans within the state. The 1979 work plan for "designated area implementation" in New York State calls for the definition of management agency roles for high priority recommendations in the plan, the obtaining of concurrences from the management agencies (letters of commitment), and the monitoring of the progress of implementation. Concurrent with the statewide effort is a program being undertaken for Long Island by the Long Island Regional Planning Board under U.S. EPA funding to arrive at implementation measures specific to Long Island that implement the 208 plan there.

## Wastewater Treatment Facility Plans ("201" Plans)

Wastewater treatment facility planning is one of the oldest, largest and most complex of the planning programs. It is applied to a wide range of geographic areas from multi-county to submunicipal jurisdictional levels. The plans are currently conducted under Section 201 of P.L. 92-500 as amended by the Clean Water Act of 1977 (P.L. 95-217) though the origin of such facility planning on a nationwide basis began as early as 1948. The 201 plan is considered one of the major implementation mechanisms for several more broadly based plans and regulatory programs in the Clean Water Act, namely the statewide basin planning originally carried out under Section 303(e), the areawide waste treatment management plans under Section 208, and the NPDES program under Section 402.

A wastewater facility or "201" plan is the basis for and culminates in the construction of wastewater treatment and related facilities primarily for the purpose of reducing "point" sources of water pollution. "Point" sources of waste are wastes that are or can be easily channelized as compared to wastes that drain across wide areas. The components of a "201" Plan have expanded over time as waste treatment technology and an understanding of the impacts of waste treatment have become more sophisticated and subject to the new environmental policies of the 1970's. A "201" Plan typically consists first of a set of alternatives for location, service area (including industrial customers), sizing and type of technology of the system based on population and economic projections, the need for pretreatment or removal of certain toxic wastes that cannot be handled by the system, sludge disposal alternatives, and other factors. Second, the Plan consists of an evaluation of alternatives based on a number of criteria such as the extent to which (1) state approved water quality standards will be met, (2)

the system will be cost effective, (3) the system will induce growth, and (4) the system will produce adverse environmental impacts and hence, generate controversy.

The funding of "201" planning is accomplished through a mix of federal, state and local cost sharing, the proportions of which have changed over time and depend on the specifics of the systems and the incentives to which they respond (e.g., the introduction of innovative technologies, promotion of interstate arrangements, etc.). The initial three year allocation for the development of these plans nationwide amounted to $18 billion between 1972 and 1975, but the distribution was delayed by impoundments of funds at the federal level. An additional $24.5 billion was allocated by the Clean Water Act of 1977 through 1982. Future levels of funding are uncertain given the general direction of environmental priorities at the federal level. The funds allocated at the federal level are administered by a priority rating system now implemented by the states, and submitted to the U.S. EPA for approval. The various states differ slightly in the form of their rating systems. Those for New York and New Jersey are shown in Tables 15 and 16. The actual funding under Section 201 has been broken up into three stages or "steps" corresponding to planning, design and construction, which recently have been collapsed down into a single grant rather than three separate grants. In addition to "201" funds, wastewater treatment plants attempting to apply innovative technologies or solving unique problems can receive funding under demonstration grants, such as the grant awarded to Newtown Creek for the study of the feasibility of the Unox (pure oxygen) process for bacterial degradation of wastes. The New York region surrounding the HRE has been known to claim large shares of the construction grants funds. For instance, during 1981 projects constructed in the Interstate Sanitation Commission's area of jurisdiction (accounting for a large portion of the HRE area) accounted for $652 billion (14 projects) in 1977, $724 million (17 projects) in 1979, $730 million (36 projects) in 1980, and $115 billion (52 projects) in 1981 (ISC, 1977-81). These figures are for all government sources of funds, not only 201 funds.

The approximate boundaries of the existing "201" planning areas adjacent to the HRE superimposed over some of the major wastewater treatment plants (existing and pending construction) are shown in Figure 11. A number of trends have been apparent in "201" planning. First, there has been a continuation of the trend toward regionalizing wastewater treatment, encouraged by the cost-effectiveness criterion in state and federal grant conditions. In the HRE area this is most pronounced in the following plants: the Passaic Valley Sewerage Commission plant which will incorporate wastewater from Kearny; the Middlesex County Sewerage Authority plant which is expected to incorporate Carteret, Old Bridge Township, Perth Amboy, Sayreville-Melrose and Morgan plants; and the consolidation of the Jersey City West and Jersey City East plants in New Jersey and the construction of the Westchester County Regional Plant in Ossining which will combine several Ossining plants, Briarcliff Manor and Croton-on-Hudson. Second, some tradeoffs continue to have to be made with respect to the location of new sewage treatment plants relative to environmentally sensitive portions of the estuary because of land availability problems. The North River plant's northern location exacerbating the ultimate transport of the wastes out to sea and the Red Hook plant location in one of the narrower parts of the East River with limited dilution capability are examples of this.

Some of the major areas of conflict that have emerged between the "201" facility planning process and other planning and regulatory programs specifically in and around the HRE are described below:

1. The outcome of many of the "208" plans raised the possibility of varying treatment levels from the secondary treatment levels required under Section 201 of the Act. The Clean Water Act of 1977 allowed exemptions from the secondary treatment requirement where adequate justification could be made, and where water quality would not go below standard as a result of the exemption (Section 301(h)). The concern over the fact that treatment levels might be higher than necessary was addressed in a number of studies during the mid-1970's (for instance, Environmental Research and Technology, Inc., 1977; U.S. Comptroller General, 1978).

   New York City specifically has raised the possibility of exempting some of the wastewater treatment systems bordering the Estuary from secondary treatment levels, since water quality standards might be met with lower levels of treatment, a concern initially raised during the "208" planning process. This issue has been particularly raised in connection with some of the new systems or systems undergoing massive upgrading, namely the Newtown Creek plant discharging into the East River from Brooklyn and the Mamaroneck plant in Westchester. As of early 1982 decisions were still pending on both of these applications at the U.S. EPA. It was considered unlikely that the exemption would be granted by the U.S. EPA, since the exemption was intended to allow discharges at a distance from inland estuaries (such as ocean outfalls) where there is a lot of dilution to have a lower treatment requirement. The City of New York also applied for a 301(h) exemption for the North River plant. It withdrew the application, since it would have held up the processing of the 201 construction grant application for that plant (a 201 application cannot be processed with a 301(h) proceeding pending). In addition, a considerable amount of scientific data would have been required to justify the exemption of North River.

2. The development of infrastructure such as wastewater treatment facilities and their associated distribution lines could conflict with the preservation of environmentally sensitive lands, such as wetlands, and the state regulatory programs that were developed to preserve these lands. The placement of these facilities and distribution lines has been the subject of controversy, because lines have to extend to the water through environmentally sensitive areas. Conflict occurs in the sewering of wetland areas. In the case of the Lemon Creek Drainage basin, the Coastal Management Plan for the City of New York pointed out that the "201" plan for the layout of sewers in the area follow the grid pattern of streets rather than another which would avoid sensitive wetland areas. The plan conflicts with the CZM plan as well as wetland regulations. Much of the bargaining over these problems is done within the context of individual regulatory programs rather than planning programs.

3. Industrial Pretreatment - In order to implement many of the goals of "208" plans, "201" plans would have to deal with toxic wastes and other wastes not treatable by conventional secondary wastewater treatment systems. The role of the "201" program is to inventory and identify the sources of those

wastes and set forth options to deal with them, i.e., (1) separating out those sources and making them independent or (2) paying the costs of extra treatment required for these wastes and transfering the costs back to the source of the wastes. The nature of the financing system under "201" is such that the first alternative is strongly encouraged over the second. The pretreatment issue is discussed in greater detail in a subsequent section on the National Pollutant Discharge Elimination System.

## Water Supply Plans

The objectives of water supply planning in the two states that adjoin the Hudson-Raritan Estuary area are to meet a growing deficit in water usage on a normal basis and to meet contingencies arising during drought conditions.

In New Jersey the most recent major effort to undertake water supply planning was the New Jersey Water Supply Master Plan, whose interim output was produced in 1980. The Master Plan was a result of recommendations by the State's County and Municipal Government Study Commission and the Governor's Interdepartmental Commission on Water Supply. The recommendation to prepare the Plan was made to the Governor in 1975 and authorized a year later (NJDEP, 1979: 1). The concerns of the commissioners were prompted by regional studies by the Corps of Engineers. Of the six planning regions defined by the Plan, northeastern New Jersey is one, which is further subdivided into three subregions. The plan recommends that the following steps be taken in the northeastern region:

(1) Northern subarea - Proposed plans include the construction of a pumping station and intake system at Two Bridges (at the confluence of the Pompton and Passaic Rivers), a pipeline connecting the Wanaque and Oradell reservoir systems, and the construction of a diversion system via a pump station to bring Ramapo River water to the Wanaque Reservoir (see Figure 12). The cost is estimated at $66.1 Million (NJDEP, 1979: 27).

(2) Western subarea - The Spruce Run/Round Valley/North Branch pumping and pipeline system is proposed to bring water from the Round Valley Reservoir ultimately to a storage point at the ridge line of the Raritan and Passaic Basins (NJDEP, 1979: 30).

(3) Southern subarea - improvements are planned for the Delaware and Raritan Canal system such as dredging to increase its capacity. This is shown in Figure 13. Another major recommendation is to redesign some of the existing linkages in the water distribution system.

The Municipal Land Use Review Law, which requires municipalities to prepare local master plans and submit them to the NJ Department of Community Affairs, makes a water supply element mandatory. Prior to this counties often prepared water supply master plans under general powers granted to them by the State.

Water supply planning in the State of New York has taken a very different course. The first attempt in this decade to plan for water supply at the state level was through a temporary state commission (Temporary State Commission on the Water Supply Needs of Southeastern New York, 1972), which was not specific about any particular facilities (see Figure 14 for study area boundaries). The Commission's work was authorized by the NYS Laws of 1969, Chapter 593. More

recently the water supply picture in the Hudson Basin area has been the subject of a Level B study funded by the U.S. Water Resources Council, after the "1975 National Assessment of Water and Related Land Resources" found that the area had a major water supply system problem, evidenced by its projected deficits (NYSDEC, September 1979: 40). The recommendations of that plan for facility construction included further study of the Hudson River Project proposed by the U.S. COE and the funding and completion of Stage 1 of the New York City Water Supply Tunnel #3.

The major regional effort in the area of water supply planning encom-passing the entire HRE but focussing on facilities within New York State was the NEWS study by the U.S. Army Corps of Engineers, authorized by the Northeastern United States Water Supply (NEWS) Act of 1965 (P.L. 89-298). The Hudson River Project report dated July 1977 isolated the New York Met-ropolitan area as one of the critical areas for study because of recurring droughts and projected deficits. While many alternatives were considered in the study, the common theme and the one with the most impact for the HRE was the proposal to build a high flow skimming project at Hyde Park in order to tap Hudson River water as a potable supply. The components of the project are shown in Figure 15. The project would rely upon the New York City Water Tunnel #3 currently at a hold in the construction process, to link that supply to Long Island.

The City of New York, the major regional supplier of water in the HRE, owns, operates and maintains many of the system's facilities. These are listed in Table 17 and shown in Figure 16. Changes to the system are made on an intermittent basis through operation and maintenance procedures, rather than as the result of an overall planning program. The City of New York does not undertake comprehensive water supply planning per se, except through its annual capital budgeting process because most of its facilities are already in place, and demand for water has generally stabilized. The capital budgeting process primarily addresses operation, maintenance, rehabilitation, and replacement of in-place structures rather than constructing major new facilities. A ten year maintenance program has been developed by the City for the replacement of water lines. The Third Water Tunnel is the major exception to this. The Third Water Tunnel is needed not only as a major distribution link in the proposed Hudson River flow skimming project, but it is also considered necessary for the maintenance of the City's existing Tunnels No. 1 and 2. The project currently has completed its first stage and requires Congressional authorization to proceed with the rest of the project.

## Floodplain Management Plans

The legislative and administrative basis for floodplain management originates in a number of federal laws and executive orders and the state laws that parallel or implement the federal ones. The form of management plans for floodplains is primarily regulatory. A National Flood Insurance Program (NFIP) insures homeowners for flood damages provided that the community in which they are located has mapped the floodplain and adopted regulations to prevent further flood damage from occurring within the mapped floodplain. The program has its basis in the National Flood Insurance Act of 1968 and the Federal Disaster Protection Act of 1973, as amended (42 USC 4106 and 4128), and expanded in Executive Order 11988 of May 24, 1977. Table 18 summarizes the provisions of these pieces of legislation.

The National Flood Insurance Program is aimed at preventing, where practicable, new development in the 100-year floodplain (defined as the area adjacent to a waterway subject to a one percent or greater chance of flooding in any given year). As it currently is designed, the Program requires communities to map the entire floodplain within their borders. This was initially a two step process, the first being a more general Flood Hazard Boundary Map (FHBM) (which allows a community to enter the "Emergency Program" of NFIP) and the second, a more detailed map, the Flood Insurance Rate Map or FIRM (which allows the entry of the community into the Regular Program). These maps are to form the basis for (1) the review of the development projects in the floodplain by local officials responsible for approving the projects such as building inspectors, zoning officials, and planning boards or departments; (2) insurance eligibility at federally subsidized rates rather than actuarial rates (provisions are laid out in 43 FR 2570, January 17, 1978) for existing development - this shifts the federal subsidy away from disaster relief to insurance; (3) the award of bank mortgages.

The status of municipalities over time in the preparation of these maps since the program first started under the National Flood Insurance Act of 1968 (P.L. 90-448) is shown in Table 19. Figure 17 shows the status of communities adjacent to the HRE in their efforts at either developing or revising floodplain maps.

Solid Waste Management Plans

The actual and potential effect of many years of incremental decision-making in solid waste management (particularly related to solid waste disposal facility siting decisions) upon the quality of the waters of the Hudson-Raritan Estuary has been indicated in a number of technical studies specific to the HRE (Geraghty & Miller, 1978; PBQD-Cosulich, 1980). While these studies have concentrated on the effect of solid waste disposal practices on groundwater, there are often implications for surface water quality also. A number of the 208 plans and coastal management plans cited areas in which poor surface water quality originated at least in part from solid waste facilities. Thus, the key aspects of solid waste management that relate to the quality of the Estuary are policies and programs regarding the siting of new disposal facilities, in particular landfills and resource recovery facilities, and programs for the control of existing facilities and their environmental impacts.

As a result of these and other concerns, comprehensive solid waste management programs, including planning processes have been developed in recent federal and state legislation. The federal programs are mandated by the Resource Conservation and Recovery Act of 1976, which requires the states to come up with solid waste management plans for the transport and disposal of solid wastes. The states adjacent to the Hudson-Raritan Estuary have passed their own versions of similar legislation. This legislation has resulted in the designation of solid waste planning districts shown in Figure 18. The existing solid waste disposal facilities are shown in Figure 19.

New Jersey

The preparation of a statewide solid waste management plan in New Jersey is mandated by the New Jersey Solid Waste Management Act (P.L. 1975, C. 326), and will consist of a compilation of the individual district plans.

New Jersey's Solid Waste Management Act (NJSA 13:1E-1 et seq., as amended by Chapter 325, Laws of 1975) has established each of the counties in the State and the Hackensack Meadowlands District as solid waste management districts (see Figure 18). These districts are responsible for developing and adopting solid waste management plans (NJSA 13:1E-2; 3 b (2)). The plans are legally the responsibility of the county Boards of Freeholders or their designees. The specific agencies that have been designated within each of the districts to perform the development of the plans are listed in Table 20. The districts are assisted by advisory solid waste management councils organized at the county level (NJSA 13:1E-20, 11 b (1)) that provide local input into the plan. Local input is crucial to the ultimate implementation of the plans, since many local agencies review any solid waste disposal facility proposed within their boundaries. At the county level the planning agency, engineer, board of health, 208 agency, and general counsel all have input into the decision. At the municipal level the facility is reviewed at least by a planning board, building or zoning officer. The plans can be developed by individual districts or jointly by several districts. The districts have to formally adopt the plans, followed by final review and approval by the New Jersey Department of Environmental Protection (NJDEP).

In order to encourage interdistrict coordination in the solid waste planning process, particularly in the northeastern part of the state, the NJDEP issued supplemental rules on December 31, 1979 ("Adopted Rules Concerning Interdistrict Flow of Solid Waste Between and Among Solid Waste Management Planning Districts in Northeastern New Jersey", NJAC 7:26: 1.11). In light of these new rules, several districts were required to submit modifications of the original plans to encourage interdistrict coordination. If they failed to do this, the NJDEP could take over the task of designing modifications for this.

After several years of planning and conflict resolution among the districts and municipalities, the ultimate plan for the northeastern part of the State which borders the Hudson Raritan Estuary was comprised of two basic disposal regions. While resource recovery plants have been proposed for each district for the long term (listed in Table 21),in the short term the Hackensack Meadowlands District (HMDC) and Middlesex County have been identified to receive waste flows for land disposal. To summarize:

(1) HMDC - in the short term HMDC landfills and the Baler in North Arlington will receive wastes from all of the municipalities in Bergen and Hudson counties, 11 of the 16 municipalities in Passaic County, and all of the municipalities in Essex County (HMDC, Modifications, 1979: 11-12). Two municipalities in Union County, Union and Springfield, will use the MSLA 1-D landfill.

(2) Middlesex County - all of the rest of the wastes from Union County shall be disposed of in Middlesex County except for some interim allowances for Hillsdale and Rahway (whose wastes will ultimately go to Middlesex County). An interdistrict agreement effective April 1, 1980 provided for the following: "Except for the Union County municipalities assigned to disposal sites in Morris and Essex Counties, and for the Union County municipalities assigned to Union County resource recovery facilities, all Union County waste is assigned to Middlesex County for disposal on a long term basis". Wastes from Somerset County will cease to be disposed of in Middlesex

County after five years (with a possible one year extension). Other agreements with Monmouth and Mercer Counties were also recommended for adoption by Middlesex County. The Mercer County recommended agreement involves municipal solid wastes from Princeton Borough and Princeton Township only for a two year period (Middlesex County Board of Chosen Freeholders, July, 1980). After July, 1980 wastes from all other counties are to be excluded from Middlesex County, and New York State wastes are to be excluded after that period also except if they are covered by long term agreements with the county (Middlesex County Board of Chosen Free-holders, July 1980: 6-6).

(3) In the long term, resource recovery facilities are planned in the following municipalities: Ridgefield Park (Bergen County), Jersey City (Hudson County), Newark (Essex County), and Paterson (Passaic County) and Rahway (Union County). Specific sites within these municipalities have not yet been officially selected. The role of the Port Authority in resource recovery has been a participation in a joint agreement with Essex County and Newark for a facility in Newark.

In the course of this planning process a number of issues and policies have emerged for the deployment of disposal facilities in the areas adjacent to the HRE. Specifically, the NJ DEP has come up against several problems in the design of modifications to the district plans (Personal Communication (1982): E. Nieliwocki, NJDEP, Solid Waste Administration).

1. The Essex County and HMDC plans had been in conflict with respect to the deployment of Essex County wastes. Essex County has been sending its solid wastes to the MSLA 1-D landfill in the Hackensack Meadowlands district since 1969. The Act establishing HMDC required HMDC to always accept Essex County and other wastes in this district (NJSA 13:17-10). Essex County is holding the HMDC to this stipulation while the other counties are planning to have their own resource recovery facilities by 1984. Essex County has particularly been the target of the HMDC's attempts to get out of the waste stipulation. Passaic and Hudson Counties will be sending their wastes to the HMDC after their landfills close - the HMDC can handle these wastes (amounting to 1,000 tons/day currently to be expanded to 2,000 tons/day), but cannot handle Essex County's wastes. Essex County has now been given until September, 1988 to come up with a new landfill site for its 3,000 tons/day of solid wastes, since MSLA 1-D is at elevation. After studying 66 alternative sites, the selection has been narrowed down to two new sites - one in Kearny (Hudson County) and in Newark for demolition debris only. The Kearny site is likely to be a problem, since Hudson County is planning to spend an estimated $8.00 - $9.00 per ton to divert its wastes from the MSLA 1-C landfill in Kearny (where it was costing them an estimated $3.00 a ton to ship wastes) to a baling facility in North Arlington (Hudson County Board of Chosen Freeholders, 1979:11-16). Hudson County might not look favorably upon Essex County using a site that they themselves have had to abandon, within their own county.

2. The coordination of resource recovery facilities at the regional and county levels has been an issue. The Port Authority had planned to build one resource recovery facility in New York and one in New Jersey in conjunction with its plans for industrial park development in its region. Three alternatives each in different counties were being considered for the New Jersey facility: Elizabeth, Jersey City and Newark. While each of the three counties wanted the Port

Authority industrial facility within their county, the initial uncertainty of the Port Authority's plans prompted the NJDEP to require the counties to devise their plans independently from those of the Port Authority. The Port Authority is currently negotiating with Newark on the facility.

3. Solid waste management plans can divide a county rather than provide integrated solid waste management. Lower Passaic County uses landfills within the HMDC, while Upper Passaic uses landfills in Sussex and Morris Counties. The Sussex and Morris County landfills will close in one year, and it will be three years until a resource recovery facility can be built. In the interim, the HMDC will not allow Upper Passaic to use its facilities, only lower Passaic.

4. The HMDC will have to confront a rate problem within its district with respect to proposed resource recovery facilities. HMDC has proposed using rate averaging, which requires the submission of an application to the Public Utilities Commission (PUC) for approval. Passaic, Hudson and Essex Counties which currently pay $9.87/ton to haul wastes to North Arlington will stand to benefit. Bergen County which currently pays $3.00/ton will not benefit. This discrepancy will have to be worked out, or the method of designing the rate structure changed. (For a discussion of this see Hudson County Board of Chosen Freeholders, 1979: 11-17 to 11-18; 11-22 to 11-24).

The rate problem is very much connected with other issues related to the timing of landfill closures by the HMDC. The HMDC had hoped to close many of its landfills by the early 1980's, however, many of the resource recovery plans will not be completed by then. The existing landfill alternatives are currently less expensive than any resource recovery alternative. If price differentials even of a temporary nature are allowed to exist between the two facilities, a waste transport pattern that goes against the plan may be encouraged. For instance, if the HMDC landfill prices (of $4-6/ton in 1979-83 and $7.50-9.50 thereafter) (Hudson County Board of Chosen Freeholders, 1979:11-23) are allowed to remain below resource recovery prices in Hudson and Essex Counties now estimated at $8-11 per ton at Greenville Yards and CEA/Newark, then Hudson and Essex County municipalities would prefer HMDC landfills to the resource recovery facilities, and the latter would not be viable without extensive regulatory efforts. It is not certain what restrictions the state could place directly on these existing transfers. While the PUC approves the rates in conformance with the plan, it only has authority over new rate structures. The NJDEP function in site approval generally is geared to environmental considerations rather than economic incentives. The only way out of this appears to be a rate averaging system. Such a system would need to be imposed uniformly across the area, since it has been argued that the existing system of competition among refuse disposal companies has produced a highly variable cost structure (Hudson County Board of Chosen Freeholders, 1979:11-52).

5. Disposal of out-of-state wastes in New Jersey has been a major issue in the planning of solid waste management. The state is anticipating endorsing the countywide resource recovery facilities as a way of indirectly discouraging interstate waste transport as well as a way of ensuring financing for the facilities. By endorsing plans which specify the origin and direction of all solid wastes to resource recovery facilities, banks will be willing to finance the facilities, since the revenue is ensured and backed by state administrative actions. In addition, such a system would be county owned and supported by taxpayer dollars. These systems would be more likely to keep out New York State

wastes (estimated at 10,000 tons per week), than one that cuts across county boundaries. A system that cuts across county boundaries would necessarily be of an authority type, or quasi-public agency and could accept any kind of wastes (Personal communication (1982): E. Nieliwicki, NJDEP, Solid Waste Administration). The desire to keep out New York State wastes is a very strong influence in the design of the solid waste management plans and strategies in New Jersey. This does not take into account the fact that a large amount of New Jersey wastes from northeastern New Jersey counties gets transported to New York.

New Jersey's policy of discouraging the disposal of out-of-state wastes within the state has been consistent over the past decade. For example, when the Hackensack Meadowlands Development Commission was formed in 1971, its regulations stipulated that the importation of wastes from outside of the State was prohibited (Section 2 of the regulations). This was partially based on a New Jersey Department of Health study that found that 13% of the HMDC wastes were coming from out-of-state. The major court case in which this issue was decided was the appeal in 1973 by the City of Philadelphia and several waste disposal companies of a New Jersey state statute (Chapter 363, Laws of 1973, Approved January 2, 1974) barring such importation (City of Philadelphia v. New Jersey, No. 77-404). The State supported the statute by maintaining that the State's landfill space could not support out-of-state wastes. The City of Philadelphia argued that this was an impediment to interstate commerce. The New Jersey Superior court sided with the City of Philadelphia. This decision was reversed by the New Jersey Supreme Court saying that the state was allowed to exercise such police power. A final appeal was brought to the U.S. Supreme Court by the City of Philadelphia. This appeal was sent back to the New Jersey Supreme Court, which was required to evaluate the case in light of the Resource Recovery Act of 1976 which encourages regional (interstate) solutions to solid waste disposal problems, but nevertheless upheld the State statute banning interstate transfer of wastes (Anonymous, Nov. 29, 1977). The U.S. Supreme Court finally ruled the statute unconstitutional. Another major obstacle to the State's control over out-of-state wastes is private companies. While they are responsible under state law for the proper operation of disposal facilities, and transporters are responsible for the proper operation of transport vehicles, the State cannot dictate who their customers should be. The State strategy for solid waste planning described above is to reduce private interests, and promote publicly owned and operated facilities so that there will be a greater likelihood that out-of-state wastes will be refused. The HMDC's strategy has been to gradually reduce the amount of land allowed to be used for landfilling. For instance, between 1970 and 1979 it reportedly reduced its acreage for landfilling from 2,508 acres to 515 (Hudson County Board of Chosen Freeholders, 1979:11-15). Middlesex County has similarly attempted to ban wastes originating from outside of its county borders.

## New York

In New York State solid waste planning has proceeded in a somewhat different manner from the planning efforts just described in New Jersey. The approach taken has been to identify nine different solid waste streams and produce a separate plan for each of them with a tenth plan for resource recovery. The nine waste streams are: hazardous wastes, municipal wastes, nonhazardous industrial wastes, wastewater treatment plant sludges, water treatment plant sludges, power utility wastes, septic tank pumpings, mining wastes and agricultural wastes. Fourteen regions throughout the state have been specifically proposed for

municipal waste management. The ones in the areas of New York State surrounding the HRE are: Nassau-Suffolk (the proposed planning agency would be the Long Island Regional Planning Board with representatives from each of the towns on Long Island), New York City (the proposed planning agency would be the NYC Resource Recovery Task Force), Westchester County (planning would be done by the Westchester County Planning Board) and the Mid-Hudson region (with no proposed planning agency other than DEC representatives at this time) (NYSDEC, 1981). In the plan approximately two-thirds of the municipal wastes were targeted for resource recovery. (NYSDEC, Resource Conservation and Recovery, July 1981: R-3). The same fourteen statewide resource recovery planning regions have been designated for municipal waste management. DEC has given initial implementation responsibility to the following jurisdictions for resource recovery and municipal waste management: towns on Long Island, New York City, and upstate counties (NYSDEC, Resource Conservation and Recovery, July, 1981: R-19).

Resource recovery efforts in New York State are currently proceeding primarily with the use of Environmental Quality Bond Act funds (for both source separation and disposal) and private resources. Some of the major disposal projects underway or proposed in the HRE in the area of resource recovery are listed in Table 21 and some are discussed briefly below. Projected plans through 1985 are shown in Figure 20.

1. Rockland County completed the update of its comprehensive solid waste study in June of 1980 with 50% funding from New York State.

2. After producing a Comprehensive Solid Waste Plan primarily aimed at closing the Croton Point Landfill, Westchester County is embarking on a resource recovery scheme for a 1500 ton-a-day facility which will produce electricity, steam and recover ferrous metals.

3. Nassau County - The Hempstead Resources Recovery Corp. built a resource recovery plant in Hempstead at a cost of $135 million which was shut down in 1979 by the U.S. EPA because of emissions of dioxin, a known carcinogen. Debates are continuing on whether to reopen the plant or not. The facility was constructed to accommodate 2000 tons-per-day, produce electricity and recover a variety of products.

4. Suffolk County - several towns in eastern Suffolk have organized to develop a resource recovery facility under the auspices of the Multi-Town Authority. The Authority, initially consisting of Babylon, Islip and Huntington will proceed with only Babylon and Huntington because of the withdrawal of Islip.

5. New York City underwent an intensive study of its landfills recently (Parsons Brinckerhoff - Cosulich, 1980), and is currently embarking on a Resource Recovery Plan for a number of facilities throughout the City to be built by the City, The Power Authority of the State of New York and the utilities.

## Managerial Arrangements for Solid Waste Disposal

Many states are quite specific about the kinds of legal arrangements they will allow in the administration of solid waste disposal. Table 22 gives the scope of these arrangements for the State of New Jersey, and reflects the complexity that such arrangements can achieve. Practically all of the management forms listed in the Table are represented in the State, and the desirability of

one form over another to a given municipality depends upon various financial and political considerations. In addition to these public management arrangements, the private sector plays a large role in solid waste management. Table 23 shows the public vs. private involvement in collection.

Park and Open Space Planning

Major State Park Planning Programs Pertaining to the HRE and Adjacent Areas:

(1) New York State

The New York State Parks and Recreation Law created the Office of Parks and Recreation within the Executive Department in 1970. It was originally within the New York State Department of Conservation, which was also created at that time. The Office of Parks and Recreation was not given departmental status because a restriction on the number of state departments would have been exceeded (Rockefeller Foundation, 1976: 109). The New York Parks and Recreation Law (Title B, Art. 3, Sec. 3.01) gives the Office the authority over the state park system. The Office is also responsible for preparing a state master plan. In 1972 the Office took over many of the major decision-making functions of regional park commissions, whose previous responsibility since 1924 has been to manage the parks in their particular regions. The boundaries of the New York State Park Regions in New York State are shown in Figure 21. The Commissions or agencies that previously were responsible for those regions within or adjacent to the Hudson-Raritan Estuary included the Palisades Park Commission covering Orange and Rockland counties and much of Sullivan and Ulster, the Long Island State Parks Commission for Nassau and Suffolk counties, the Taconic State Park Commission for the eastern portion of the Hudson and the State Office of Park Recreation (New York City office) for the City of New York. These Commissions currently have an advisory role to the State Office of Parks and Recreation and provide grass roots input into the decision-making process (Rockefeller Foundation 1976: 111). The exceptions to the Office's role in acquiring, developing, maintaining and operating parks in New York State are the Adirondack and Catskill Forest Preserves which are the responsibility of DEC, and the managment of unincorporated lands that are potential parkland by the New York State Office of General Services.

The most recent responsibility of the Office of Parks and Recreation in recreation planning was the production of the statewide comprehensive recreation plan, People Resources Recreation 1978. The projected deficits in terms of number of people underserved, distributed by type of activity underserved are shown in Figure 22.

The New England River Basin Commission (NERBC) undertook a recreation study for parts of New York State within the HRE. Their inventory of existing sites and proposals is shown in Figure 23.

A number of laws and administrative practices set the stage for recreation and park planning at the local level in New York State. The General Municipal Law (Section 239-m) requires any proposed zoning change of land within 500 feet of a state park boundary to be submitted to the county for approval. If the county disapproves the change, the municipality can overrule the decision by a vote of a majority plus one, and must explain why their decision differs from

that of the county. The Town Law (Section 264) and the Village Law (Section 7-706) have similar provisions for towns and villages, except that instead of submission to counties, submission to the regional commissions is required.

Any unit of local government has the authority to develop and manage a park within its jurisdiction, and can adopt as part of local zoning ordinances zones designated for parkland (see section on local environmental regulations and zoning). Many of these designations are hidden within residential zones that can also be used for parkland.

(2) New Jersey

NJSA 13-1B-65 and 13:1D-9(r) authorizes the Department of Environmental Protection to receive and spend funds in general, and was used as the basis for the development of the Statewide Comprehensive Outdoor Recreation Plan in 1973 (an update of the earlier 1966 plan) supported by the Land and Water Conservation Fund. No update of the 1973 plan has been undertaken. In addition, the Department of Environmental Protection is responsible for formulating comprehensive policies for natural resources conservation in the State.

The 1973 Plan divides the State into eight regions for the purposes of estimating supply and demand for recreation (see Figure 24). The land areas contiguous with the HRE lie in three of these regions: Bergen, Lower Passaic, Hudson, Essex and Union counties lie in the Northeast region, Middlesex in the Central Corridor, and Monmouth in the North Shore region.

As in the State of New York major park and recreation planning functions are undertaken by Commissions that generally report directly to state departments, in this case the NJDEP. Below is a description of the activities of some of the Commissions that directly affect the HRE.

The Hackensack Meadowlands Reclamation and Development Act of 1968 (NJSA 13:17-1 et seq.) created the Hackensack Meadowlands Development Commission (HMDC), one of the more automonous commissions in New Jersey. It is authorized to develop an Open Space Map for its 19,730 acre area of jurisdiction. That map was completed in 1972 delineating marshland preservation areas and parkland among other categories of environmentally sensitive land. Several parks have been developed in the District out of closed landfill areas. Unlike the Commissions discussed below which are connected administratively to DEP, HMDC is connected with the Department of Community Affairs. The environmental planning activities of the HMDC are discussed in detail in the section on "Environmental Plans" below.

The Delaware Raritan Canal State Park Law of 1974 (NJSA 13:13A-1 et seq.) established the Delaware Raritan Canal Commission to oversee and protect the Delaware and Raritan Canal State Park. The Commission produced a master plan for the park and rules and regulations for a "review zone" which is considered to impact upon the park. The municipalities that are located both in the Canal State Park and adjacent to the Hudson Raritan Estuary are located in Middlesex and Monmouth counties. Franklin Township is the only municipality in the Park that borders directly on the HRE. The Commission recommends sites for acquisition to DEP, and recently recommended 17 such sites. The scope of the Commission's review to protect the Park are primarily based on the criteria of "storm drainage and water quality impact, visual impact and noise impact" (DRCC, Regulations, November 1979: Part 3).

The Liberty State Park Public Advisory Commission was created by Executive Order #74 (May 1980). The Liberty State Park Commission is authorized to act in an advisory capacity in the planning and development of some 800 acres of parkland in Jersey City. The Commission also acts in a fund-raising capacity. The Executive Director of the Commission originally came from the DEP's Division of Parks and Forestry, Bureau of Capital Planning and Improvements, where the planning process was initiated. Now the Commission reports directly to the Assistant Commissioner for Natural Resources and the Deputy Commissioner of DEP. After an initial obstacle with wetlands permits (Hudson River Waterfront Study, Planning and Development Commission, 1980: 35), the Commission obtained approval for all of the permits required to develop the site as well as for the Environmental Impact Statement (EIS). Construction started during January 1981, and parts of the park were already completed one year later. The financing for the park has come from a variety of federal and state sources such as the Department of Interior, the Army Corps of Engineers, Economic Development Administration, and the Bicentennial Commission (Personal communication (January 22, 1981): McCabe, Executive Director of the Commission).

Hudson River Waterfront Study, Planning and Development Commission (Executive Order No. 69 (January 11, 1979)) - This interdepartmental commission completed its report in September 1980 describing existing uses and conditions along the Hudson River waterfront in New Jersey and made recommendations for improvement. The Commission relied primarily upon the staff of DEP's Division of Coastal Resources for the completion of the report.

A major issue identified in the Commission's report was public access to and open space along the waterfront. Table 24 presents the Commission's summary of existing parks by municipality on the New Jersey side of the Hudson River waterfront.

Municipal Land Use Review Law - This Act, which mandates municipalities to produce local land use plans includes as a planning element recreation and parkland planning.

Both New York and New Jersey have been promoting the concept of an esplanade as a form of continuous public access to the waterfront. In Manhattan, the Mayor has put forth a policy promoting the development of a continuous walkway around the island. The program is being implemented by the New York City Department of Ports and Terminals. In New Jersey, the Hudson River Waterfront Study, Planning and Development Commission also recommended the esplanade idea adjacent to the Hudson River waterfront.

Major Federal Park Planning Legislation Pertaining to the HRE and Adjacent Areas:

P.L. 92-592 (85 Stat. 1308) - Gateway National Recreation Area - This enabling legislation passed in October 1972 provides for the development of the Gateway National Recreation Area by the Department of Interior's National Park Service. The National Park Service has been administering it since 1974. The extent of the 26,000 acre recreation area shown in Figure 25 consists of four units: Staten Island Unit (Great Kills Park); Sandy Hook Unit; Breezy Point Unit; and the Jamaica Bay Unit (Floyd Bennett Field, North Shore, Wildlife Refuge) (U.S. Dept. of Interior, 1979).

The Fire Island National Seashore Act of 1964 established the 31 mile Fire Island as a Federal Park under the jurisdiction of the National Park Service. Recent plans of the Service for the Park include the designation of a 6-1/2 mile stretch between Watch Hill and Smith Point County Park as a wilderness area. After a bill was proposed it was withdrawn by the Park Service because of a disagreement about the waterside boundary of the area (Anonymous, December 18, 1980).

Federal water resource management legislation and park planning - Park, recreation and open space planning is integrated into water quality management planning in a number of ways, as described below:

Facility plans prepared under Section 201 of the Clean Water Act of 1977 are encouraged to combine "'open space' and recreational considerations with such management" (P.L. 95-217, Section 201(f)). In the awarding of grants for facility plans the Administrator of the U.S. EPA has to make sure that "the applicant has analyzed the potential recreation and open space opportunities in the planning of the proposed treatment works" (Section 201(g)(6)). An example of the difficulties that can actually arise in implementing the recreation requirements of "201" planning is the River Park plan for the North River Sewage Treatment Plant (Zimmerman, January 1978).

The Clean Water Act of 1977 also added an open space and recreation component to areawide water quality management under Section 208. The plan must explicitly include

> "an identification of open space and recreation opportunities that can be expected to result from improved water quality, including consideration of potential use of lands associated with treatment works and increased access to water-based recreation" Section 208(b)(2)(A)).

The regulations make this more precise by requiring as part of plan development an analysis of the public benefits to be accomplished by the plan, and coordination not only with recreational development under facility planning but coordination with state and local recreational programs as well (44 Federal Register 30033, Part 35.1521-3(e)). State recreation programs include those developed under the National Wild and Scenic Rivers Act (P.L. 90-542) and the Land and Water Conservation Fund Act (P.L. 88-578). The Clean Water Act further strengthens the emphasis upon recreation by making sure that exceptions for effluent limitations, granted to industry and the requirement for secondary treatment for domestic wastewater treatment plants do not impair a waterway's quality for recreational activity (Section 301(g) and (h)).

Energy Development Plans

A number of energy policies at the national and state levels are having a substantial impact on the planning and development of energy related facilities and activities in the HRE. The development of these policies has been formalized within statewide energy planning efforts that both New York and New Jersey have undertaken in response to existing and projected energy crises. Energy planning occurs in both states in the form of statewide master plans as well as programs drawn up under the Coastal Energy Impact Program funded under CZMA.

In New York the State Energy Office was formed to respond to the need for energy policy development and planning (New York Laws of 1976, c. 819 and 820), and in New Jersey the analogous agency is the Department of Energy set up under NJSA 52:27F-1 et seq. The Master Plan in New Jersey is called for under NJSA 52:27F-14 and in New York under the 1978 amendments to the Energy Law (Sections 5-110 and 5-112). In both states the Master Plans are updated every two years. Other administrative actions in state government that relate to energy development are listed in Table 25, and are required to conform to the energy master plans unless this is not practicable.

The policies of the State of New York expressed in the Master Plan regarding energy development emphasize a reduction in the use of petroleum products and nuclear power, and an increase in the use of natural gas, coal and energy conservation mechanisms. The policies of New Jersey in its Master Plan are much more broadly based, though specific facility oriented objectives are included. The policies include the assurance of uninterrupted energy supplies, the promotion of economic growth, safeguarding of environmental quality, and attainment of the lowest possible costs for energy within the constraints imposed by conservation and effecient energy use. No statement against the use of nuclear power is made in the New Jersey plan.

More specifically, the following policies are and will continue to be central to the definition of energy facilities in both states particularly in and around the HRE, and are worthy of elaboration:

1. The reduction in the dependency on petroleum and an associated increase in the use of coal.

The importance of this policy has been underscored in the two states abutting the HRE because of their abnormally high dependency on petroleum relative to the rest of the country. While an average percentage of petroleum accounts for 45% of total energy need nationwide, the percentage in New Jersey is now estimated at 59% (NJ Department of Energy, September 1981) and in New York, 57% (NYS Energy Office, August 1981). In the early 1970's this dependency was due initially to a reliance upon OPEC oil, but more recently was due to an anticipated growth in offshore petroleum resources. As of mid-1981 twenty one of the twenty six wells drilled in the Baltimore Canyon off New Jersey's coast were dry (New York City DCP, August 1981). While the remainder show some promise and the necessary approvals are being pursued, the fact that the reserves may prove to be smaller than anticipated will inevitably affect the reliance of the region on petroleum.

In response to this policy, New York State in general and the City in particular are actively trying to decrease their dependency on petroleum. In the New York portion of the HRE several developments are occurring. Several power plants in the area are planning to or have recently converted from oil to coal. Plans and an environmental impact statement for the conversion of Ravenswood 3 and Arthur Kill 2 and 3 by Con Edison are currently being reviewed. Con Edison has been mandated to convert Ravenswood No. 3 to coal by the U.S. Department of Energy under the provisions of the Powerplant and Industrial Fuel Use Act of 1978. The New York State Public Utility Commission has also supported a more extensive conversion of all three Ravenswood units to coal (New York City DCP, August 1981).

The implementation of the conversion to coal, while agreed upon in principal among a number of government agencies, has generated a considerable amount of controversy. In a recent brief prepared in connection with the NYS Energy Master Plan, the City of New York contended that coal conversion should be a fourth priority in energy planning in the state, with conservation, alternative energy generation (such as district heating, cogeneration and renewable energy), and imports of Canadian hydroelectric power being given higher priorities as energy resource strategies. The City's support of coal conversion in power plants is contingent upon the viability and cost-effectiveness of pollution control facilities to control sulfur emissions. On the basis of the cost-effectiveness criterion, the City does not support the conversion of Ravenswood No. 1 and No. 2 to coal, as advocated in the State Master Plan, without the use of state bonding authority. In order to test the feasibility of coal conversion, both the State and the City passed variants to their air pollution control regulation to allow three of the plants to be tested with medium sulfur oil as an analogy to the pollution possibilities of sulfur. The City passed temporary variances to their Air Pollution Control Code and the State granted a special limitation and amendment to the State Implementation Plan (State of New York, Energy Planning Board: December 3, 1981).

A second development which is occuring in response to an anticipated European market as a domestic market for coal as well is the development of coal transshipment facilities in areas surrounding the HRE. First, the New York City Department of Ports and Terminals is investigating the development of a coal export facility in Staten Island between Arlington and Stapleton for export of coal to Europe from Appalachian coal fields. This plan would consist of the following facilities: (1) various rail links and yards between the Conrail and Chessie systems and rail yards at Arlington, Staten Island; (2) a coal unloading and slurry storage pond at Arlington; (3) an underground coal slurry pipeline between Arlington and Stapleton following an eight mile route along the Staten Island Expressway using water from the Port Richmond Sewage Treatment Plant for the slurry; (4) a dewatering facility occupying about ten acres in Stapleton; and (5) port facilities at Stapleton and associated dredging to allow 260,000 DWT ships to enter the harbor (City of New York, DPT, 1981). It is anticipated that an oil pipeline would follow the coal slurry line to link New Jersey oil refineries with New York Harbor ports, which would include an oil terminal at Stapleton. Independent of the NYC Department of Ports and Terminals proposal is the Port Authority of New York and New Jersey's proposal to construct a coal transshipment port in the Bayonne-Jersey City area. The two proposals are not considered to be in conflict (City of New York, DPT, 1981).

A number of federal laws affect the use of coal either directly or indirectly. Some of the more recent laws are listed in Table 26. The most important ones, as discussed above, appear to be the environmental ones as well as the energy legislation directly restricting the use of petroleum.

2. Resource Recovery

Many of the plans for resource recovery in the HRE use waterfront lands and thus have a direct impact on the Estuary. Practically all of the energy planning efforts have at one time or another advocated resource recovery as an energy utilization reduction strategy. These have been reinforced by the emphasis upon resource recovery in solid waste management legislation. While a good deal of consensus may exist on the virtues of resource recovery in its various forms, a considerable amount of controversy surrounds its actual implementation. The

implementation problems involve facility siting and the associated unpredictable environmental effects resulting from burning heterogeneous raw materials, uncertain and unstable markets for the raw materials, and uncertain markets for the products of resource recovery. Like any other kind of facility, resource recovery facilities have to meet a large number of regulatory requirements even though their primary function is environmental control. Nevertheless, the increasing stringency of solid waste disposal regulations and associated higher costs of disposal and the need to supplement fossil fuels in energy production necessarily converge upon resource recovery as a joint solution to the problems. The resource recovery plants that have been proposed, under construction, or are in various stages of planning are listed in Table 21 in the section on solid waste planning. In addition to the various municipal and county plans PASNY is planning to develop several projects: S.W. Brooklyn Incinerator, South Bronx, North Hempstead and Arthur Kill (NYS Energy Office, 1981: 272-3 (II)). Some of the plants that are further along in the planning or construction stages are already encountering some unique problems. The Hempstead plant had to be closed because of unforeseen dioxin emissions from an unidentifiable source; a new start-up is meeting with considerable community opposition. There are some positive developments. The plant to be developed on the Brooklyn Navy Yard site has been guaranteed a market for its steam by Con Edison.

Going beyond these major and current issues in energy development planning in and around the HRE and taking a perspective across the entire sequence of steps in the fuels management process, a number of other significant characteristics of energy planning in the HRE are evident.

Table 27 lists the range of energy production activities from fuel extraction to energy transmission by type of fuel and the potential environmental impacts that might be expected from these in the HRE. A few of the more significant areas not already touched on above are highlighted below.

Fuel Extraction: The most viable form of fuel extraction at all close to the HRE is oil and gas drilling in the outer continental shelf. The current status of this form of extraction was discussed briefly in the introduction to this section. The potential onshore effects of OCS drilling are extensive in terms of the various maritime industries. The mechanism by which these impacts are understood and evaluated is the Coastal Energy Impact Program (CEIP) in the amendments to the Coastal Zone Management Act of 1976. In New Jersey the CEIP is being conducted within the Department of Energy, in coordination with the Department of Environmental Protection. Recently, the Coastal Zone Management Program within DEP and the CEIP in the DOE produced a method for evaluating the development potential of the New Jersey coastal area for energy facilities. The methodology, called development potential analysis, claims consistency with NJ's "Coastal Location Acceptability Method" (CLAM), which is DEP's more general method for assessing the acceptability of development in the coastal areas of the state (NJDEP, September 1981).

Fuel Transport: A variety of fuels are transported extensively within the HRE by barge, tanker, pipeline and truck. These include oil, coal, gas and nuclear fuels. The control of spillage and leakages which are considered the major problem associated with fuel transport is primarily regulatory rather than planning oriented with the exception of contingency planning that is currently underway in the HRE on a multi-agency basis.

Since 1973 the number of spills of oil reported throughout New York State occurring during fuel transport has increased annually, though after peaking in 1976 the total number of gallons spilled appears to have stabilized in subsequent years to between 1 and 2 million gallons a year (NYSDEC, May 1980). The importance for the HRE of the prevention and regulatory mechanisms applicable to these spills is reflected in the large proportion of spills that were located in waterways in or immediately adjacent to the HRE. For instance, DEC reported that between April 1, 1978 and March 31, 1979 the Lower Hudson River accounted for 206 of the 1,342 spills, the Atlantic Ocean-Long Island Sound basin accounted for 626, and the Raritan Bay-Newark Bay area for 6 (NYSDEC, May 1980: Table 6). Together these basins accounted for well over half of the total spills reported during that year, just within New York State.

The responsibility for oil spill responses is divided in New York State between the Department of Transportation (DOT) and DEC. DOT is the on-scene coordinator of cleanup activities and coordinator of the various governmental agencies in this regard. DEC looks at the environmental implications of both the spill and the clean up procedures (NYS DEC, May 1980).

The NYS DEC has elaborated on contingency planning for all water quality accidents, not only oil spills, in the "Water Quality Accident Handbook" (NYSDEC, Sept. 1977) which lays out areas of responsibility for each governmental agency and basic technical information for hazard identification enforcement and control. The contingency planning effort is based upon the state's authority under the Environmental Conservation Law (Articles 3-0301, 11-0305, 17-0303, 17-1743, 71-0301, 71-1941, 71-1943). While provisions for emergency response to hazardous material spills exist within the City of New York, the coverage of oil spills by these various mechanisms is noticeably absent. The City Planning Commission's recent survey of bulk oil facilities in the city noted two units established for hazardous material spills, namely the Hazardous Material Unit (HMU) within the Fire Department established in 1981 and the Interagency Hazardous Materials Task Force comprising representatives of the NYC DEP, Police, Fire, Health, and the Mayor's office that was reactivated during the same year. Both of these entities, however, did not include waste oil in their contingency plans (New York City Department of City Planning, August 1981). The list of hazardous substances issued by the U.S. EPA under RCRA also does not include waste oil as a hazardous substance, and thus, is not covered by many of the planning and regulatory provisions of the Act. EPA has played a major role in oil spill contingency planning by virtue of its authority in P.L. 92-500. Spill Prevention Control and Countermeasure Plans (SPCC) are to be filed with EPA by potential spillers. The U.S. Coast Guard has a similar provision in its requirement for an Operations Manual from potential spillers (33 CFR Part 15.300).

The transport of coal and its unique characteristics in the HRE given recent proposals for coal transshipment projects were discussed earlier in this section. EISs will accompany the proposals for facilities in both NY and NJ.

The transport of nuclear fuel through the HRE has become a major public issue culminating in the recent decision in Federal District Court to prohibit the transport of nuclear fuel through the City of New York.

Fuel Storage: The major forms of fuel storage in the HRE are bulk oil facilities and LNG storage facilities. In terms of capacity, Staten Island leads

the rest of the area in storage of fossil fuels. The location of many of these facilities are indicated in Figure 26. A listing of the facilities is given in Table 28. In 1981 New York City accounted for approximately 18% of oil stored in New York Harbor with the New Jersey side accounting for the rest (NYC DCP, 1981: xii). The estimated total storage capacity just in New York City for all types of fuel is 607 million gallons. The City Planning Commission study funded by CEIP concluded that no expansion of oil storage facilities was likely, given the trend toward conversion to other forms of fuel, though considerable new construction may be needed for replacement of aging tanks just to maintain existing levels.

Fuel Processing: Oil refining is the key form of fuel processing performed directly in the region. The location of refineries is shown in Figure 26, and a listing of the various characteristics of these facilities is given in Table 29. In spite of the fact that refinery capacity in the New York area has been a limiting factor in fuel production, no new refinery capacity has been built in the HRE area for quite some time, nor is any major effort expected in this area. Thus environmental problems relate to bringing existing facilities in conformance with environmental requirements, rather than the siting of new facilities.

Fuel and Energy Transmission: Transmission systems exist for the distribution of both electricity and fuels, namely petroleum products and natural gas. The distribution network for electricity for the New York State portion of the HRE is given in Figure 28. A schematic showing the sources of natural gas and their transmission to distribution companies is shown in Figure 29. The various routes for petroleum products within the state coming from the major suppliers listed in Table 30 are shown in Figures 30 and 31.

Energy Production: A number of different companies service the energy needs of areas adjacent to the HRE. The existing energy production and distribution systems in New Jersey are given in Figure 26. In New York, the major service areas are covered by Brooklyn Union Gas Co. (Brooklyn, New York), Con Edison Co. of New York, Inc. (New York City and the western part of Westchester County), NYS Electric & Gas Corp. (for northeastern Westchester), LI Lighting Co. (LILCO) (covering Nassau and Suffolk Counties), Central Hudson Gas & Electric Co. (covering the mid-Hudson area), and Orange and Rockland Utilities (covering Orange and Rockland Counties and parts of northern New Jersey). Smaller companies also service parts of New York. For instance, on Long Island in 1972 Fisher Island and Lawrence Park were reported as being serviced by privately owned power companies; and Freeport, Greenport, and Rockville Centre were reported as being covered by municipal companies (Federal Power Commission, 1977: 10).

The locations of the electric generation facilities in the HRE are shown in Figure 26. As can be seen from the Figure, many if not all of these facilities occupy waterfront locations. Existing plants in the Public Service Electric and Gas Co. service area which covers most of the land area adjacent to the Hudson-Raritan Estuary in New Jersey are listed in Table 31. The proposed changes in these facilities are given in Table 32. Existing plants in New York State (in the HRE) are listed in Table 33. In New York State the plans to alter existing power plants are shown in Table 34.

The construction of new power plants in the HRE has been blocked primarily by environmental constraints. The mechanism by which power plants receive

approval in the State of New York is through the submission of site plans to the New York State Board on Electric Generating Siting and the Environment. This board issues a Certificate of Environmental Safety and Compatability under Article 8 of the Environmental Conservation Law. The Certificate is considered to embody many of the state environmental requirements with which a power plant would have to comply.

A series of power plant cases in and around the HRE under the jurisdiction of New York State have had a considerable impact on the direction of power generation in the HRE. While these cases or events have not been argued within a planning context, they set the stage for the development of energy facilities in future updates of state energy master plans. One of the major cases in the HRE concerns the construction of a 700,000 kilowatt electric generating plant on a 200 acre site in Travis on Staten Island proposed by the Power Authority of the State of New York. The first submission to the state siting board was made in December, 1974 and it is only recently that after years of hearings and governmental actions at the federal, state and local level, the board recommended approval of the construction of the plant. The board's decision has been challenged by the State Supreme Court's Appelate Division in Brooklyn on the grounds that it did not heed and would violate the more stringent air quality requirements of the City of New York. The government actions to date include endorsements of the project in an Army Corps of Engineers impact statement on December 7, 1981, and a U.S. EPA air quality permit of March 7, 1982. On the other hand the City of New York claims that the plant will exceed its more stringent air quality standards. To meet the City's objections, the Board mandated that the plant treat Arthur Kill water prior to using it for cooling water, install a scrubber to reduce suflur dioxide emissions and an electrostatic precipitator for soot. In spite of these requirements the board mantained that the City's standards were unduly restrictive, and the Court's recent decision put the burden on the Power Authority to demonstrate why the City standards are restrictive (Kihss, 1982).

In another incident located in the HRE's "secondary" area in the Mid-Hudson, the course of energy production was changed dramatically. Once again the issues related to the impact of power plant development on the environment, in this case, the Hudson River's aquatic resources. The settlement agreement which was drawn up as a private agreement among several federal and state environmental agencies, environmental groups and utilities, contained provisions relating to the installation of cooling towers and the preservation of fish in the Hudson River. The utilities agreed to do the following: Con Edison would terminate the Storm King project and donate the land to the Palisades Park Commission and the Village of Cornwall for a park; all future power plants built along the Hudson during the next 25 years (with the exception of those buily by Niagara Mohawk) would include closed cycle cooling systems; the utilities would finance fish studies, construct and operate a hatchery, conduct monitoring programs, and institute facilities to prevent fish entrainment; and water withdrawals would be conducted in such a way as to prevent adverse effects to fish. In return, the utilities would not have to construct closed-cycle cooling systems (cooling towers) at the Bowline, Indian Point and Roseton plants which were initially required either in federal wastewater discharge permits or NRC licenses (Sandler and Schoenbrod, December 10, 1981). The settlement agreement required approval of the cost sharing arrangements by the New York State Public Service Commission, which recommended approval in May 1981. The responsibility for enforcement of the agreement was given to the U.S. District Court for the Southern District of

New York or the Supreme Court of New York County (Settlement Agreement, December 1980: Part O).

Environmental Plans and Associated Land Use Controls for Environmentally Sensitive Areas

The planning and regulation of environmentally sensitive areas has long been recognized as a major vehicle for accomplishing in a comprehensive and integrated way the environmental quality goals articulated in many recent laws. This attention to environmental planning techniques began in a formal way with the development of the environmental impact assessment process when the National Environmental Policy Act of 1969 was passed. New analytical methods were initiated to address these requirements such as the mapping overlay technique popularized by McHarg (1971) and the environmental matrix first developed for water resource planning by Leopold (1971).

The environmental planning process as it developed over the last decade or more consisted of an integration of environmental (e.g., soils, flora and fauna, water resources, geology, air resources) and socioeconomic and land use data bases for the purpose of arriving at either environmentally sensitive land areas and their carrying capacities for development (in the case of spatial mapping techniques) or environmental impacts for a series of actions affecting the environment (in the case of the matrix techniques). This analysis along with cost considerations and public inputs, would then be used as a basis for evaluating alternative development plans. The techniques actually developed range from the simple two dimensional matrices first developed by Leopold to stepped matrices (Sorensen, 1971), decision trees (Dee, et al., 1973), and multiple matrices (Central New York Regional Planning and Development Board, Oct. 1972) all of which attempt to correct various deficiencies in the basic techniques. These techniques fall under a number of different nomenclatures such as land capability analysis, environmental sensitivity analysis and carrying capacity analysis.

While the specification of these techniques in agency guidelines lagged behind the development of their analytical capabilities for a long time (Carter, et al., 1974), the techniques are now widely used and often required at least in the form of performance standards if not comprehensive environmental planning approaches in many public programs ranging from the planning to the regulation of environmentally sensitive lands. An integral part of the environmental planning process is the land use variables and control mechanisms that can be manipulated to achieve environmental objectives. Environmental analysis has adapted environmental data bases and analytical techniques to be specifically responsive to and be able to be coupled with development parameters.

The environmental and associated land use planning processes appear in public programs in two forms: (1) as governmental planning programs for environmentally sensitive lands and (2) as land acquisition programs to protect the environment (often in accordance with a priority system that is the outcome of a formal planning program). The programs that fall under each of these categories are discussed below as they relate to or provide a context for the relevance of environmental planning in the HRE.

## General Governmental Programs for Planning for Environmentally Sensitive Lands

### Federal Strategies:

The federal government does not directly plan for environmentally sensitive lands, but rather conducts a variety of programs that incorporate environmental planning requirements in them for other levels of government to implement. Many of these were listed in Table 1, and were discussed in earlier sections. Some of the environmental planning and related land use requirements of these programs and others not mentioned will be highlighted here specifically.

Environmental and related land use planning has been integrated into areawide waste treatment management planning (208 plans) under P.L. 92-500, coastal management plans under P.L. 92-583, the flood plain mapping and land use control procedures required for insurance under the National Flood Insurance Program, the sole source aquifer designation process for water supply protection under P.L. 93-523, solid waste management plans under P.L. 94-580 and other programs. With the exception of 208 planning which is considerably more detailed than the others, environmental planning requirements are generally included in these planning processes via direct references to the NEPA environmental assessment process or coordination and consistency provisions with other environmental planning processes.

### Multi-State Regional Environmental Planning:

The Tri-State Regional Planning Commission (TSRPC) has been the major public planning agency in the HRE that does planning on an interstate basis. This agency developed the Regional Development Guide, 1977-2000 (TSRPC, March, 1978) which contained an environmental planning element. The guide inventoried and identified critical lands upon which development should be prohibited or limited, defined on a square kilometer grid system in terms of slopes, drainage, soil type, flooding, headwater areas, watersheds, aquifer recharge areas, wetlands, wildlife habitats, vegetative cover, parkland, and historic sites. As a land development policy the plan generally favored the concentration of land development rather than its dispersal.

Aside from those of the Commission, other environmentally related regional plans exist in the HRE. The Regional Plan Association's Mid-Hudson Development Guide also defined environmentally sensitive areas using generally the same kinds of categories as those contained in the Tri-State Guide. Like Tri-State, the Regional Plan Association (RPA) recommended the concentration of development in pre-existing centers rather than the dispersal of development.

### State Environmental Planning:

The state strategies currently existing for managing environmentally sensitive areas that are directly administered by the states are listed in Tables 35 and 36 for New York and New Jersey. Many of these are regulatory and are administered through permits or licenses. These will be discussed in a later section of this report. At the state level, unlike many local areas, the land use controls and environmental regulatory programs are not backed by an overall environmental plan for the state. Some of the environmental plans developed in the early 1970's (e.g., the NYS Department of Environmental Conservation's Environmental Plan for New York State prepared in 1973) were merely policy

statements, rather than geographic area specific or critical area specific guidelines. Within the context of these policy statements or during planning projects mandated by the federal government, states will occasionally establish priorities for environmental areas of concern.

The creation of environmental inventories is a key environmental planning function conducted by state government. In New York, this appears in the form of the "Land Use and Natural Resource" (LUNR) system. The LUNR system consists of an Area Land Use inventory of 51 categories and a Point Land Use inventory of 68 different types, all portrayed at a scale of 1:24,000, coincident with U.S.G.S. 7.5 minute quadrangle maps. The data are graphed from aerial photographs which date from 1967 and are updated periodically. A one square kilometer grid system has been superimposed over the data for computer storage and retrieval (State of New York, Office of Planning Services, June 1974). In New Jersey a similar system has been developed called the "Land Oriented Resource System" (LORDS) administered by the NJDEP Bureau of Geology and Topography.

The major environmental planning efforts initiated by the states occur at substate regional levels independent of the regional environmental plans for coastal zone management and "208" planning mentioned earlier. New Jersey has been more of a leader in this regard, with environmental plans being prepared for the Pinelands, the Hackensack Meadowlands and the Delaware and Raritan Canal areas. The last two regions are contiguous with the Hudson-Raritan Estuary.

The Delaware-Raritan Canal supplies water to some 600,000 people, and is currently managed by the Delaware and Raritan Canal Commission in accordance with the Delaware and Raritan Canal State Park Law of 1974. The Commission is authorized to devise a master plan, which it completed in 1977, and manages public and private projects proposed for certain areas called review zones, where adverse impacts upon the park and its waters are possible. The boundary of the D & R Canal area is shown in Figure 32.

The Hackensack Meadowlands, whose jurisdiction comprising a 36 square mile area within northeastern New Jersey is shown in Figure 33, has developed a complex environmental planning function over the last decade within the context of its zoning ordinance. The Master Plan, zoning map and zoning ordinance was prepared in 1972 (HMDC, Nov. 8, 1972). The zoning ordinance spells out three environmentally sensitive areas: marshland preservation (wetlands), park recreation, and waterfront recreation. In addition, the Open Space Map delineates a number of other environmentally related areas including those mentioned above: marshland preservation areas (wetlands), public parks, open water, waterfront recreation areas, and waterway buffer strips (schools are also included as a category in the map).

Environmental planning in the HMDC proceeds in a number of different ways. First, developers are to adhere to environmental performance standards set up for all zones in the zoning ordinance. Second, the developer of a Specially Planned Area set forth in the Master Plan Zoning Regulations of 1972 (Article 7), must provide environmental information for three distinct planning stages: the General Plan, the Development Plan and the Implementation Plan. Currently going through this process is the Berry's Creek Center. The environmental components of a General Plan (specified in NJAC 19:4-5.8, formally Article 7-301 of the HMDC zoning regulations) include information such as soils maps, water table locations, solid waste locations, etc. The environmental components of a

Development Plan (specified in NJAC 19:4-5.9) give more specific information relative to the proposed development such as the location of riparian lands, plus the environmental impact of the proposed project. Finally, the Implementation Plan (specified in NJAC 19:4-5.10) contains environmental information that is specific to environmental permits and the like necessary to proceed with the project. A third type of environmental planning process is mandated by the Wetlands Order accompanying the master plan (adopted November 8, 1972). The Wetlands Order covers the 3,160 acres of Wetlands (called marshland preservation areas) in the district. It requires an environmental impact assessment for areas within Specially Planned Areas that impact on wetlands.

In New York State, the two areas that have had major environmental plans or studies developed for them are the Adirondack Park Area covered by the Adirondack Park Agency and the Catskills area for which a study was conducted by the Temporary State Commission to Study the Catskills. Both of these lie outside of the HRE.

Local Planning Strategies for Environmentally Sensitive Areas:

Many local powers for managing environmentally sensitive areas originate in state enabling legislation for counties and municipalities. Some of this enabling legislation for New York and New Jersey is given in Table 37 for counties and in Table 38 for municipalities. The extent to which county government has actually initiated environmental plans is shown in Table 39. Most of the efforts are relatively new compared with the length of time that environmental planning has been active as a field of study. Many of the significant municipal strategies appear as regulations rather than plans and are covered under the section on regulatory programs.

Within the HRE, major local environmental planning efforts that stand out are the Ramapo Plan for the Town of Ramapo in Rockland County, NY which received national attention; the environmental plans for several Long Island communities such as Huntington and Islip; and the county level environmental inventories and master plans done by county planning boards often in connection with 208 planning such as the inventory completed by Middlesex County, New Jersey.

One major vehicle for implementing a wide range of environmental activities at the local level, including input into environmental planning processes, is the local environmental commission or council. At the onset of the environmental movement in the late 1960's and early 1970's, state governments found it expeditious to establish local environmental commissions or councils at either the county or municipal levels to provide local input and expertise into the environmental decision-making process. Table 40 summarizes the history of the various statutes in this area in both New York and New Jersey. The existence of these councils and commissions continued through about the mid-1970's when financial problems either abolished them or caused them to be absorbed into local government to a greater extent than they were before fiscal problems emerged (Kundell, 1977:90,94). Some of the county level commissions in those counties within the HRE established in New York State are indicated in Table 41, along with the funding levels by fiscal year during the years that they were most active. As an example of the extensiveness of the council system at the municipal level is Westchester County - those municipalities that have had councils are indicated by an "X" in Table 42.

## Land Acquisition Programs Now or Potentially Used For Environmentally Sensitive Lands

A number of programs exist primarily at the state and federal levels for financing land purchases for conservation, including watershed protection.

State Programs:

The Green Acres program in New Jersey has been funded through several bond issues passed in 1961, 1971, 1974 and 1978. The New Jersey Green Acres Bond Act of 1971 approved by voters in November 1971 (P.L. 1971, Chapter 165) authorized $80 million primarily for buying lands for recreation for urban populations. A second purpose was for acquisition of land of unique ecological value and a third, the purchase of land associated with state projects. This supplemented the $60 million bond issued in 1961 which was for the same purpose of acquiring land by the state or to assist counties and localities to do the same. While the major purpose of this program was for recreation, much of it was automatically linked to watershed protection, especially where recreation is linked to water resources.

Another act which is significant in watershed management in New Jersey is the Water Conservation Bond Act approved by voters in November 1969 (P.L. 1969, Chapter 127). While the authorization of $271 million was primarily to meet the state's share of the construction cost of wastewater treatment facilities, it also authorized $29 million to plan and acquire sites for water supplies. In addition to these isolated bond issues are annual appropriations to state agencies for the purpose of capital recreation improvements, the bulk of which in the past has been for the development of new recreational facilities (NJDEP, 1973:176). The use of the 1969 Bond was extended to some reservoir sites on the Raritan, Hackettstown, Six Mile Run, South River, and Manasquan. The purchase of aquifer recharge land under these state programs has primarily focussed upon Southern New Jersey, in particular the Pinelands. One area, Pigeon Swamp State Park in Middlesex County is the closest area to the HRE acquired under the 1969 state bond program.

The State of New York has been acquiring lands for various purposes since the turn of the century. In the recent past, the Park and Recreation Acquisition Bond Act was the cornerstone of acquisition programs during the 1960's. New York State's Environmental Quality Bond Act of 1972 allocated some $103 million specifically for "preserving, enhancing, restoring and improving the quality of the land" (NYS Parks and Recreation, 1978:20). Land is purchased by the Office of Real Property Services in the following environmentally sensitive land categories: Unique, Tidal, Freshwater, Forest Preserve, Access to Reforestation or Wildlife Management Areas, and stream rights areas. In addition, the Office of Parks and Recreation purchases waterway access areas. It is estimated that the State has added 41,000 acres to its park system since 1960, funded by various appropriations in three referendums (NYS Parks and Recreation, 1978).

Interstate Programs:

Interstate land acquisition programs for recreation and environmental preservation purposes include the financing capabilities of the Palisades Interstate Park Commission which receives its funds primarily from New York and New Jersey state governments, as well as from user fees and rentals of property (NJDEP, 1973:174).

Federal Programs:

The major federal financial programs for land acquisition for park development over the past decade or more have been from Congressional appropriations to two major funds administered in coordination with the states or in some cases through the states: (1) the Land and Water Conservation Fund and (2) the U.S. Department of Housing and Urban Development Open Space Program. The National Park Service also receives appropriations for selected park development, such as the Gateway National Recreation Area.

The Land and Water Conservation Fund began in 1965 to fund planning, development, and acquisition programs for recreation, and required an equal contribution by state and local government. Through 1972, the State of New Jersey received $18 million in federal funds, of which 29% went for the acquisition of 26,109 acres of parkland, fish and wildlife management areas (NJDEP, 1973:219). The recreation planning area in New Jersey most closely associated with the HRE is the Northeast Region, which between 1965 and 1972 received 3% of the federal funds of $111,375 for the acquisition by the State of 48 acres at Skylands (NJDEP, 1973:220). Among the local projects in the Northeast area were three impoundment sites and one dam construction project. Two other regions that are adjacent to the HRE are the Central Corridor (Middlesex County) and the North Shore (Monmouth County). The Central Corridor projects have been concentrated in the Delaware River Basin portion, and projects in the North Shore have been in the Sandy Hook area between 1965-1972.

## REGULATORY PROGRAMS

Regulatory programs that influence the environmental quality of the Hudson-Raritan Estuary cover a wide range of institutional mechanisms including administrative procedures for the issuance of permits or licenses to conduct an activity, legal sanctions for failing to meet certain standards and conditions including fines or imprisonment, and financial incentives such as tax write-offs for the purchase of pollution control equipment. These mechanisms are not mutually exclusive and are often used in combination.

By far the most popular of these mechanisms is the permit or license to conduct an activity, such as construction, transport of materials, or disposal. The permit is usually accompanied by a set of conditions which the permit holder must meet and a compliance schedule which sets forth the timing of compliance. The major limitations of this device for regulation across many of the specific programs discussed below are the manpower requirements to monitor the compliance of permit holders and the creation and application of legally defensible standards which relate permit conditions to environmental quality.

Financial incentives, which are not discussed extensively in this study, primarily include provisions for writing off sales tax or the cost of pollution control equipment from income taxes. The Federal Rapid Tax Amortization Program set the pattern for many other state incentive systems for such equipment. The more sophisticated financial incentives such as emission or effluent taxes have not been employed so far in the areas surrounding the Hudson-Raritan Estuary.

### Federal Regulatory Programs

The federal government has acted as the initiator of many major regulatory programs for environmental protection in operation today. Many of the programs ultimately become delegated to states or localities, with the federal government assuming the role of overseer, developing guidelines and a technical information base. The federal government usually retains powers of oversight and the right to impose sanctions against permit holders not complying with the programs and the administrators that have been delegated the responsibility to manage the programs.

The federal government directly administers only a few water-related regulatory programs. The U.S. Environmental Protection Agency (U.S. EPA) administers the National Pollutant Discharge Elimination under Section 402 of P.L. 92500 as amended by P.L. 95-217 for those states that have not taken over the program. A second permit program administered by the U.S. EPA is Ocean Disposal Permits under the Marine Protection, Research, and Sanctuaries Act (P.L. 92-532). This program has no provisions for delegation to states. A third regulatory program also undelegated and administered by the U.S. EPA is the Spill Prevention Control and Countermeasure (SPCC) program, mentioned earlier in connection with energy planning, which is adminstered via spill control plans rather than permits. The new Federal Emergency Management Agency administers the National Flood Insurance Program (NFIP) under a number of flood protection acts. Though it is primarily a planning program, NFIP has strong direct regulatory implications involving local land use controls. The planning aspects of this program were discussed under "Planning Programs". The U.S. Army

Corps of Engineers issues Dredge and Fill permits under Section 404 of P.L. 92-500 and several other pieces of legislation, with considerable input by the U.S. EPA.

There are a number of other major regulatory programs that are now underway that relate in various ways to programs developed by state government. These federal programs and their state counterparts are summarized in Tables 43 and 44.

A major development in the issuance of federal permits recently occurred in response to President Carter's mandate for regulatory simplification and streamlining. Five of the major environmental permits either issued by the federal government or in some cases delegated to the states by the federal government have been consolidated. These are for (1) the hazardous waste management program under the Resource Conservation and Recovery Act, (2) the Underground Injection Control program under the Safe Drinking Water Act, (3) the National Pollutant Discharge Elimination System, (4) the State Dredge and Fill program ("404") under the Clean Water Act and (5) the Prevention of Significant Deterioration program under the Clean Air Act (45 Federal Register, 33290, May 19, 1980).

Some of the major permit and regulatory programs initiated at the federal level are discussed below as they pertain to the Hudson-Raritan Estuary.

### The National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) is one of the older federal environmental quality programs. It emerged out of the federal Refuse Act Permit Program (RAPP) of the late 1960's and early 1970's, that was originally administered by the U.S. Army Corps of Engineers under the Rivers and Harbors Act of 1899. Section 402(a)(4) of P.L. 92-500 converted all of these older permits to NPDES permits. These were administered initially by the U.S. EPA and gradually have been delegated to the states under Section 402. New York State has been administering the NPDES permits in its state for several years, called the SPDES program, and New Jersey after several years of negotiation with EPA and implementing required changes in its own laws was delegated the program in April 1982. Even with these delegations, EPA still retains certain oversight functions.

The distribution of permit holders by major Standard Industrial Classification (SIC) code is given in Table 45 and the industrial breakdown by county is given in Table 46. This is a partial listing of NPDES permit holders, excluding the "non-municipal/non-industrial" categories, normally administered by state governments under a separate program. This latter category includes commercial, residential, and institutional (e.g., hospitals and schools) wastewater treatment facilities.

A number of complex issues have emerged within the NPDES program during the past decade relating to the relationship between standards-setting and permit issuance, toxic substances, pretreatment, coverage criteria and compliance.

(1) The Standards Issue

In its requirement for a permit for any discharge of pollutants, NPDES is one of the major vehicles for implementing ambient water quality standards established under P.L. 92-500, as amended by P.L. 95-217.

A number of problems have emerged in connection with the NPDES program relating to the application, implementation and integration of various kinds of standards. Before discussing this fully an understanding of the various existing forms of water quality standards is necessary.

Strategies in the form of standards for environmental regulation have taken on a number of different characteristics as governmental programs for pollution control were developed over time. The different types of control strategies can be grouped generally as follows:

a. Control over the location and decision to construct a facility or conduct an activity that results in pollution;

b. Control over the operation of a pollution abatement facility connected with the activity rather than regulation of the activity itself;

c. Control of the waste discharge itself rather than the facilities causing the discharge;

d. Regulation of the components of the environment-land interface, such as land use;

e. Regulation of the ambient environment itself and its desirable use rather than activities affecting it.

Regulation at each of these points involves very different though conceptually interdependent kinds of standards. The first two involve engineering design standards or specifications, the third involves effluent standards, the fourth, a complex set of land capacity or waste generation coefficients keyed to different land use types, and the fifth involves "ambient" standards (Zimmerman, 1980:78-88). The NPDES program primarily involves the third strategy, and hence, depends upon "effluent" standards. The determination of effluent standards, however, relies heavily upon the values assigned to the ambient standards. Also, the review of any given wastewater discharge at least indirectly involves the review of a wastewater treatment facility or the construction and operation of a facility causing the discharge, both of which involve the use of design standards.

A major issue related to standards for the NPDES as well as for every other area of pollution control is the degree of prescription vs. discretion in the application of standards to particular cases. This issue is usually cast in terms of the debate over local/regional or national standards, and has occurred for ambient standards as well as effluent standards in all areas of environmental protection. For the NPDES program this has taken the form of whether or not the writers of a particular permit could adapt technology based national (uniform) effluent standards to a particular discharger either because of economic or local environmental conditions or constraints. Uniformity of standards is considered to have a number of advantages, in particular the easing of the negotiation

processes between the government and a discharger (Energy and Environmental Analysis, Inc., 1975:II-2). The case of Du Pont v. Train, 430 U.S. 112 (1977) decided this issue by requiring formal variances for such discretion (Blumm, 1980:157). The variances allowed as a result of Du Pont v. Train have to be done on a class by class basis rather than on an individual discharger basis. The formal variances that currently have been written into the Clean Water Act of 1977 are for power plants (Sec. 316(a)) and exemptions for municipal wastewater treatment plant discharges from the secondary treatment requirement, for instance, if they discharge through an ocean outfall where a large amount of dilution is probable (Sec. 301(h)). It has been considered likely that more variances will occur as other parts of the Clean Water Act become implemented, such as toxic substances controls (Blumm, 1980:160). If these variances from the national standards do in fact proliferate, justified by local water quality conditions, then it has been suggested that a movement back to standards based on water quality and water use (which would produce regional differences) rather than technology-based standards may be in order (Blumm, 1980:164) assuming all of the problems that have been attributed to this type of strategy in the past (Rogers, 1977).

One of the major difficulties in using national effluent standards is that such standards are not applicable to all situations and do not cover all possible discharges. Where they are used, they may still have to rely on discretionary engineering judgment for combinations of discharges from different waste steams (e.g., combined cooling water and process water or a combination of multiple waste streams from different product lines).

The categories for which various kinds of standards are or will be available for the NPDES are given in Tables 47 through 50. Many of these types of industries are represented in the HRE. The process for determining the applicability of national standards to specific cases was spelled out in recent EPA regulations (43 FR 37133, August 21, 1978), and the authority for setting the limits for such discharges is described in the Clean Water Act of 1977 (33 USC 1251 et seq., Sec. 402(a)(1)). A permit writer can still exercise discretion in deciding which industrial category a given discharge falls into. Also, where a discharger does not fall into any of the prescribed categories, the acceptable limits can be designed by the permit writer.

(2) Control of Toxic Substances

Another major issue related to the NPDES program is the effectiveness of the permit mechanism and its effectiveness in controlling toxic substances. Prior to the 1977 Clean Water Act, the NPDES program and its predecessor, the Refuse Act Permit Program (RAPP), primarily concentrated on conventional pollutants, though the permit applications often listed all of the characteristics of the wastewater discharges including toxic substances. While the 1972 Act did not require toxic standards to be developed and implemented through the NPDES system, this never came to fruition for a number of reasons related to the complexity of setting toxic standards and industry resistance (Blumm, 1980: 154; Hall, 1977). The Clean Water Act, along with the Toxic Substances Control Act (TSCA) and RCRA have intensified the emphasis on toxic standards. Recent regulations specifically allow a permit to be modified when a toxic substance is first used or manufactured, and was not reported in a previous permit application (45 Federal Register (May 19, 1980) 33290, Section 122.15(a)(5)(ix)). All new dischargers are required to report the use of toxic substances in their discharges (Section

122.53(d)). The implementation of toxic substance controls for these discharges will occur through technology based standards for NPDES discharges, pretreatment standards for discharges through publicly-owned waste treatment plants (where toxic substances prove to be incompatible with plant operation), and specific standards for new sources, rather than having a general class of widely applicable toxic effluent standards (Blumm, 1980:154).

The known discharges of toxic substances in the HRE covered specifically under the NPDES are listed for industrial sources by SIC code in Table 51. This is only one route by which toxics enter waterways, and a more detailed discussion of the toxics problem by type of subtances is given in a subsequent section.

(3) Pretreatment

Pretreatment programs have been a major method of dealing with the toxic substances problem. Ultimately, dischargers of domestic wastewater that receive wastes from industry will be required to develop and inventory a control program for the more toxic components of industrial wastes. Industry will ultimately be required to pretreat some of the more toxic waste components prior to their entry into these domestic wastewater treatment systems in order to avoid their accumulation in the final residuals of the process where they are harder to dispose of. These regulations first appeared in 43 Federal Register (June 26, 1978): 27736, as a means of implementing Section 307 of P.L. 92-500, as amended by P.L. 95-217.

The responsibility for implementing federal pretreatment requirements according to the regulations is clearly the responsibility of the states and localities. States are required to develop pretreatment programs that include model ordinances and programs, and localities are required to implement ordinances that mandate pretreatment by municipal wastewater treatment systems. Extensive guidance documents were produced by the U.S. EPA for the development of these programs (U.S. EPA, 1977). The requirement is that any sewage treatment plant that has a design flow greater than 5 MGD (or otherwise needs a pretreatment program) must have such a program developed prior to July 1, 1983 by the locality in which it is located. The federal construction grants program for wastewater treatment systems has been adapted to this and provides grants of up to 75% for the development of pretreatment programs. The State of New Jersey currently has a grant to develop a statewide pretreatment program, and a similar grant to New York State has been considered. At the present time, several grants are being negotiated or have been granted in the Hudson-Raritan Estuary area for local area pretreatment programs in New York City, Westchester, Nassau, and Rockland counties, Poughkeepsie and Newburgh. The development of standards for pretreatment will proceed much the same as the development of effluent standards. The success of the pretreatment program will ultimately depend on the tradeoffs that are made by individual discharges in deciding to construct independent, on-site waste treatment facilities as opposed to using a municipal system, and how the various regulations implicitly or explicitly move industry in one direction or another. Clearly, the individual discharger acting "rationally" and in accordance with purely economic considerations would choose the cheapest option or the one that would delay costs into the future when regulations might change. The allowance of industrial dischargers into municipal systems while pretreatment programs are being developed and before major wastewater treatment facilities are built, buys time for those dischargers, and allows them to discharge with little or no pretreatment of the wastes. In the short run this is

cheaper than filing an NPDES permit for an independent wastewater discharge. When pretreatment standards more stringent than the NPDES requirements are developed, the individual discharger would opt for the NPDES permit as an independent discharger (assuming that the initial capital costs of an independent treatment system averaged over time would not be much greater than a pretreatment system). The federal government will have to decide in designing these programs and their standards, which is environmentally more desirable: having wastes centralized within municipal waste treatment systems and allowing state and local governments to be the primary enforcers, or having wastes decentralized among individual dischargers. There are ways of determining the optimal solution for water quality through models. At the present time this kind of a tradeoff analysis is not being performed as a criterion for designing pretreatment standards relative to NPDES effluent standards.

(4) Screening and Classifying of Dischargers for Inclusion in the Program

A number of formal and informal criteria have emerged for including various dischargers in the NPDES and applying different performance standards to them. The first decision made in applying standards is whether the source of the wastewater discharge is new or old. New sources receive more stringent performance standards. There are currently no new sources in New York or New Jersey, though there are some potential ones related to offshore drilling. For older sources, performance standards have been established for the industries listed in Tables 53 and 54.

A second decision point is whether the discharger is "major" or "minor". Major dischargers are given more careful tracking and monitoring. For municipal wastewater treatment systems the threshold for a major discharger is in terms of flow (50,000 GPD or more). For industrial dischargers the threshold is not as clear. It has never been defined in regulations, and is discretionary based upon the type of industry, the type of wastewater (e.g., cooling water vs. process water), and other factors. Best engineering judgment is ultimately used to define major industrial dischargers. Lists of major dischargers appear from time to time.

(5) Timing of Compliance

Compliance relevant to the NPDES program refers primarily to the meeting of deadlines and conditions for effluent quality standards or limitations or for the implementation of a wastewater treatment system. Schedules for compliance with various municipal and industrial effluent limitations were set in the FWPCAA of 1972 and revised in the CWA of 1977. A number of these target dates have already passed.

There is some disagreement about just how many NPDES permit holders were not in compliance with the deadlines. A recent GAO report noted for the Region II Office of the U.S. EPA, which covers New York and New Jersey and other areas that:

> Region II records indicated that EPA underestimated the number of permittees failing to meet the deadline. In Region II our analysis revealed that 206 major industrial permittees did not meet the July 1, 1977 deadline. This figure is significantly greater than the 64 noncompliers reported by Region II. EPA officials stated that Region

II was the only region to miscalculate the number of noncompliers (GAO, 1978:7).

Table 52 gives the compliance status of NPDES holders in areas around the HRE for a recent, representative time period. The table gives compliance with respect to the submission of various reports and records in accordance with their permit conditions, and compliance with effluent limits set within the permit. The numbers are not very large compared with the total number of permit holders, but many things influence the degree to which non-compliance is reported as indicated by the GAO report. Compliance has to a large extent been complicated by continual movement or revisions in complicance schedules in amendments to water quality legislation.

## Dredge and Fill Permits

Under authority granted to it by P.L. 92-500, as amended by the Clean Water Act of 1977, the Army Corps of Engineers issues permits for dredging and filling and related disposal activities in navigable waterways, including wetlands. This authority under Section 404 of the Act gives the Corps pervasive powers over development activity throughout the HRE, and it is the Corps dredge and fill permit that has often been a determining factor in the implementation of certain major developments. For example, the dredge and fill permit was a major factor in the decision whether or not to proceed with Westway. It was recently determined through a combination of the NEPA and permit processes that the issue of fish spawning had not adequately been considered in the granting of that permit. A dredge and fill permit will be required for the proposed PASNY power plant in Travis, Staten Island should other obstacles be dealt with. Dredge and fill permits were required for Battery Park City and the North River Sewage Treatment plant. Permits will be required for any dredging operations for toxic substance problems in the estuary, such as the mercury in Berry's Creek from the Ventron Corp., PCBs in the Hudson from G.E. discharges, and cadmium in Foundry Cover from the Marathon Battery Co. Thus, the permit potentially has a pervasive impact on the direction of activities in and adjacent to the HRE. At the same time as it conducts regulatory activities with respect to dredging and filling, the Corps also conducts such operations as dredging of the federal channel and any other areas, as a service to both government and private parties.

Section 404 contains provisions for the issuance of general permits for activities of a similar nature which will cumulatively have a minimal impact on the environment (Sec. 404 (e)(1), and provisions for delegation of the program to states that have analogous permit programs for dredge and fill activities.

## Regulation of Toxic and Hazardous Substances

The area that will be experiencing the most growth in regulatory activity in the next decade is toxic substances. Table 53 summarizes the major pieces of federal legislation that regulate toxic substances. The states also have a number of programs in this area.

The extensiveness of the toxic substances problem in the HRE is only beginning to be understood. Tables 54 through 58 summarize the data on the presence of toxic substances in the areas around the HRE that appeared in the

"208" plans. Table 59 tabulates the known NPDES dischargers of selected toxic substances by SIC code, since these are considered one source of toxic substances in the HRE.

State Regulatory Programs

The major state environmental permit-related regulatory programs administered directly by State government that affect the Hudson-Raritan Estuary are listed in Table 60 along with the volume of permits processed in both states annually between 1977 and 1979. The table also gives the date that each program was first initiated. The legislative references for some of these regulatory programs were presented in Tables 37 & 38 along with the planning statutes. For a more complete list see Zimmerman (1980:34-36). The New Jersey counties in the HRE account for a sizable portion of the statewide total of permits issued for three of the five major types of permits covered under the NJ 90-Day Act (see Table 61). The exceptions, Wetlands and CAFRA permits, are not applicable to areas surrounding the HRE.

Tables 62 through 65 give the totals for the major environmental permits issued by New York State between 1977 and 1980 for the counties that impact the HRE area. Once again these counties account for a sizable portion of the statewide totals for most permits. Suffolk County alone tends to account for anywhere from one-fifth to one-third of the total PDES (non-industrial/non-municipal permits issued in the region. Non-industrial/non-municipal permits cover commercial residential and institutional facilities. By definition of the jurisdiction of the Act the counties in the HRE account for practically all of the Tidal Wetlands permits. Solid waste transport and disposal facility permits tend to be underrepresented, because changes in the level of activity of those programs did not occur until 1979.

The administration of environmental permits has some unique characteristics that affect the complexity of the process. In the past many of the permits were administered by bureaus that were separate from one another - that is, only in a few instances did the same bureau review more than one permit. Tables 66 and 67 indicate the location of permitting functions within environmental agencies in New York and New Jersey. Comparing the 1979 and 1980 DEP organizations in NJ shows an attempt to consolidate the administration of permitting. To a large extent the fragmentation still occurs, though, as discussed below the states have now begun to implement a variety of mechanisms for permit integration and coordination not necessarily reflected in the organization charts.

Without going into a lengthy description of the permits themselves, a number of issue areas can be highlighted where the administration of permits has been problemmatic.

1. The CAFRA Permits and the set of Riparian and Wetlands permits form two mutually exclusive groups. This occurs because the north-south boundaries of these permits were set politically rather than based on environmental need. Legislators in the north successfully resisted the extension of CAFRA north of Raritan Bay. CAFRA permits have requirements that are distinctly different from Wetlands and Riparian (Waterfront Development) permits. The CAFRA permit system is much more complex than the other two and the size threshold for facilities above which a permit is required differs for CAFRA and Wetlands and Riparian permits. As a result of this, the coastline can receive an uneven coverage with

respect to coastal development controls. This potential problem is considerably lessened by two factors. First, before this past year, the three permits which were issued within the same division were issued by different offices within that division. Thus different standards could be applied under the three programs, even where the standards were approximately the same. Over the past year the Division of Marine Services was changed to the Division of Coastal Resources, and the bureaus within it were given functional breakdowns rather than a breakdown by type of permit. All three permits are now issued within the Bureau of Coastal Projects Review, which is further subdivided georgraphically. It is more likely under this system that a consistant evaluation of coastal permits will occur. Second, the Division of Coastal Resources was given the responsibility of preparing the New Jersey Coastal Zone Management Program. As part of that program, the State was mandated to develop an integrated management program for the coastal zone. It is within that context that the reorganization of the Division of Coastal Resources occurred. Given an integrated planning base, the potential exists for integrated decision-making in project reviews.

2. In the case of large projects requiring multiple permits, the permit reviews used to be undertaken separately by different offices. This often resulted in a lengthy time period for review of all permits, especially where the issuance of one permit was conditioned upon the issuance of another. Second, it often resulted in contradictory decisions on permits. Third, reviews of the same information were often repeated, and the redundance did not provide checks and balances in the system.

As a partial answer to this, both New York and New Jersey instituted a number of permit steamlining and coordinating procedures (for an extensive discussion of this see Zimmerman (1980)). One such mechanism was a shortening of the overall review period for permit processing by public agencies. In New Jersey the 90-Day Act required that five major permits be processed within a set time frame of 90 days. In New York, the Uniform Procedures Act requires a similar set time period for review of more than a dozen permit types. Another mechanism was to integrate environmental evaluations. The State Environmental Quality Review Act (SEQRA) in New York State attempted to coordinate at least the environmental data bases and reviews associated with permits and unify them under one evaluation process. Table 68 gives the magnitude of the effort under SEQRA for HRE counties. New York City's version of SEQRA - the City Environmental Review Act (CEQR) and its impact on project review and regulation is discussed under local controls. New Jersey also has an environmental review process mandated by Executive Order, but its applicability is limited to state projects above a certain size (measured in dollars). Thus, its role in permit coordination is somewhat limited.

While in theory these mechanisms were designed to lead to regulatory simplification, and did in fact shorten review periods, the streamlining has been criticized for the following reasons: (1) The analysis for some permits with a number of extremely complex environmental analyses associated with them has been weakened; (2) The streamlining took place without an associated redeployment of manpower and resources for the development of an environmental data base to speed the reviews; (3) The clocks for the 90-day periods start at different times for different permits, though both New York and New Jersey have instituted clearinghouses to prevent this from happening; and (4) In their haste to keep to the time schedule, permit processors may be rejecting applicants rather than negotiating with them as used to be the case. In fact, to many people, permits

were looked at as a negotiation process and few were ever denied (see Table 69). Unless the applicant voluntarily agrees to extend the period the time limit changes.

The states of New York and New Jersey also have tried a variety of the other permit coordination mechanisms listed in Table 70. For instance, three Protection of Waters permits (Part 608) in New York State - stream encroachment, dredge and fill, and dams and docks - now use the same application form. Several permits hold joint hearings such as PDES and Wetlands permits in New York State. Cross referencing to other permits is used extensively, where an applicant for one permit must list other permits for which he is applying. New Jersey has instituted a master permit information form for multi-permit projects which acts as a check list and coordination device. Table 71 gives an account of those projects that went through the master permit information procedure. The procedure only unifies the application procedure, and the different permits are still issued separately. Table 71 tabulates those projects that went through the master permit procedure in the counties adjoining the HRE in New Jersey over a four year period. These numbers are small relative to the total number of permits issued. The number is also small relative to the total number of building permits issued (shown in Table 72) during any given year, much less for a four year period. What is also clear from the table is that larger projects appear to take advantage of the system more than smaller projects. As the procedure becomes better known it may become more widespread. One unique consolidation mechanism recently employed in New Jersey is the use of a general permit for similar activities. This has been used for Waterfront Development permits. As of June 1981 certain waterfront projects i.e., involving only minor construction, maintenance and reconstruction of certain waterfront structures need not obtain specific waterfront development permits since they come under a general permit issued by the State of New Jersey (NJDEP, "Notice of general Waterfront Development Permit Issuance", Trenton, N.J.: June 8, 1981). This general permit is analogous to those issued by the U.S. Army Corps of Engineers' Philadelphia District for certain construction activities in navigable waters.

In spite of all of these efforts the types of permits continue to grow in number. New programs, such as underground injection, sole source aquifer protection, and non-point source controls are beginning to suggest new permit programs. The existing structure of permits and their purposes needs to be reassessed in a comprehensive framework. Techniques such as permit sequencing, using permits with very high volumes or often associated with other permits as "pivotal permits", as well as designing new development permits to integrate the needs of several permits should be investigated. Through successive reorganizations of state government departments responsible for environmental permits, it has been shown that the same bureaus tend to persist processing the same permits for as long as fifteen years (Zimmerman, 1980; 1981). A functional reorganization rather than structural reorganization is needed at this time. Some integration is beginning to occur as described above, however, it does not seem to keep up with the development of new permits.

3. The permit form of regulation is basically an effective mechanism for tracking actual or potential sources of environmental problems. It is, however, a tremendous drain on manpower and information resources of government. This results in poor monitoring and follow-up, and the reliance upon information from permit applicants. The manpower problem within some bureaus is reflected in the growing backlog of unprocessed permits, expecially in areas not covered by the

streamlining provisions. The "projects pending" category for water diversion permits in New Jersey was 1,160 in 1977, 1,381 in 1978 and 1,435 in 1979, indicating an increasing backlog. During that period the number of new applications did not increase, also verifying the increasing backlog. The ratio of approvals to new projects remained about constant - between 85-89% (Personal Communication, NJDEP, Trenton, N.J., 1981).

Local Regulatory Programs

A wide range of options exist for regulation of environmental protection at the local level. A typology of the more popular programs is presented in Table 73. These programs are generally initiated by local government at the county or municipal level through state enabling legislation or the general police powers of local government. They are primarily related to land use controls and public health concerns. Many of the more recent regulations were suggested as a way of implementing non-point source controls for the 208 planning process. New York and New Jersey both have provisions for hiring environmental conservation officers to enforce the ordinances when necessary. Unfortunately, the extent to which these ordinances are actually used by local governments in the areas surrounding the HRE area is not well known, and few inventories exist. Those that do exist were collected as part of the "208" planning process, and are given in Tables 74 through 76 for Westchester County and New York City. Two surveys currently exist for the New Jersey portion of the HRE area (Office of Business Advocacy, N.J. Department of Labor and Industry, 1979; Zimmerman, 1980: Chapter V), however, the responses to these surveys do not give a complete picture of the ordinances in existence in every municipality and county that borders the HRE. The data that does exist is summarized in Table 78. An inventory of local ordinances in towns in Nassau and Suffolk counties is shown in Table 77. A map of management authority with respect to animal wastes considered during the "208" process to be an important aspect of the quality of runoff is shown in Figures 34-36.

New York City is one of the only localities in the HRE that has (1) adopted its own version of the federal and state environmental impact assessment requirements as a type of local environmental ordinance, and (2) integrated these requirements into an ongoing project review process in conformance with the City's zoning ordinance. The system also has the capacity to evaluate projects for their conformance with the City's coastal managment plan. The system is necessitated by the potential for multi-agency involvement in the project review process involving the City Planning Commission (CPC), various city agencies, issuing permits, community boards, borough boards, the Board of Estimate and the Board of Standards and Appeals. The Uniform Land Use Review Process (ULURP) has been developed for a wide range of activities and types of projects. ULURP requires the submission of applications for precertification to the city Planning Commission, followed by submission, certification and hearings where appropriate before community and borough boards. In parallel with this process is the submission of a Project Data Statement (PDS) describing in summary form the anticipated environmental impacts of the proposed facility, which is reviewed jointly by the City Planning Commission and the NYC Department of Environmental Protection. The PDS can be the basis for a decision on project approval or can be followed by a more detailed environmental impact statement.

Another important area in which management by local government is significant for environmental protection is in land maintenance activities, listed in the typology in Table 75. Some of the more significant land

maintenance activities performed in the counties and selected municipalities surrounding the HRE in New York and New Jersey are summarized in Table 79, along with the names of the agencies performing the functions. An analysis of the performance of these activities and their significance for water quality in the HRE has been discussed elsewhere (Zimmerman, 1979). Land maintenance activities can be both operational and regulatory. For instance, while ordinances exist for private property owners to keep litter off of their sidewalks and gutters in urban areas, the same public agencies that oversee these regulations often conduct street sweeping activities for public properties. Thus, in a sense they both regulate private sector activities and self-regulate their own performance of these activities.

Local zoning, a power that has been granted to local government through state enabling legislation, is a powerful land use control that can be and has been used for the purpose of preserving environmentally sensitive lands.

The use of zoning in the preservation of waterfront areas has been explored through the use of a number of innovative techniques. Some of the general ones that have been suggested include (U.S. Dept. of Commerce, NOAA, 1980:29):

> "-designating a special waterfront planning area and recognizing it as such in the city or town master plan,
> -adopting a waterfront zone as part of the existing zoning ordinance, and
> -developing criteria and performance standards that pertain to waterfront."

The more specific types of ordinances available are listed in Table 80. This NOAA study points out the importance of justifying or substantiating zoning with a plan. This point has often been made by environmental planners over the last decade, i.e., where special environmental planning zones have been backed by an environmental master plan they stand a better chance of being upheld in court cases. This factor became particularly acute in the use of environmental planning mechanisms for growth control. In spite of the importance of the environmental plan as a back-up for zoning, municipalities have been slow to incorporate environmental goals and objectives into their zoning ordinances.

The zoning of waterfront land is potentially important to the future of the Estuary. Regional agencies are beginning to take a strong stand on the direction of waterfront zoning. For instance, the Waterfront Redevelopment Workshops held by the Port Authority of New York and New Jersey in 1979, drew the following conclusion related to zoning in areas adjacent to the Hudson-Raritan Estuary area:

> "The need for a review of existing zoning regulations governing the use of waterfront properties was cited as crucial. Current zoning is inconsistent for both present uses and future trends. Zoning regulations should reflect the sufficiency of present marine cargo facilities. The regulations should prepare for 'the changes in industrial/manufacturing uses and the need to encourage more residential, recreational, and commercial uses' such as, for example, a 'proper' allocation of space for the potential growth of the fishing industry'" (Port Authority, 1979:67).

Taken as a whole, the zoning done by each municipality that borders the Estuary influences the future direction of the waterfront to the extent that the ordinances are upheld in granting building permits.

Table 81 lists the existing zoning for waterfront uses that are incorporated into the zoning ordinances of the municipalities immediately adjacent to the Hudson-Raritan Estuary. A few recent innovations have occurred in the zoning to protect waterfront and environmentally sensitive areas adjacent to or influencing the Hudson-Raritan Estuary, but for the most part existing zoning is somewhat antiquated and reflects the older uses of the waterfront, namely manufacturing and shipping.

Examples of some of the more innovative approaches to zoning by waterfront municipalities are given for Hoboken in Table 82 and West New York in Table 83. Many of the more innovative approaches listed in Table 80 still have not been used in the Hudson-Raritan Estuary, and still remain to be explored in the future. Many of the municipalities that are immediately adjacent to or impact the Hudson-Raritan Estuary vary in the extent to which they have incorporated environmental considerations which would potentially affect the Estuary into their ordinances. Table 84 lists, for instance, the dates that many of the zoning ordinances in Westchester County were adopted and whether or not they were about to be revised in 1977. Many of the ordinances date back thirty years or more, and undoubtedly do not reflect current environmental considerations. Many of the ordinances (even recent ones) do not contain general performance standards (one area in which environmental considerations would appear).

The ineffectiveness of zoning codes as a means of restricting activities in conflict with uses of the Estuary that rely upon its quality is illustrated by the zoning of waterfront uses in Elizabeth, New Jersey, recently the site of a fire in which illegally dumped toxic substances were involved. The City's entire waterfront along the Arthur Kill and Newark Bay is zoned for medium industrial use. The permitted uses in such a zone (according to the zoning ordinance) include various storage, distribution and trucking activities in addition to the traditional manufacturing activities. The lack of specification of just what storage means is one of the factors that failed to prevent the Chemical Control facility fire in the spring of 1980. The zoning ordinance does not specify what materials can and cannot be stored. This would be up to the fire code, the health code and state regulations. While the manufacturing zone is subject to performance standards (Code of the City of Elizabeth, "Land and Development Controls," (1/1/80): Part 40-122), the standards do not specify particular toxic substances other than radioactive ones (which the Chemical Control site also had stored in drums). Thus, unless the zoning ordinance is made more specific either in terms of the performance standards or its description of permitted uses, it will be useless against problems such as toxic substances. One factor that aggrevates this is the procedure used to issue building permits. These permits are issued only when facilities are first constructed or modified or when there is a change in the use of a property from one zoned category to another. In the case of the Chemical Control site there was only an increase in the intensity of its use as a storage site, which did not alter the site's use. This was accompanied by a change in ownership, at least on paper. Thus, zoning once again cannot be used against existing non-conforming uses that had their current location before the performance standards and/or the zones were set up.

The zoning ordinance of the City of Elizabeth has many more restrictions for the floodplain (which the Chemical Control site is on), as a result of its participation in the National Flood Insurance Program. The ordinance specifically states that no dumping of industrial wastes, solid or liquid, or storage or disposal of pesticides, hazardous wastes, etc. in the floodway is allowed. The same prohibition exists for the floodway fringe, an area adjacent to the floodplain, except in the floodway fringe, hazardous wastes are not prohibited (Part 40-150). The date of the effective floodplain map in the City of Elizabeth was December 1, 1978 (though the City entered the regular floodplain program May 7, 1971). The Chemical Control site was probably there longer, or at least a similar use was there before, so that the storage activities did not require a new building permit and certificate of occupancy, which would have made local floodplain regulations applicable to it.

While the above illustration was just for the City of Elizabeth, it typifies the situation in many municipalities along the Hudson-Raritan Estuary where the waterfronts are zoned for heavy or medium industry. Other examples can be found in the cities of Linden and Bayonne.

In summary, a wide range of environmental controls are implementable at the local level in the HRE. Little is known about the consistency with which these controls are used, their effectiveness and relationship to controls at other levels of government. The traditional land use control mechanism of local government - the zoning ordinance - is effective as an environmental control device when it is combined with either a detailed environmental master plan or an environmental impact assessment process.

## CONCLUSION

Public policy pertaining to the Hudson-Raritan Estuary (HRE) has resulted in a series of plans and regulations related to environmental quality. Many of these were an outgrowth of the environmental movement of the late 1960's and early 1970's. A cross-sectional view of many of these programs as they were applied to complex urban-industrial and estuarine areas such as the HRE highlights the successes and failures of these multi-faceted public endeavors in simultaneously protecting the environment and maintaining the viability of an important economic resource.

Many of the programs as they emerged over the 1970's were conceptualized as linkages between previous programs and the future direction of environmental planning and regulation or as linkages across programs at any given point in time. The extent to which these linkages actually occurred varied considerably with interest, professional orientation, persuasive power, and resources allocated to the programs. Positive or negative outcomes of program integration or program reinforcement have appeared in the following areas: (1) Legislative consistency requirements appeared frequently in individual pieces of legislation as references to preceding legislation; (2) Generally consistent land development philosophies emerged among various levels of government consistent on a regional scale with environmental programs; (3) Managerial arrangements occurred though sporadically, and not necessarily by design, where the same agency would prepare a variety of plans providing natural integration of planning philosophy, resources and information through the administrative process; (4) Conceptual interrelationships among planning programs occurred since some plans formed natural subsets of one another: Level B, "208" and "201" planning are examples of such a conceptual interrelationship; (5) Regulatory simplification through consolidation and streamlining of requirements, such as hearings and application procedures for permits and licenses, provided an integration of these programs, though integrative mechanisms by themselves did not result in a reduction in the number of permits or in the number of units of government administering them; (6) Forums or other formal mechanisms could have resolved disputes and conflicting priorities among programs, but were never successfully implemented in the region; (7) Resources for implementation of plans and regulatory programs were perceived of as falling short or not tied to the outputs of the programs.

Each of these dimensions is described more fully below in the context of the specific planning and regulatory programs developed for the HRE.

### Legislative Consistency Requirements

Requirements for coordination and consistency of plans, regulations and other programs prepared for the same geographic area are directly stated in many pieces of federal environmental legislation. The Toxic Substance Control Act clearly states that its regulations take over where other legislation stops. The Resource Conservation and Recovery Act (RCRA) contains an integration provision to avoid duplication with five other federal environmental acts, namely CAA, FWPCAA, FIFRA, SDWA, and the MPRSA (33 U.S.C. 1251, et seq., Section 1006(b). Furthermore,according to state guidelines for solid waste management plans, regional state solid waste management plans are to coordinate with regional planning (Section 4002(a)(3)), and should consider general environmental impacts

and water resource protection (Section 4002(c)(1)). The Clean Air Water Act requires that the areawide waste treatment management planning process and the "208" plans produced under it must be consistent with wastewater facility or "201" plans (Section 208(b)(1)(a) and 208 (b)(2) and "303" or state plans (Section 208(b)(4)(A)). Priorities for basin planning ("209" plans) must be consistent with designations under "208" planning (Section 209(a)).

Regulatory provisions are often required to be consistent with planning provisions. The Clean Water Act requires NPDES permits to be in line with "208" and "201" plan recommendations, and "208" plans have to be consistent with "404" or dredge and fill permits.

Regulations further refine coordination and consistency requirements. For instance, "208" regulations require that "208" plans "...be consistent with Executive Orders for floodplain management (E.O. 11988) and wetlands protection (E.O. 11990), published agency policy and procedures for protection of environmentally sensitive areas such as floodplains and agricultural lands..." (44 Federal Register 30032 (May 23, 1979), Part 35.1521-3(d)(2)). Regulations for Urban Water Resources Plans under the U.S. Army Corps of Engineers' Urban Studies Program provide for the following: The "Joint Agreement for Interagency Coordination of Areawide Waste Treatment Management Planning Assistance to State and Local Government Between the Environmental Protection Agency and the Department of the Army" (1975) (40 Federal Register 51152. Appendix A) authorizes the Corps under P.L. 92-500 to provide consulting and technical assistance to designated "208" planning agencies.

State laws, regulations, and guidelines often reinforce federal consistency requirements. For instance, a New Jersey law provides that no permit can be issued by the NJDEP that is in conflict with a certified "208" plan (NJSA 58:11A-10). In New Jersey P.L. 1977, Chapter 327 requires solid waste management districts to include sewage sludge and septic tank waste disposal, normally considered under "201" plans, in solid waste management plans. On February 8, 1979 NJDEP prepared guidelines to coordinate the two planning processes. The guidelines leave the actual wastewater treatment and disposal facility planning, design and construction to "201" planning agencies. "201" agencies must show proof that comments of solid waste management district were solicited and reviewed in their plans as a prerequisite for DEP's approval. Solid waste management districts have to adopt disposal guidelines at least as stringent as those set forth in a "201" plan. In the interim, prior to the actual development of the disposal facilities by the "201" agencies in New Jersey, the Solid Waste Managment Districts have to include plans for the disposal of wastes generated by wastewater treatment processes. Coordination between solid waste and "208" planning is also provided for in state legislation. Solid waste management districts are required to consult and coordinate with all regional agencies (including "208" agencies) and all "county and municipal agencies concerned with environmental planning, water pollution control .." (NJDEP, Guidelines for the Development and Formulation of District Solid Waste Management Plans (August 1977): p. 8). Coordination can be in the form of representation of these groups on a technical advisory council to the districts.

In the course of implementing planning programs, "Memoranda of Understanding" signed between state or federal agencies also reinforce consistency requirements. The Memorandum of Understanding signed between New Jersey's Department of Environmental Protection and Department of Energy

requires coordination of coastal permit reviews for energy facilities; in particular, the CAFRA, Wetlands and Waterfront Deverlopments permits. The Memordandum states:

> "The DOE has coextensive jurisdiction with DEP over permit applications on the siting of any energy facility in the State, including the coastal zone. The DEP must solicit the views of DOE prior to making a decision ..." (NJDEP, Memorandum of Understanding with NJDOE, August 22, 1978).

Conflicts are referred for resolution to the Energy Facility Review Board (NJSA 52: 27F-13(c)).

The planning documents themselves often contain integration provisions. The State of New Jersey's Energy Master Plan envisions the coordination between energy and solid waste planning as follows:

> "The Department of Energy should have primary responsibility for the promotion and development of resource recovery and source separation projects, including the resolution of institutional barriers and the development of financing mechanisms. The Department of Environmental Protection should retain its designation as lead agency for solid waste management under the Resource Conservation and Recovery Act (RCRA) and should continue to coordinate and supervise all planning. Both Departments should develop the State Comprehensive Plan required under P.L. 94-580 (RCRA). The role of the Board of Public Utilities should be to assure that a rate structure is established which encourages the development of resource recovery and source separation programs." (NJDOE, 1978: 43).

In spite of the efforts of legislators and administrators to ensure consistency among plans, problems of coordination do emerge, particularly on an interstate basis. An example of this that occurred in the HRE was in the coordination among adjacent "208" planning areas sharing the waters of the Arthur Kill in common. The "208" areas were New York City and Middlesex County. In the U.S. EPA's approval letter for the Middlesex County, New Jersey "208" plan, the absence of any attempt to deal with violations of water quality standards in the Arthur Kill was emphasized. The letter states:

> "The plan does not devote any effort to assessing the water quality situation in the Arthur Kill or its tributaries. Rather, the plan defers to the New York City "208" study on this issue. In regard to the problem of dissolved oxygen levels in the tidal waters of the Arthur Kill-Raritan Bay complex, this deference is acceptable. However, the aspects of toxics and tributary management in this area are beyond the scope of the New York Study and belong within the purview of the MCBCF. This issue should be taken up by MCBCF early

in the continuing planning phase." (Letter, April 9, 1979): Eckhardt Beck, U.S. EPA Region II Regional Administrator to Commissioner Daniel O'Hern, NJ DEP, p. 5).

The New York City "208" study likewise addressed very few of the problems of the Arthur Kill in the developmment of its plan except in a general way. For instance, while the toxics problem in the Kill was recognized from sampling data, the solutions to the problem were a toxic substances inventory, and an emphasis on the industrial pretreatment program to deal with toxics going to wastewater treatment plants. The heavy emphasis of the plan on wastewater treatment eligible for "201" funding left out the problem of direct industrial descharges under the NPDES program, except to recognize they are there. The key toxic substances identified as being present in the Arthur Kill, namely, PCB, oil and heavy metals, were not addressed by the plan (NYC DEP, WQMP, 1979: Figure 7.1), and were considered to be unresolved problems. Toxic pollutants to the Arthur Kill via tributaries were not identified either (NYC DEP, WQMP, 1979: Table 3.9). Since the Interstate Sanitation Commission (the only agency in the HRE with jurisdiction over interstate waters) did not play a large role in "208" planning, it could not resolve this problem.

Similarly, coordination between the Westchester County "208" and the New York City "208" appears lacking in a couple of instances. The U.S. EPA, Region II comments on the Westchester "208" Plan note that New York City made recommendations about Westchester dischargers, but Westchester did not respond to these in the "208" Plan.

Consistencies in Land and Waterfront Development Philosophies

A consistent theme that occurs throughout many recent land use and environmental plans is the need to concentrate activities rather than disperse them. The New York State Environmental Plan of 1972 prepared by the Office of Planning Services identifies the dispersal of population as an area of concern. The New Jersey State Development Guide Plan prepared under Section 701 of the Housing and Community Development Act by the Department of Community Affairs cites in its land use element the desirability of concentrating development in areas already having in-place the necessary infrastructure. The Mid-Hudson Development Guide prepared by the Regional Plan Association recommends concentrating development around seven preexisting urbanized areas rather than dispersing it. Similarly, the Tri-State Regional Planning Commission's Regional Development Guide comes to this same conclusion. Other plans have direct and indirect references to this theme. The "Long Island Coastal Management Plan" recommends that in order to minimize the need for dredging and hence its adverse effects on marine resources, the deep draft channels that are necessary for industrial/commercial purposes should be concentrated in a few port areas (LIRPB, 1979:192). Such a concentration of navigation channels would also imply a concentration of land-based activity as well using the channels. The "Hudson River Valley Coastal Management Plan" also emphasizes the need for concentrated industrial development (NYS DOS, 1979:III-8).

In the area of waterfront development, while controversies persist over whether to use various waterfront sites for commerce, industry, transportation, residential development, or recreation, several governmental agencies have been advocating a common access plan for waterfront areas regardless of its ultimate

use. The concept of an esplanade, or a continuous walkway adjacent to the waterfront, has been advocated by New York City's Department of Ports and Terminals and the Hudson River Waterfront Study, Planning and Development Commission (1979) set up by the State of New Jersey.

Managerial Consistency

A number of planning and regulatory programs were conducted by the same agencies and hence, the potential existed for integration of future plans and regulations. Most of the integration occurred between "208" planning and coastal management planning. On Long Island the Nassau-Suffolk Regional Planning Board conducted both of these planning efforts for its region; in New York City the Department of City Planning had a major input into the "208" plan for the City (though the NYC DEP has an equal role) and produced the coastal management plan as well. In northeastern New Jersey, the State DEP conducted two "208" plans covering most of the northeastern counties bordering the HRE (with the exception of Middlesex County), completed the coastal management plan as well, and conducted many of the permit programs relevant to the implementation of the plans. New Jersey's "208" planning and solid waste management planning often coincided administratively. In Middlesex County, New Jersey and Westchester County, New York the county planning departments conducted both "208" and solid waste management plans. Such managerial consistency tended to enhance the coordinated development of data bases. Many county planning departments were able to develop natural resource inventories for a variety of programs, including "208", coastal management, solid waste management, and some "201" plans or their environmental assessments.

Conceptual Interrelationships Among Planning Programs

Many water resource management plans were conceived of as being hierarchically arranged. Ideally, Level B or "209" plans were to set broad policies for every aspect of water resources for a fairly large geographic area; "208" plans were to narrow these concerns to a specific region, focussing on water quality problems and those aspects of water resources impacting on water quality; and "201" or facility plans were to provide the major structural solutions for the broader plans.

Perhaps the closest conceptual relationships occurs between the "208" program and "201" or facility plans for wastewater treatment plants. The coordination between the two programs is required at a number of different points. The "208" plans are to provide population and economic projections and a broad environmental context for facility design, and "201" plans are to design service areas and wastewater treatment processes consistent with "208" goals. The integration is by no means a static one: as a result of the facility planning process the "208" plan can be substantially modified. There are a few examples of the integration of "201" and "208" plans. On the basis of the Westchester County "208 Plan", the U.S. EPA disapproved the Yorktown Heights facility expansion, opting instead for upgrading only (U.S. EPA, August 6, 1980:6). The U.S. EPA also cited the needs of the "201" planning process in requesting Westchester to substantiate its projection of population migration from the south to the north in the "208" Plan (U.S. EPA, August 6, 1980: 6). In New York City the output of the "208" planning process has been used as the basis of the continuing debate on the level of wastewater treatment required for New York City wastewater treatment plants.

## Regulatory Simplification

As a result of a move in the late 1970's to reduce government paperwork and the expense of the complex regulatory process that had emerged over the decade as a result of a profusion of environmental laws, many states and federal agencies introduced procedures to streamline regulatory processes. Reforms in the environmental assessment process under NEPA resulted in the reduction in the number of pages in federal environmental impact statements. Procedures for five federal permits have been consolidated, namely the Hazardous Waste Management Program under the Resource Conservation and Recovery Act (RCRA), The Underground Injection Control program under the Safe Drinking Water Act (SDWA), the National Pollutant Discharge Elimination System, the State Dredge or Fill programs under the Clean Water Act (CWA), and the Prevention of Significant Deterioration program under the Clean Air Act (CAA) (40 CFR Parts 122-125 (May 19, 1980). The 90-Day Act in New Jersey and the Uniform Procedures Act in New York State both provided for a finite review period for selected environmental permits. Analyses of both of these programs showed the review periods had in fact been reduced, though the extent to which these savings were cancelled out by an increase in the number of resubmitted applications is unknown. Both states in implementing their permit procedures did institute joint application processing and held joint hearings for different permits and environmental assessments (where appropriate) for the same project, and introduced joint procedures at other decision points.

What is ultimately needed is to supplant these joint procedures with a comprehensive overhaul of many of the permit systems. Such changes would include the design of a "pivotal" permit using a frequently used permit issued in association with others or permit sequencing techniques (Zimmerman, 1980).

## Regional Forums for Conflict Resolution

At the present time the only formal mechanism for resolving disagreements and inconsistencies among plans and between plans and regulatory programs is through the individual plan review process in which such inconsistencies could be raised on an operational basis or through public hearings held on individual plans. There are very few forums for bringing about consistency among the plans in a formal way. Agencies consistently rely upon the occasional task force or regional meeting to resolve differences, but no formal decision-making process obligates any of the members of such efforts to conform to their outcomes. Ultimately many of the plans fall within the jurisdication of one federal agency, the U.S. EPA regional office, and it is within their review process that inconsistencies could be worked out. The U.S. EPA did in fact host or sponsor a couple of regional forums for coordination under the "208" program, but these meetings did not institutionalize the forum as an integrative mechanism for regional environmental planning or regulation.

## Financial Resources for Plan Implementation

The environmental planning processes initially funded by government depend for their implementation upon subsequent funding from government. The source of funds for such implementation were generally not specified prior to the planning process. Some plans like "208" designed financial components to identify potential sources of funds, but did not address the availability of the funds. A continuing planning process for "208" was ultimately allocated about $150 million nationwide, but this was only sufficient to fund demonstration studies.

"201" planning, once considered the backbone of the nation's water pollution control program, has had its funds drastically reduced to the point where even plants that had been in the design stage are not assured of funding for construction. Coastal management plans similarly relied upon follow-up government funding for implementation, which has been hard to obtain. Thus, in many ways the financial arrangements for implementation have become the weakest link in the planning process.

In summary, the juxtapostion of a wide range of environmental planning and regulatory programs has had a mixed record over the past decade. On the positive side is the frequent reference in new legislation to programs that have been developed in the past and the conceptual integration of planning and regulatory programs in legislation, and administrative attempts to integrate plans within one agency and consolidate and streamline administrative procedures for regulations. On the negative side is the continuation of a long tradition of not ensuring the funding of or regional forums for implementation processes even those that have received the endorsements and certifications of every level of government.

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FIGURES

# HUDSON - RARITAN ESTUARY PROJECT primary area

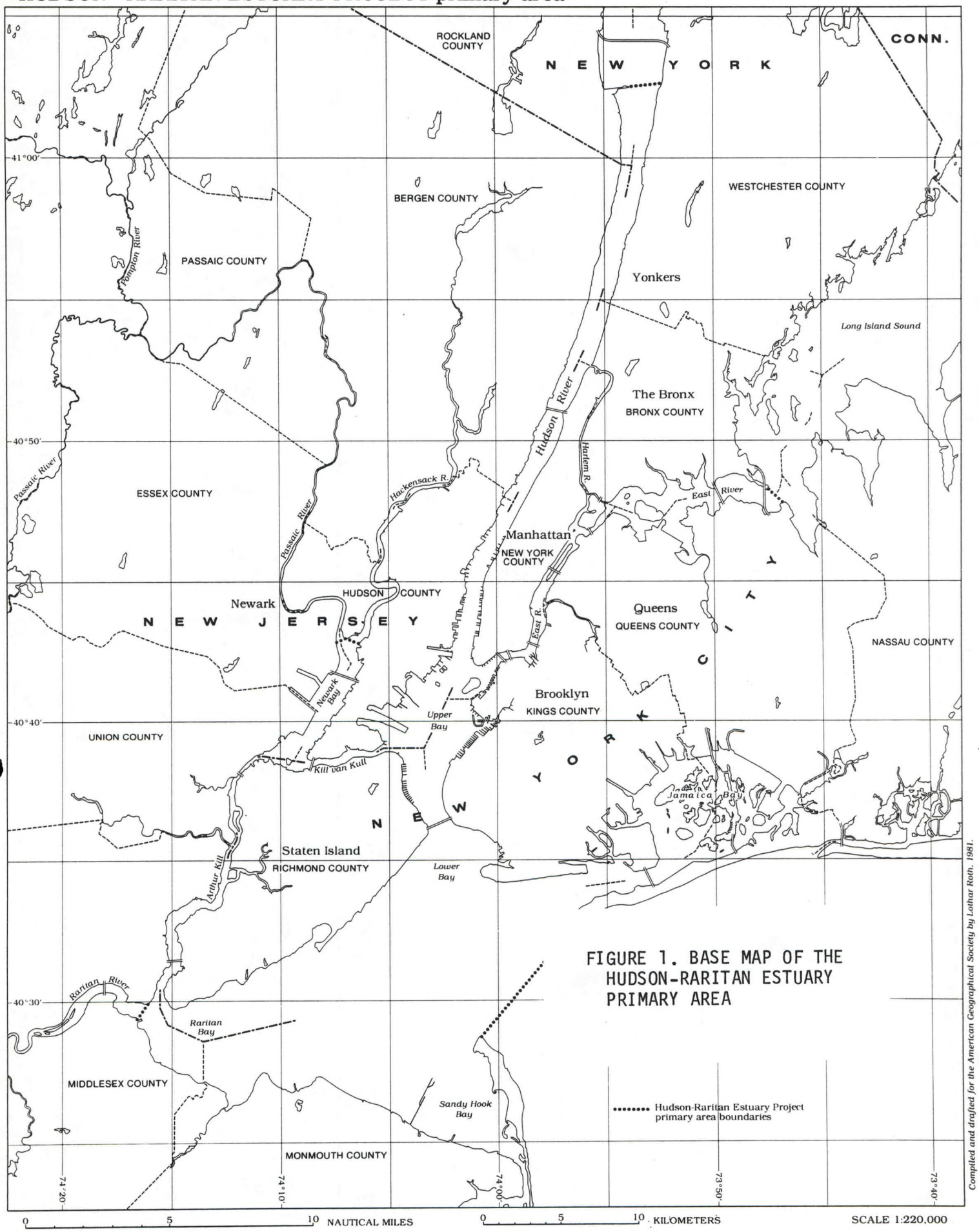



FIGURE 1. BASE MAP OF THE HUDSON-RARITAN ESTUARY PRIMARY AREA

*Compiled and drafted for the American Geographical Society by Lothar Roth. 1981.*

## HUDSON - RARITAN ESTUARY PROJECT primary and secondary areas

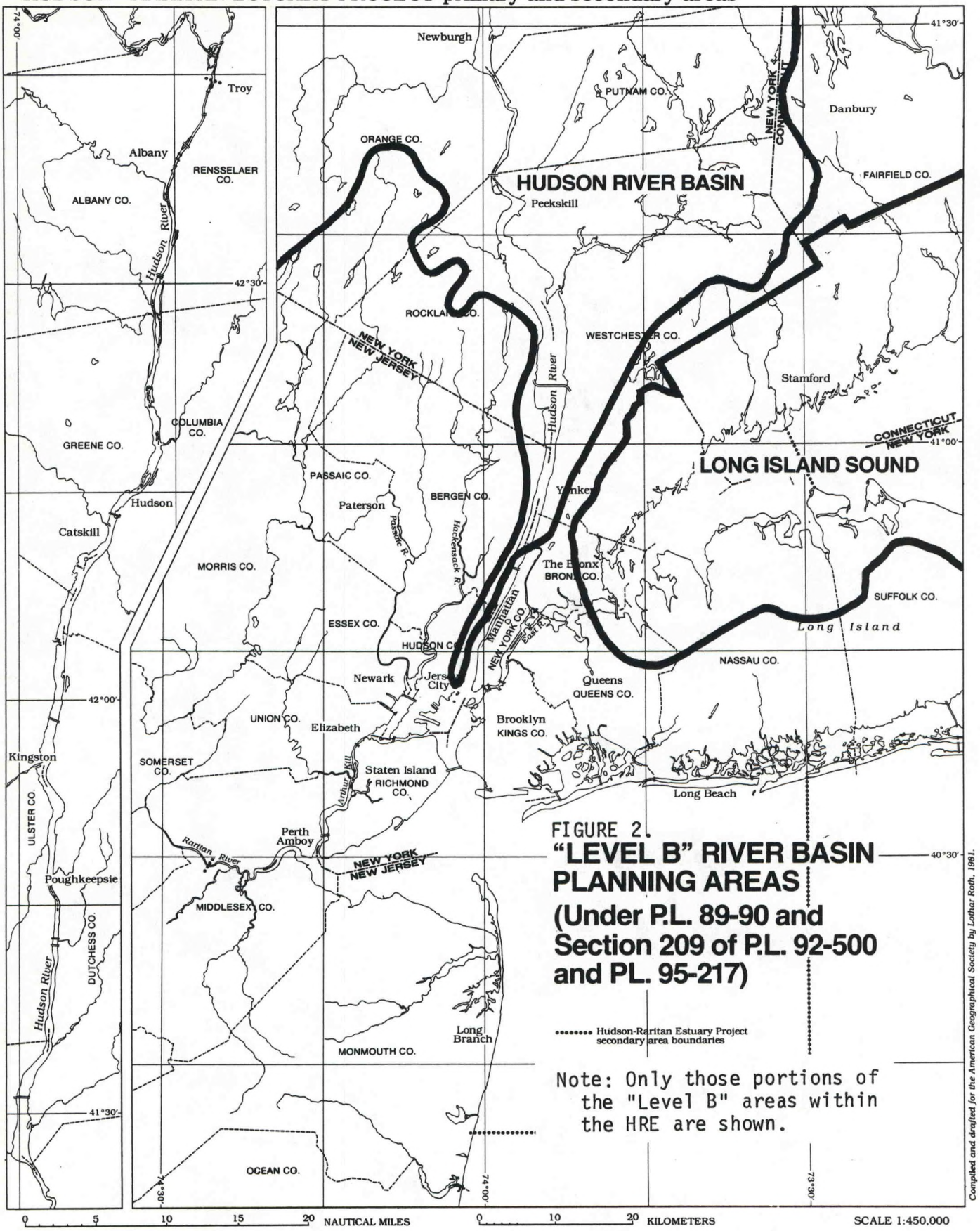



FIGURE 2.

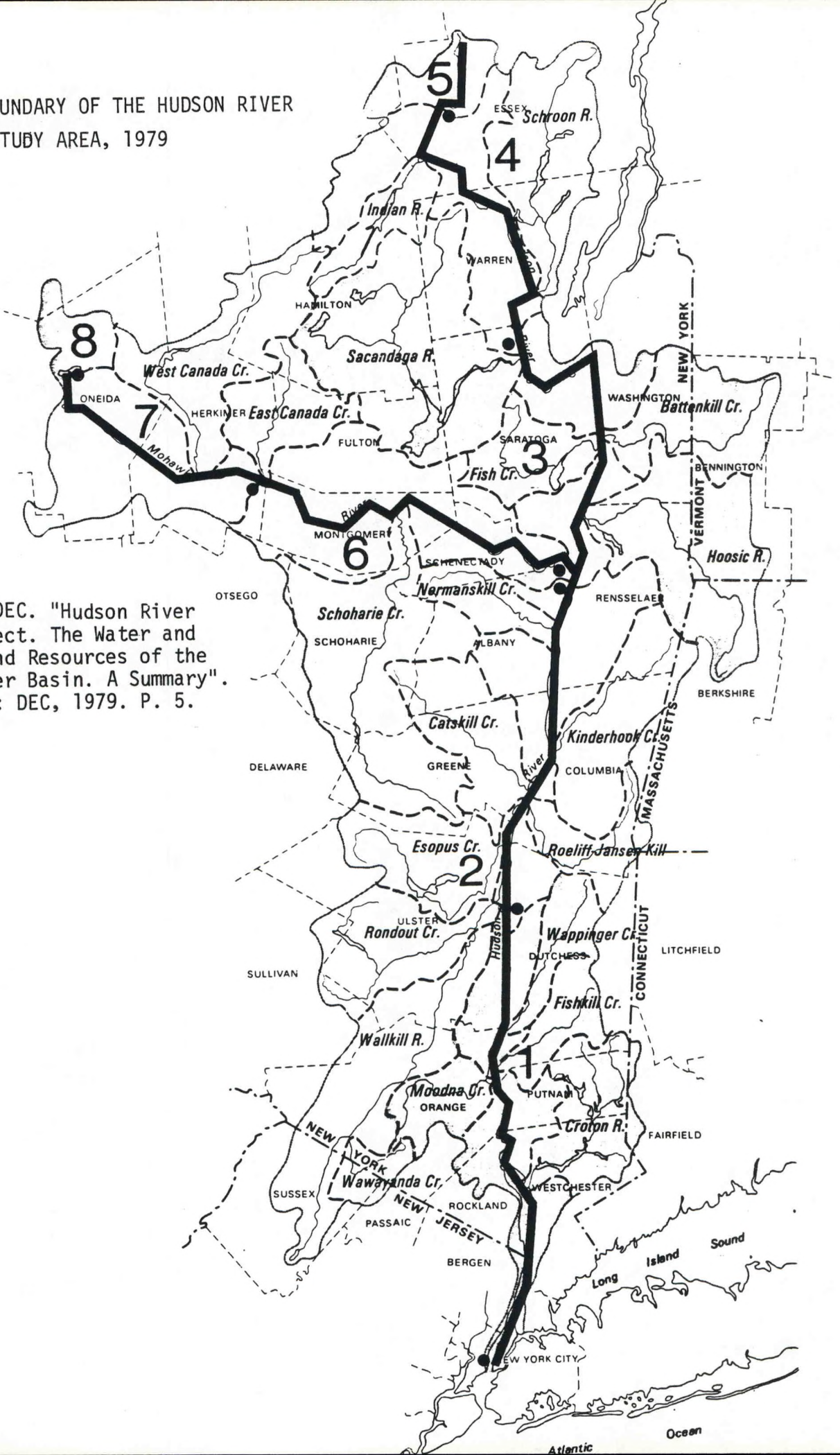
**"LEVEL B" RIVER BASIN PLANNING AREAS (Under P.L. 89-90 and Section 209 of P.L. 92-500 and PL. 95-217)**

•••••••• Hudson-Raritan Estuary Project secondary area boundaries

Note: Only those portions of the "Level B" areas within the HRE are shown.

*Compiled and drafted for the American Geographical Society by Lothar Roth, 1981.*

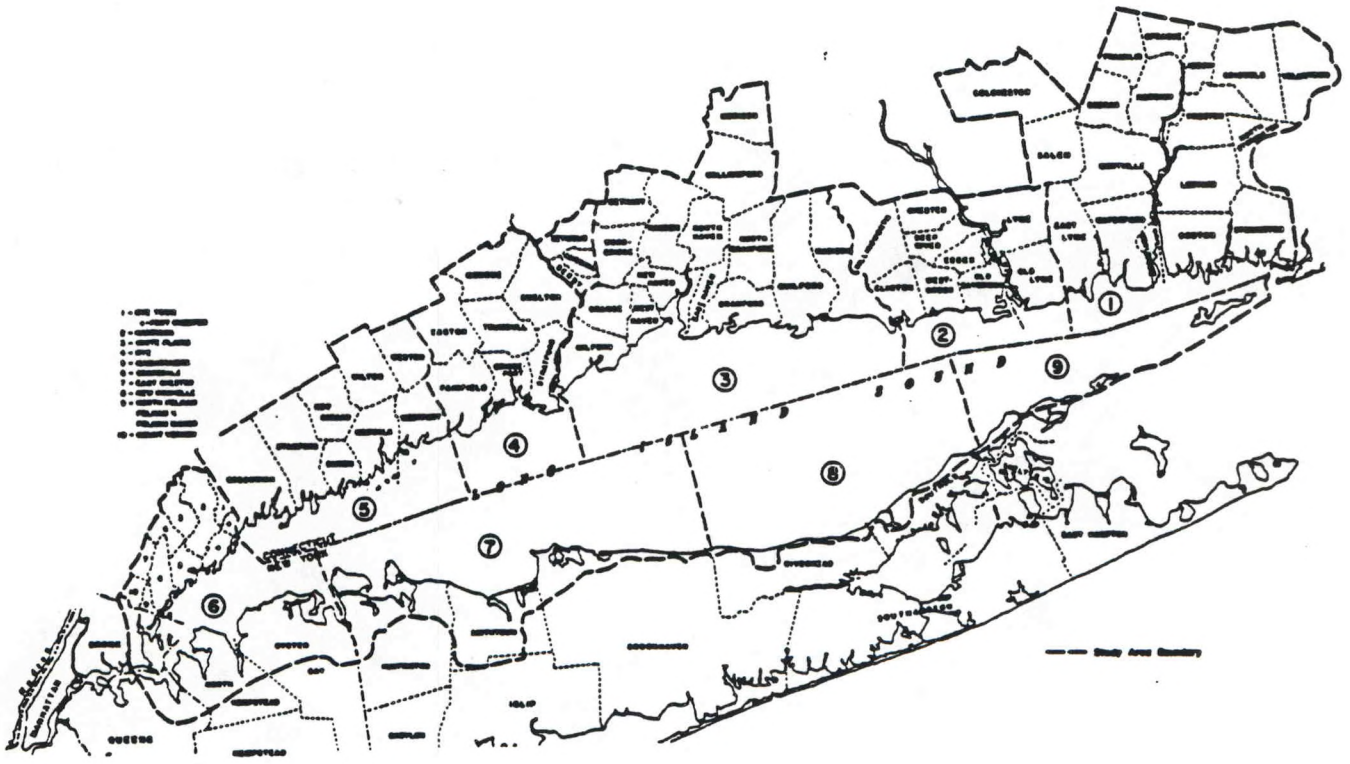
FIGURE 3. BOUNDARY OF THE HUDSON RIVER "LEVEL B" STUDY AREA, 1979




Source: NYS DEC. "Hudson River Basin Project. The Water and Related Land Resources of the Hudson River Basin. A Summary". Albany, NY: DEC, 1979. P. 5.

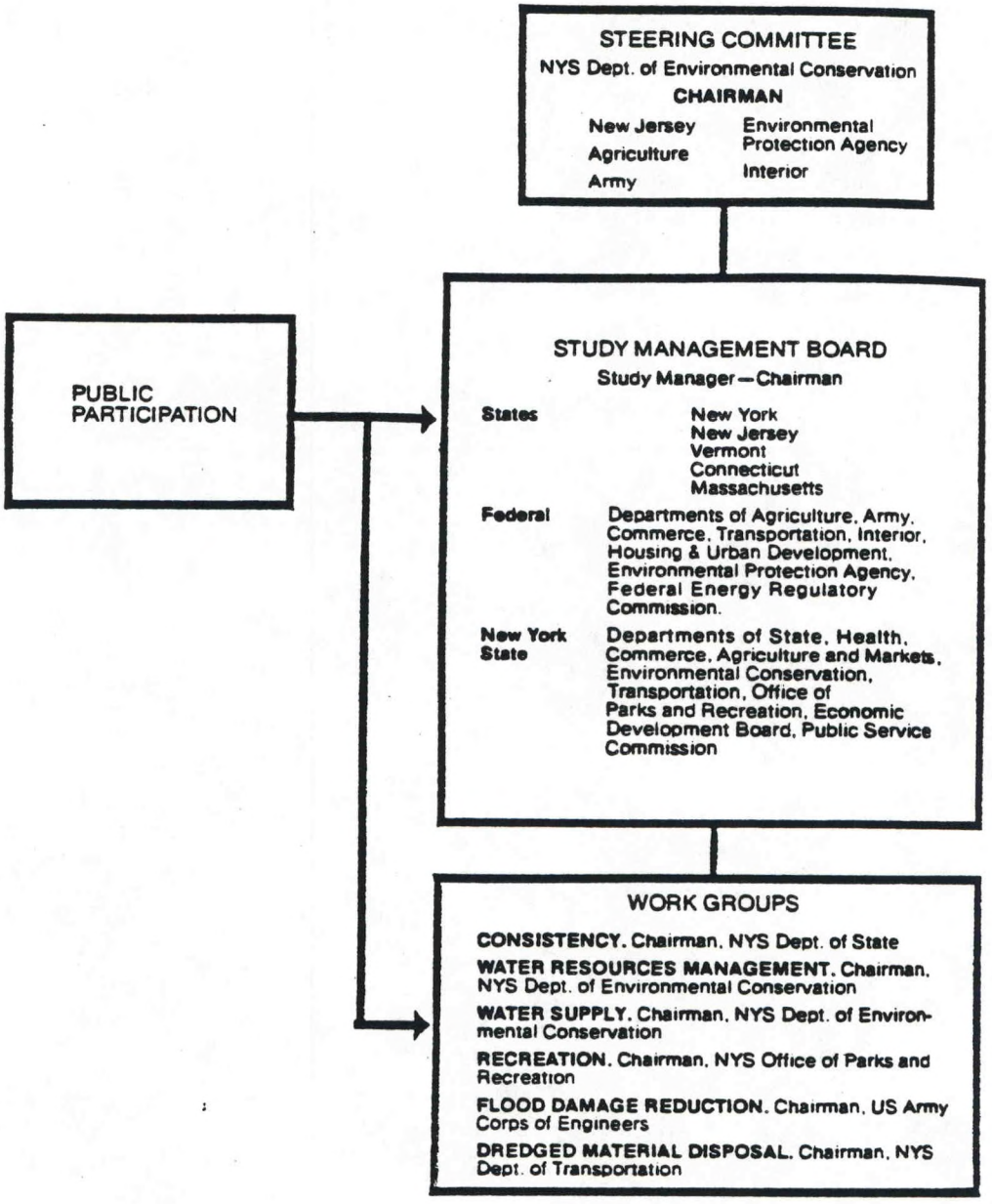
FIGURE 4

BOUNDARY OF THE LONG ISLAND SOUND LEVEL B STUDY AREA, 1975



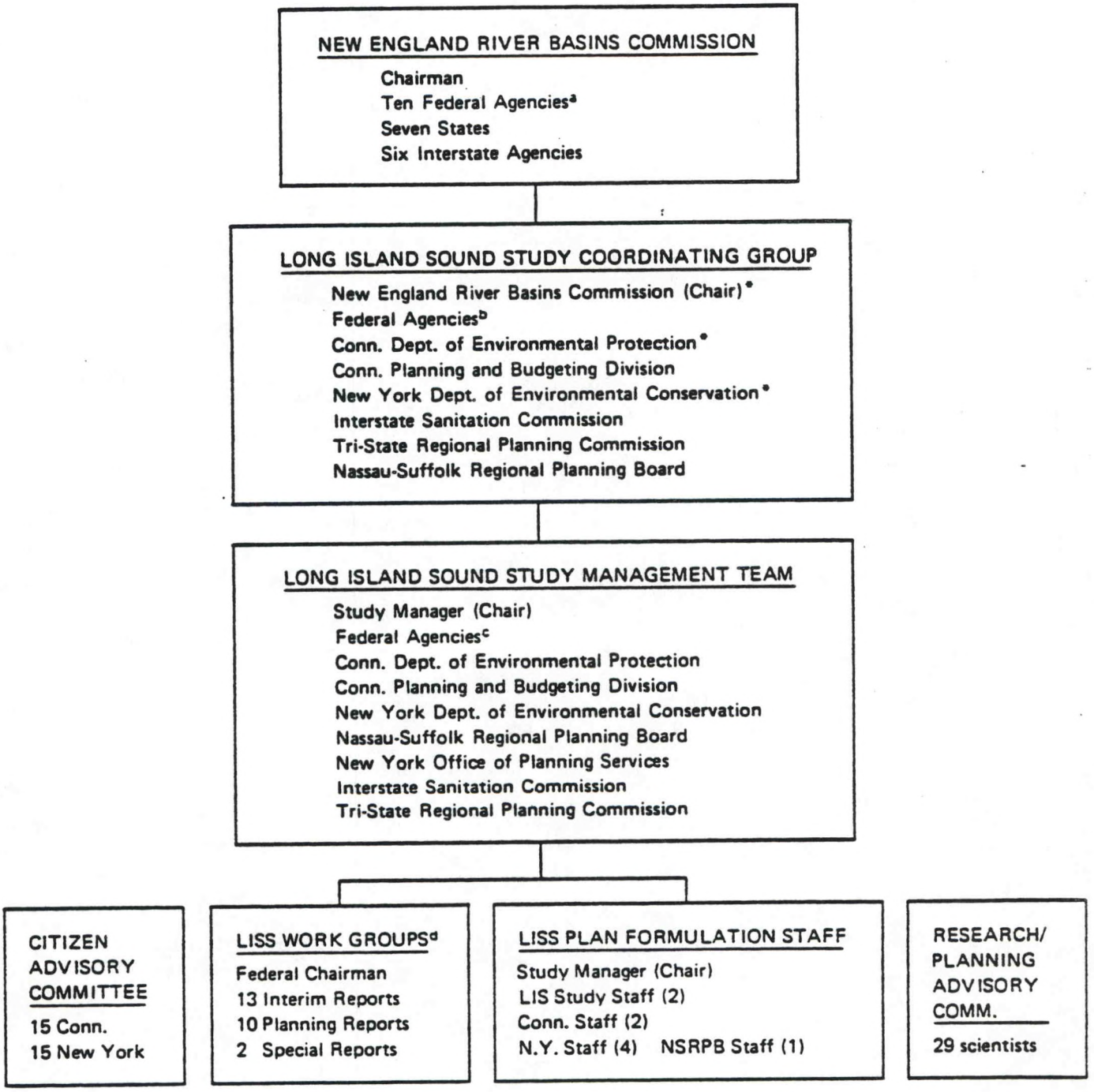

Source: New England River Basins Commission. "People and the Sound. Supplement." Boston, Mass.: NERBC, July 1975. P. 6.

FIGURE 5. MANAGEMENT ORGANIZATION FOR THE HUDSON RIVER BASIN STUDY




Source: New York State Department of Environmental Conservation. "Water and Related Land Resources of the Hudson River Basin". Albany, NY: NYSDEC, September 1979. P. 70.

FIGURE 6. MANAGEMENT ORGANIZATION FOR THE LONG ISLAND SOUND STUDY




a. Agriculture, Army, AEC, Commerce, EPA, FPC, HEW, HUD, Interior & Transportation.
b. Same as Note (a), less HEW.
c. Same as Note (a), less AEC and HEW.
d. The LISS work groups with their chair and member agencies are listed in Table 1.4-2.

*NERBC, Conn. DEP, and N.Y. DEC constituted a Steering Committee which met between meetings of the Coordinating Group.

Source: New England River Basins Commission. "People and the Sound. Supplement." Boston, Mass.: NERBC, July 1975. P. 18.

## HUDSON - RARITAN ESTUARY PROJECT primary area

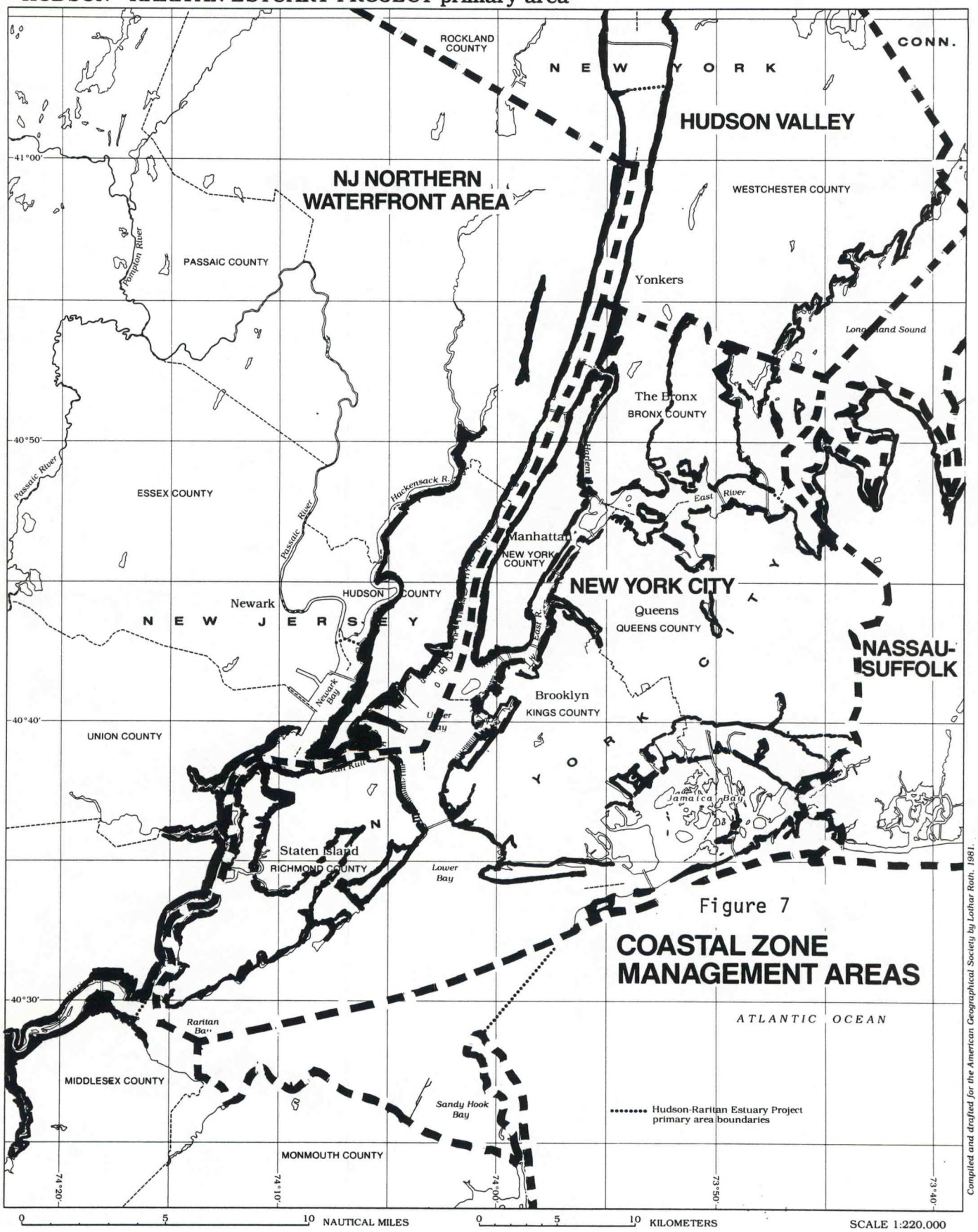



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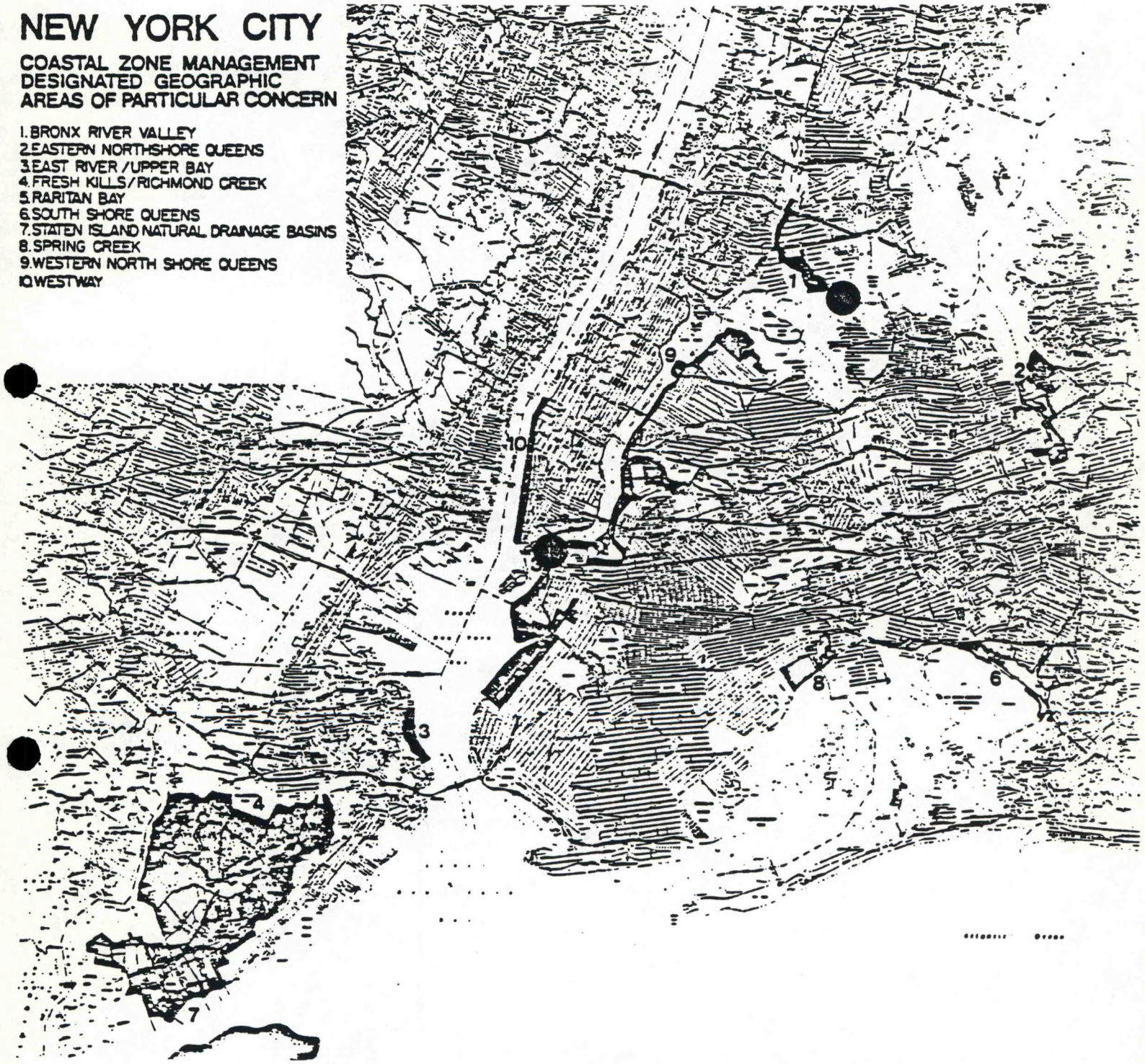
FIGURE 8. COASTAL ZONE MANAGEMENT IN NEW YORK CITY: Geographic Areas of Particular Concern and Shorefront Access Areas: 1979




Note: Geographic Areas of Particular Concern are no longer identified as such in the coastal management plan.
Shorefront Access Study areas are indicated by a dot. These are Soundview and Fulton Ferry.

Source: City of New York. Department of City Planning. "Coastal Zone Management". New York, NY: NYC DCP, September 1979. P. 4-82.

## HUDSON - RARITAN ESTUARY PROJECT primary and secondary areas

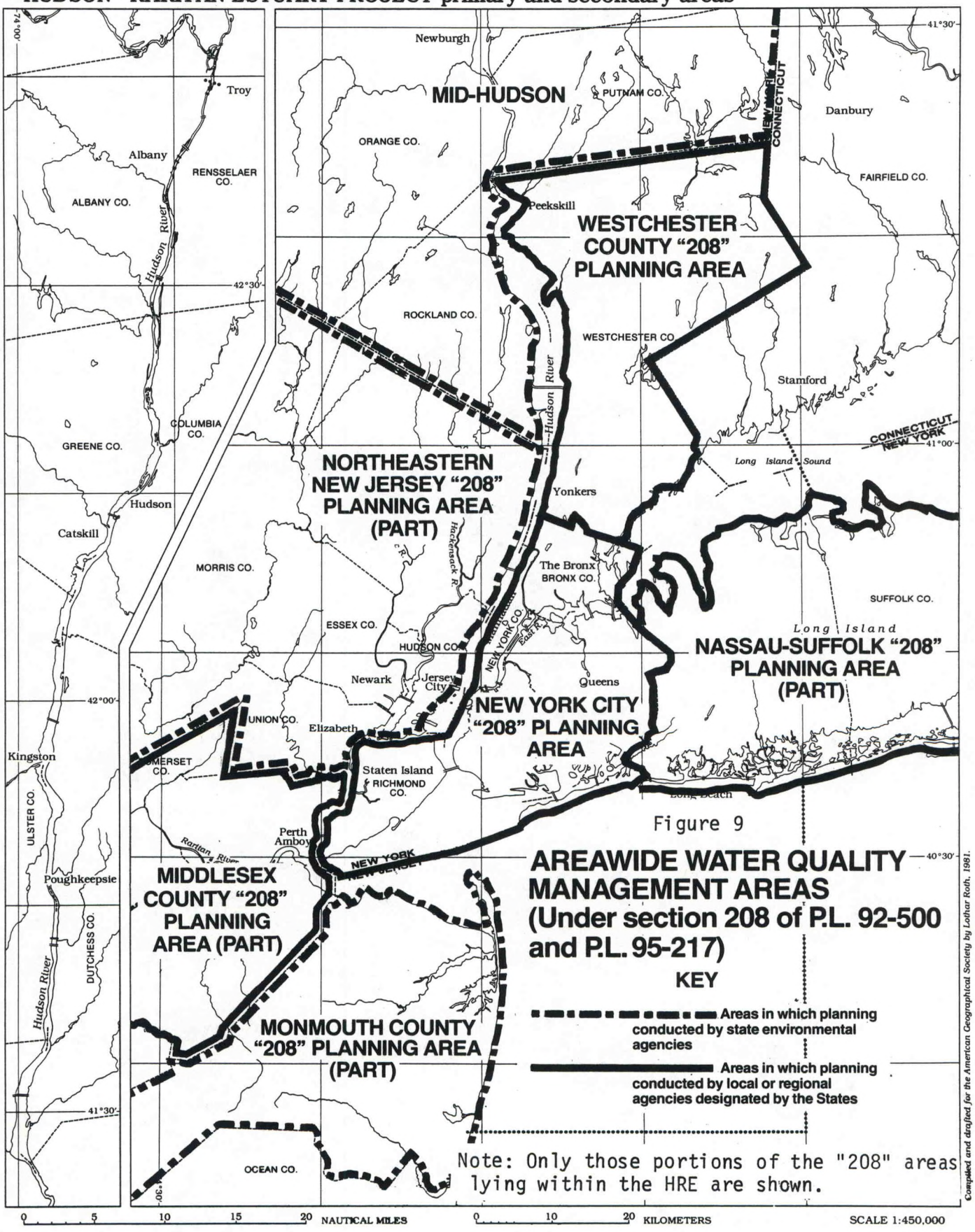



Figure 9

**AREAWIDE WATER QUALITY MANAGEMENT AREAS (Under section 208 of P.L. 92-500 and P.L. 95-217)**

**KEY**

- Areas in which planning conducted by state environmental agencies
- Areas in which planning conducted by local or regional agencies designated by the States

Note: Only those portions of the "208" areas lying within the HRE are shown.

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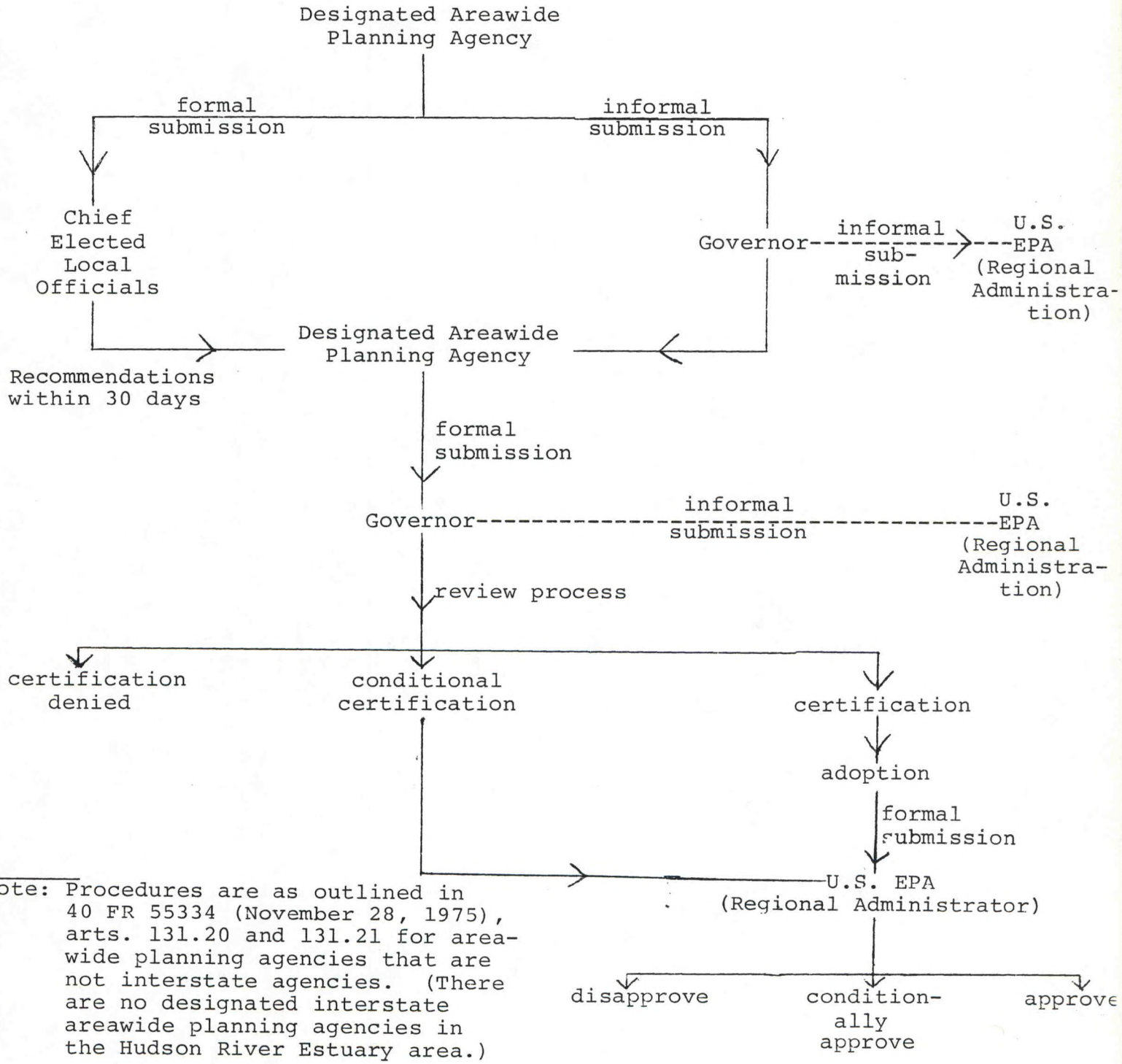
FIGURE 10A.

THE REVIEW, ADOPTION, CERTIFICATION AND APPROVAL PROCEDURES FOR AREAWIDE WATER QUALITY MANAGEMENT PLANS UNDER SECTION 208 OF THE CLEAN WATER ACT OF 1977

(for plans certified prior to May 23, 1979)

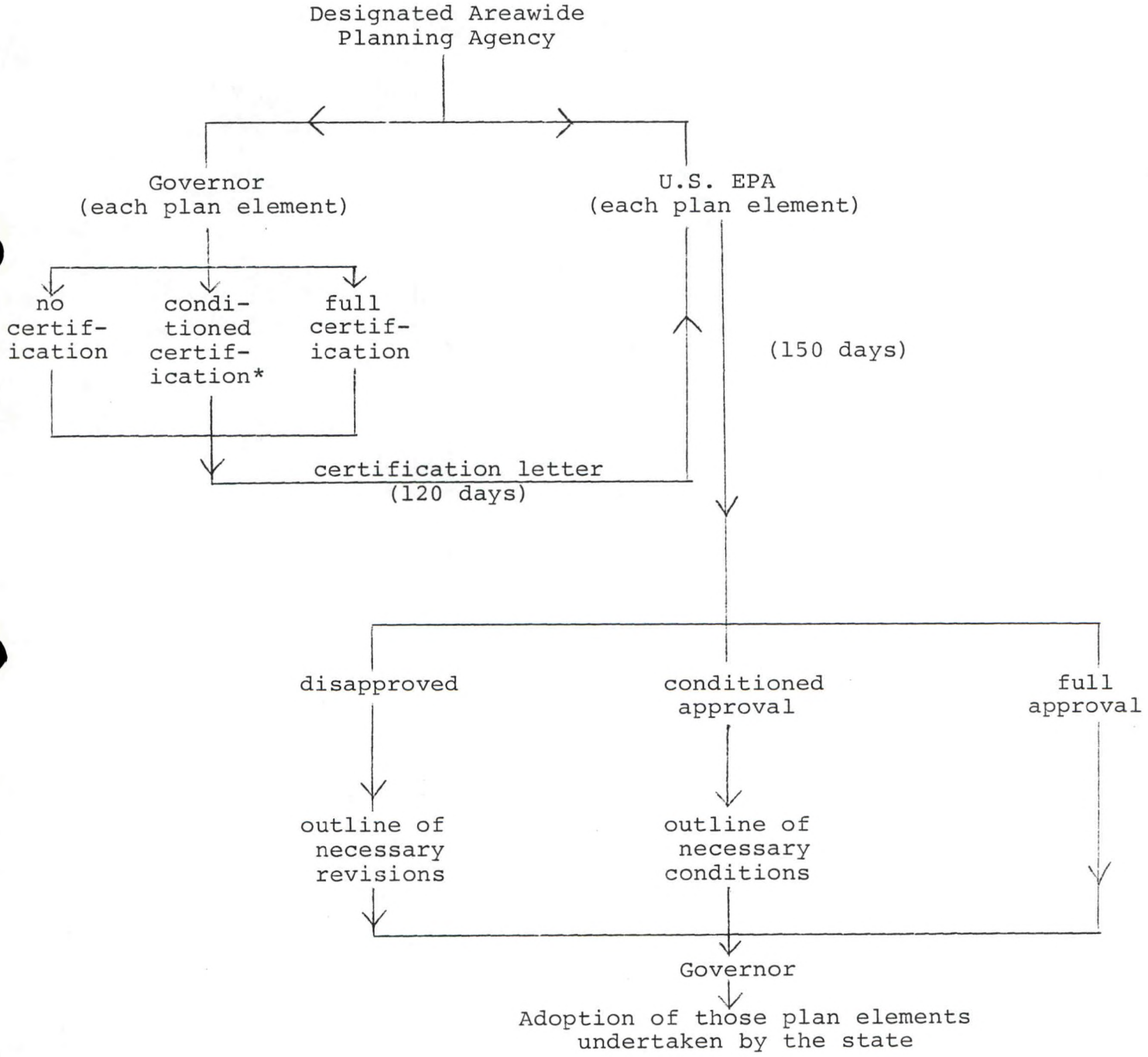



Note: Procedures are as outlined in 40 FR 55334 (November 28, 1975), arts. 131.20 and 131.21 for areawide planning agencies that are not interstate agencies. (There are no designated interstate areawide planning agencies in the Hudson River Estuary area.)

FIGURE 10.B.

THE REVIEW, ADOPTION, CERTIFICATION AND APPROVAL PROCEDURES FOR AREAWIDE WATER QUALITY MANAGEMENT PLANS UNDER SECTION 208 OF THE CLEAN WATER ACT OF 1977

(for plans certified after May 23, 1979)




Note: These procedures are as outlined in 44 FR 30016 (May 23, 1979), Part 35.1523-3(a) after the public participation process.

*Part 35.1523-3(a) states that: conditioned certification is effectively equivalent to full certification for sections 204(a), 208(d) and 208(e) of the Clean Water Act.

HUDSON - RARITAN ESTUARY PROJECT primary area

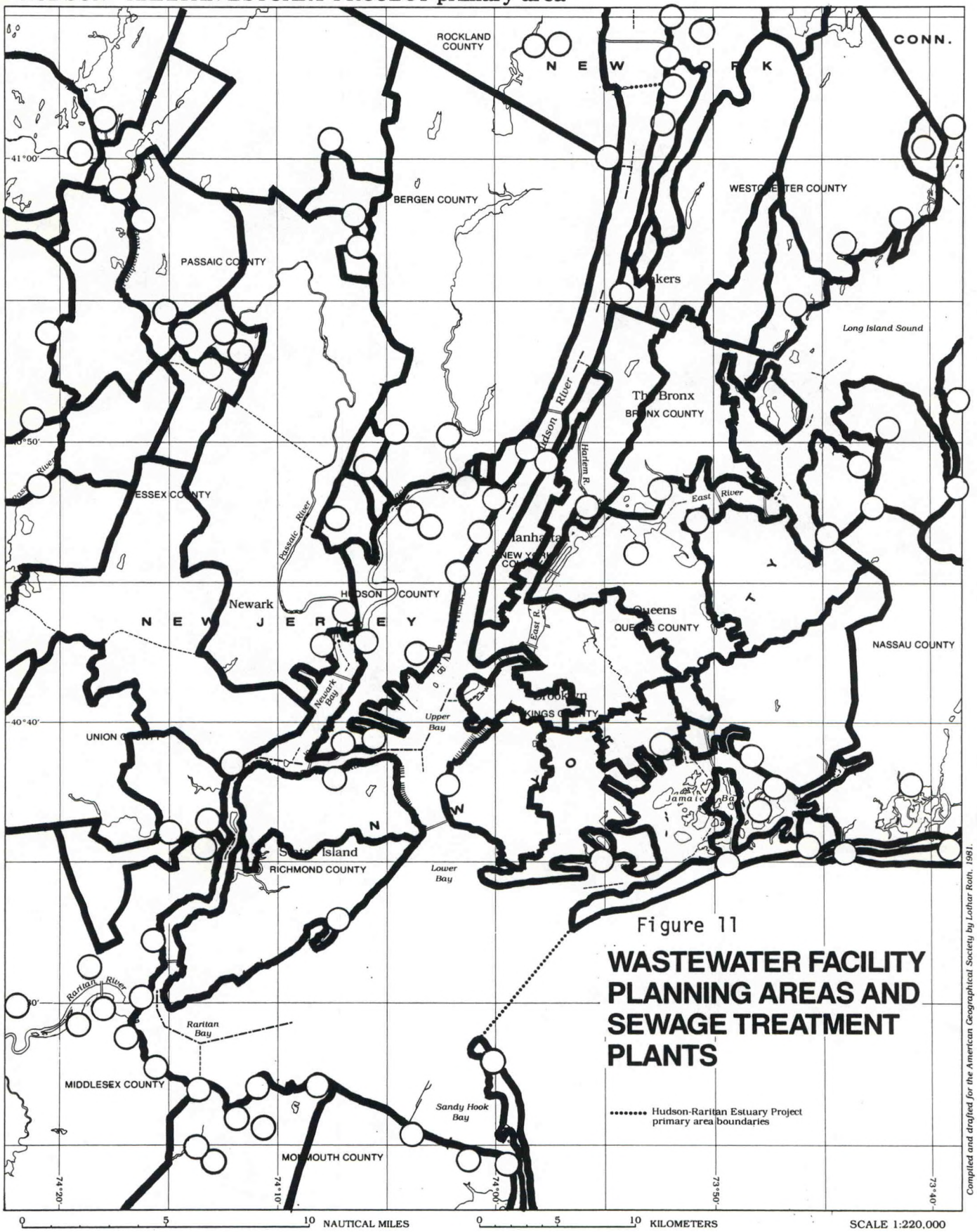


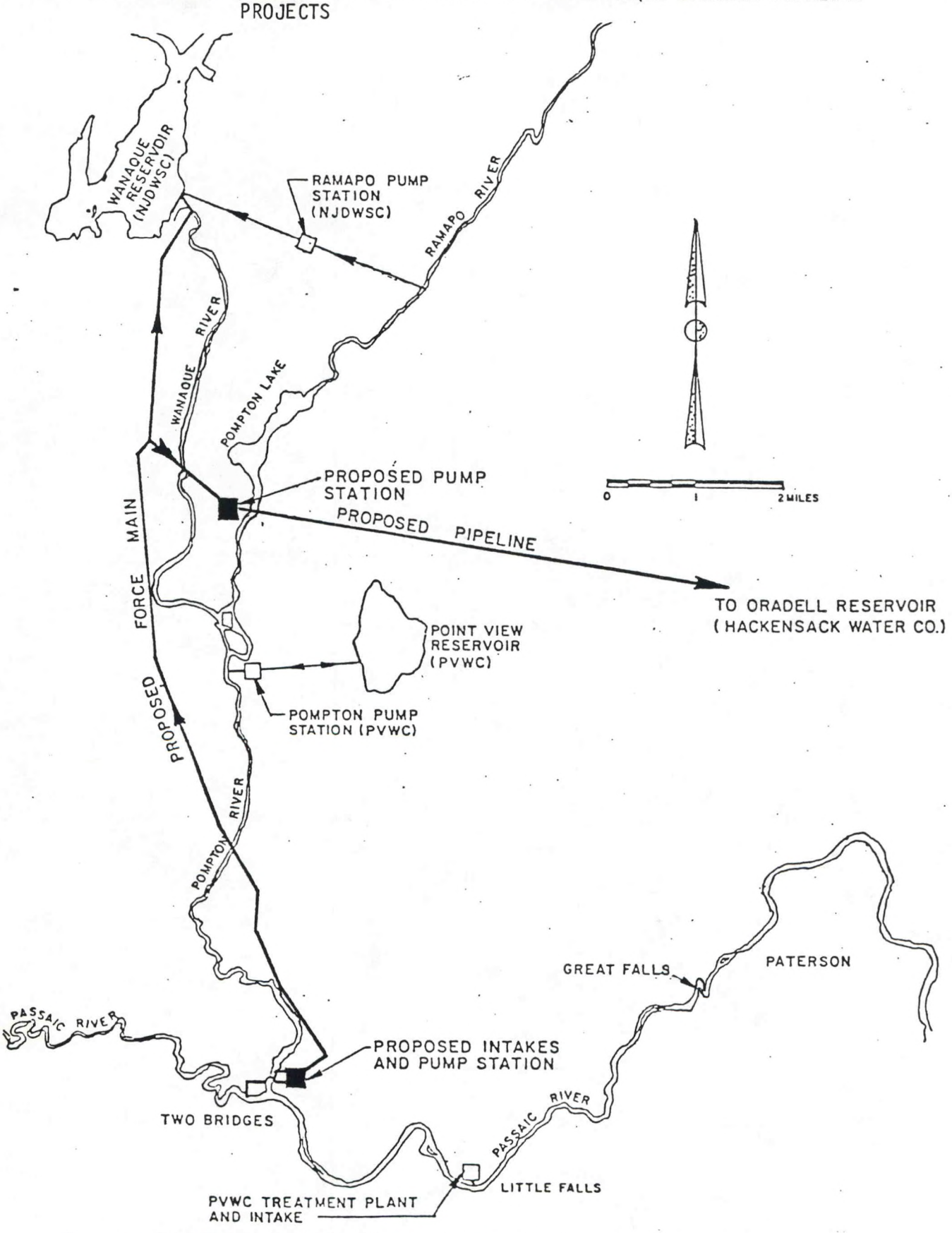

Figure 11

## WASTEWATER FACILITY PLANNING AREAS AND SEWAGE TREATMENT PLANTS

Hudson-Raritan Estuary Project primary area boundaries

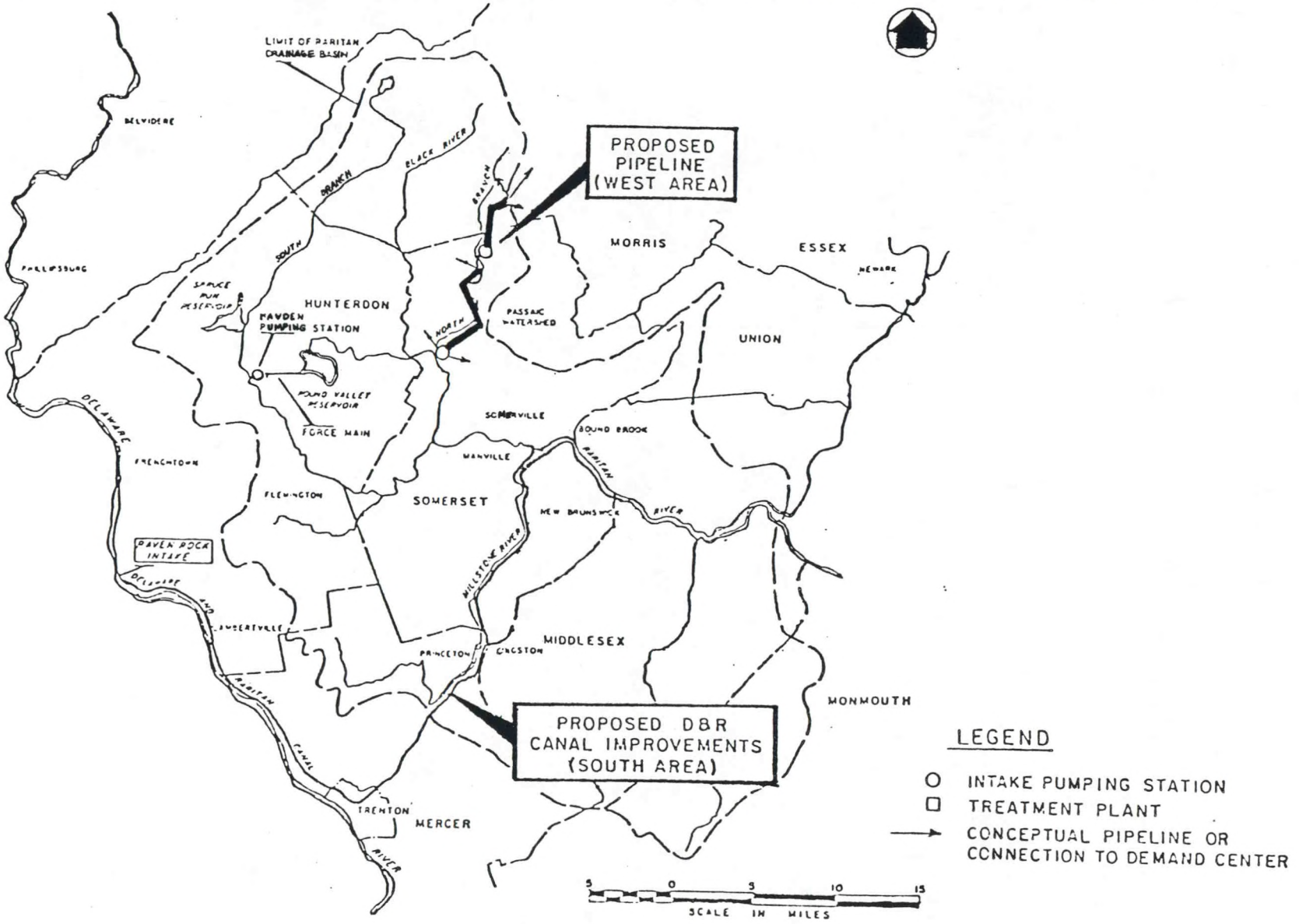
*Compiled and drafted for the American Geographical Society by Lothar Roth, 1981.*

FIGURE 12. TWO BRIDGES-RAMAPO DIVERSION AND WANAQUE ORADELL PIPELINE PROJECTS



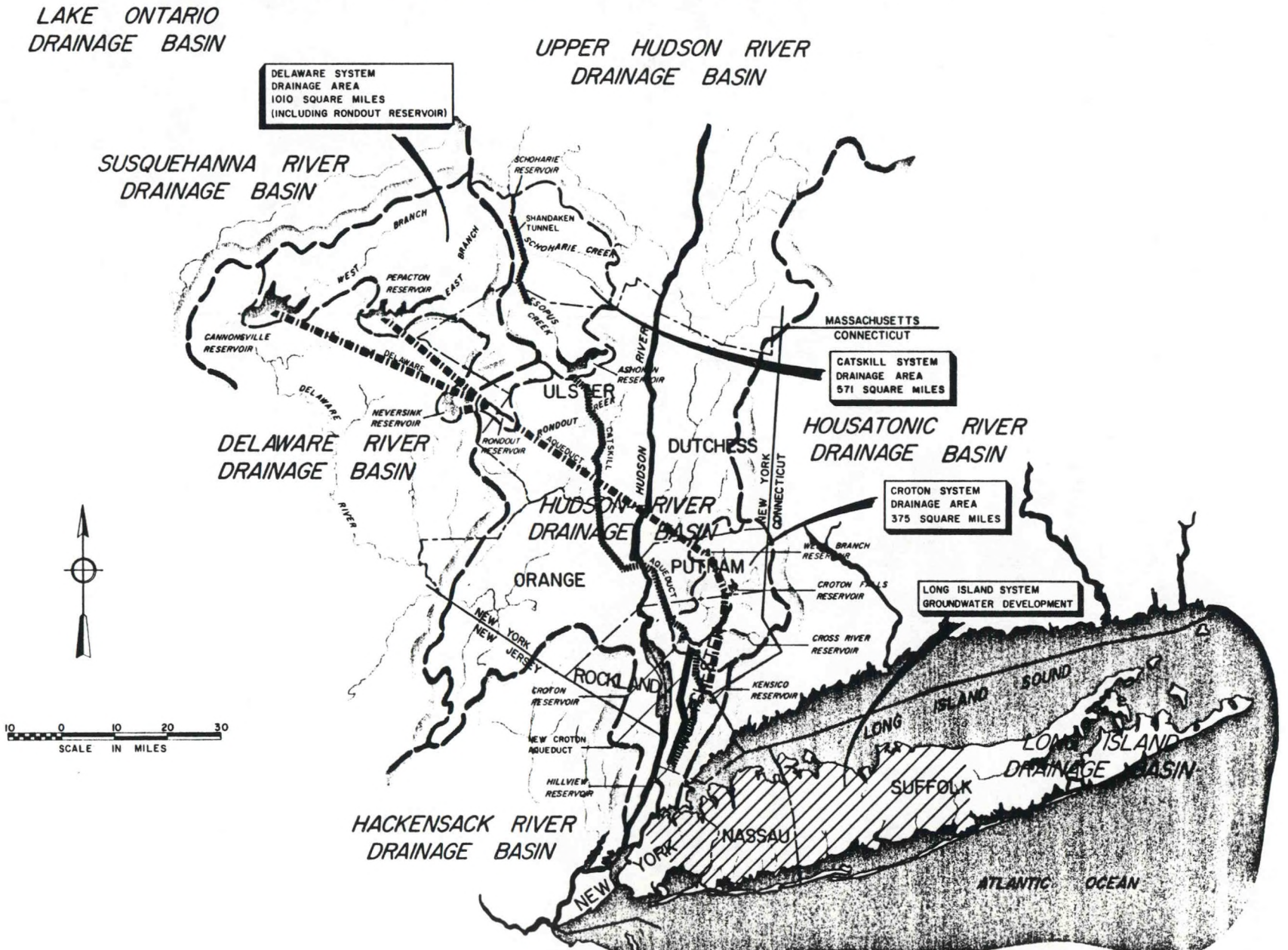

Source: NJ DEP. New Jersey Water Supply Master Plan. Summary Report. Trenton, NJ: NJ DEP, 1979. P. 29.

FIGURE 13. RECOMMENDED DEVELOPMENT OF THE RARITAN RIVER AND D & R CANAL, for immediate needs 1980-85



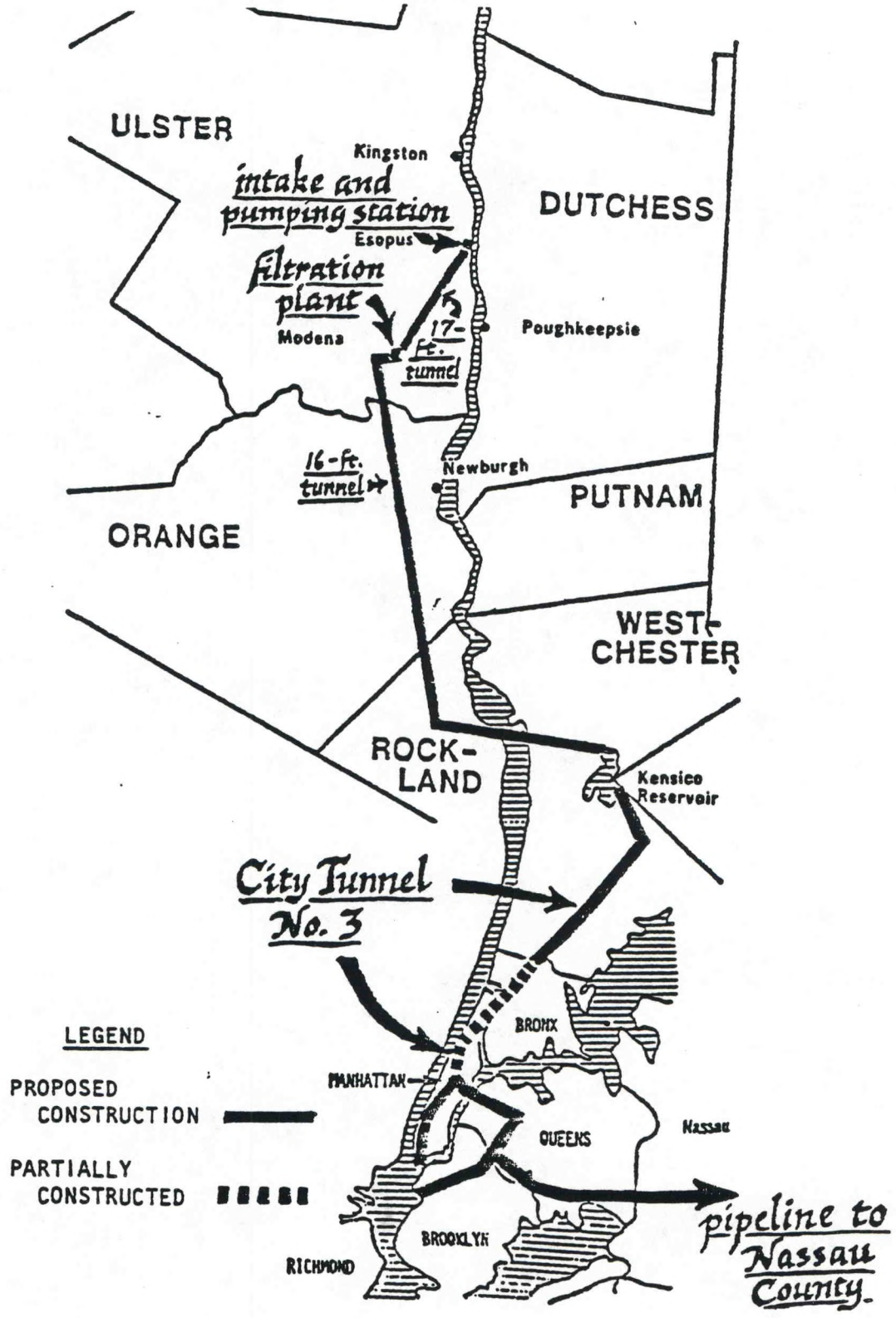

Source: NJ DEP. NJ Water Supply Master Plan. Summary Report. Trenton, NJ: NJDEP, 1979. P. 31.

FIGURE 14. BOUNDARIES OF THE SOUTHEASTERN NEW YORK WATER SUPPLY STUDY, 1972



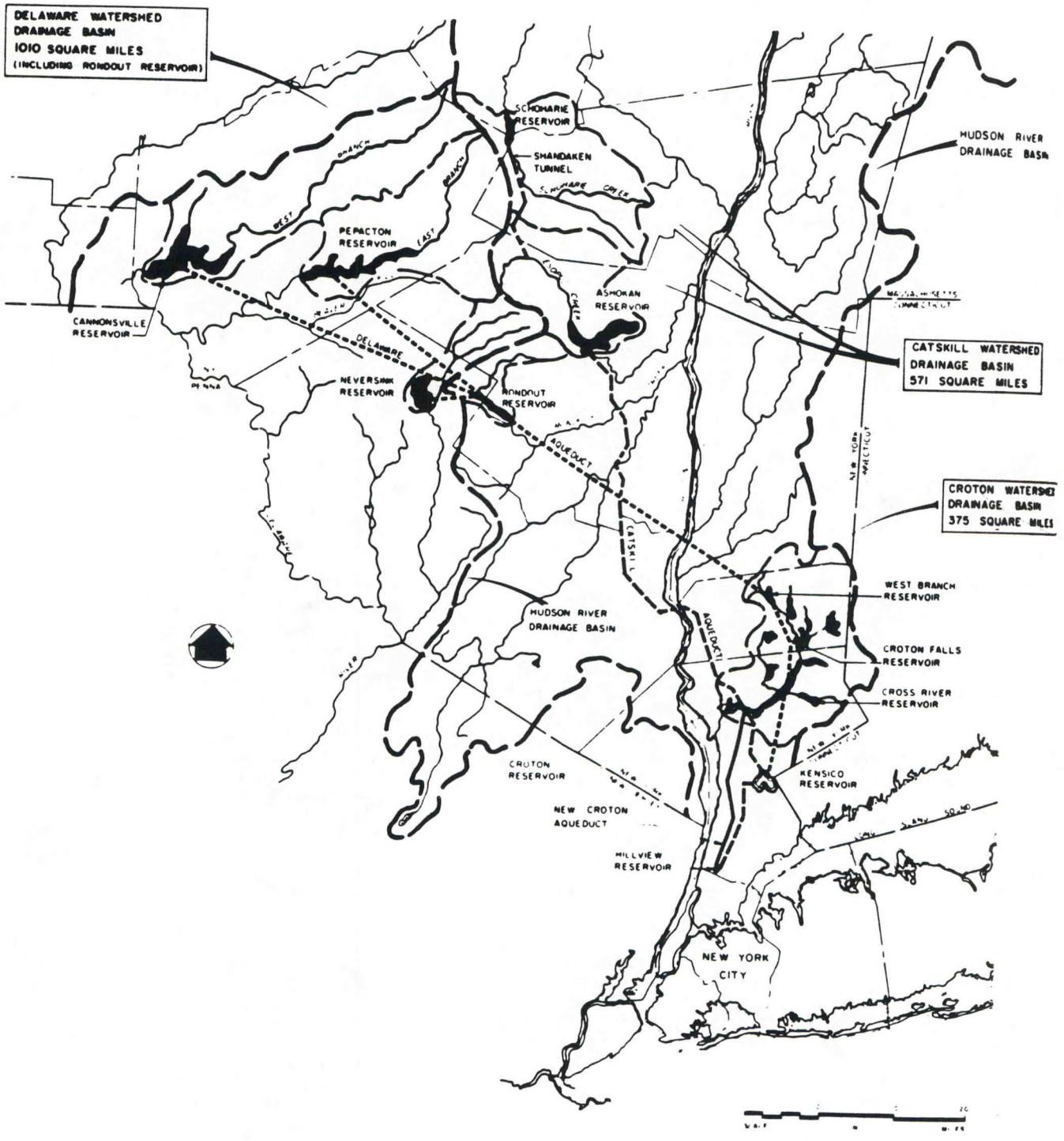

Source: Temporary State Commission on the Water Supply Needs of Southeastern New York. Scope of Public Water Supply Needs. Albany, NY: The Commission, November 1, 1972. P. 28.

FIGURE 15
HUDSON RIVER BASIN PROJECT




Source: U.S. Department of the Army. North Atlantic Division, Corps of Engineers. "Notice of Report on NEWS Study". New York: The Corps of Engineers, November 11, 1977. P. 2-5.

FIGURE 16. NEW YORK CITY WATER SUPPLY SYSTEM




Source: Temporary State Commission on the Water Supply Needs of Southeastern New York. Scope of Public Water Supply Needs. Albany, NY: November 1, 1972. P. 78.

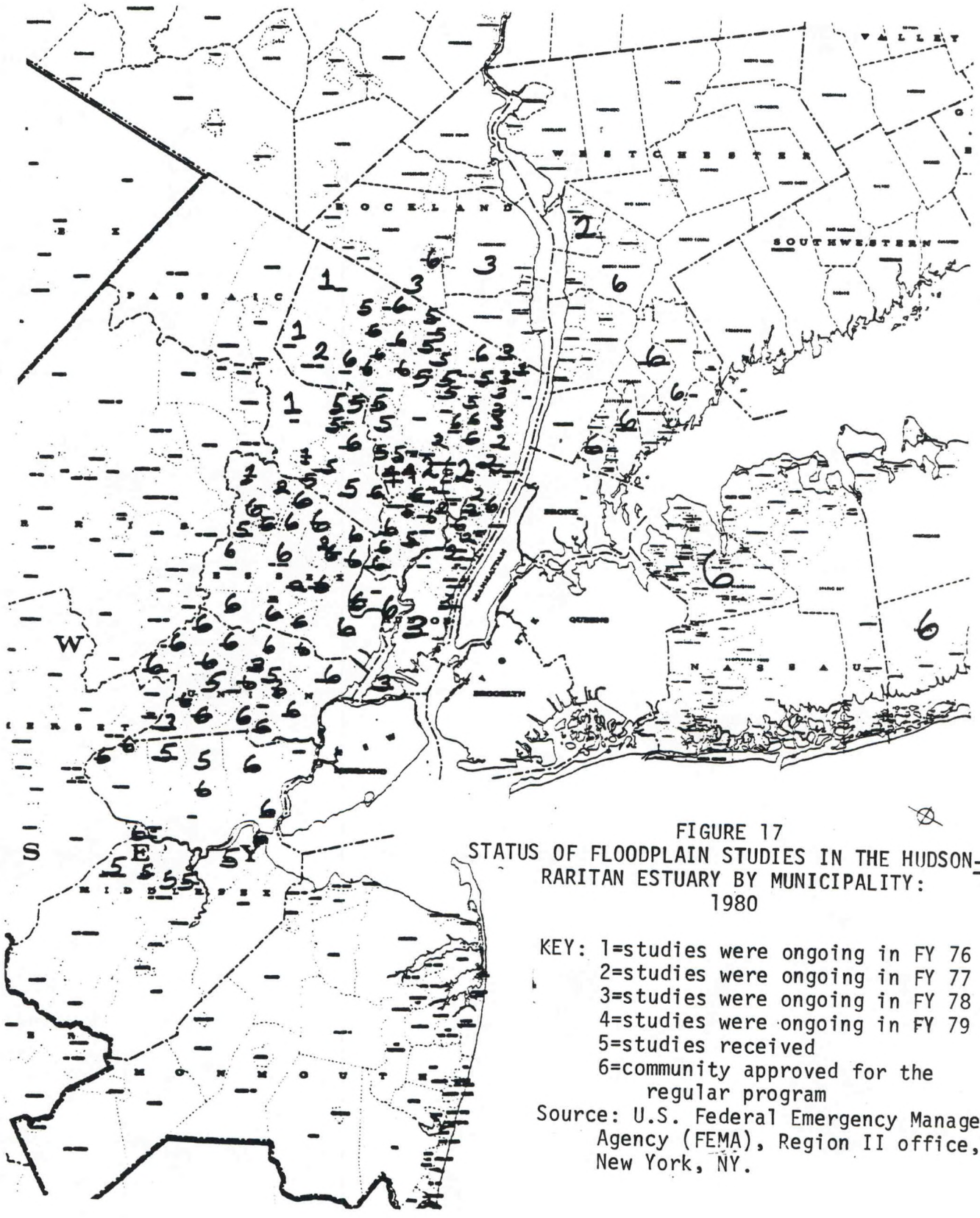


FIGURE 17
STATUS OF FLOODPLAIN STUDIES IN THE HUDSON-RARITAN ESTUARY BY MUNICIPALITY: 1980

KEY: 1=studies were ongoing in FY 76
2=studies were ongoing in FY 77
3=studies were ongoing in FY 78
4=studies were ongoing in FY 79
5=studies received
6=community approved for the regular program

Source: U.S. Federal Emergency Management Agency (FEMA), Region II office, New York, NY.

## HUDSON - RARITAN ESTUARY PROJECT primary and secondary areas

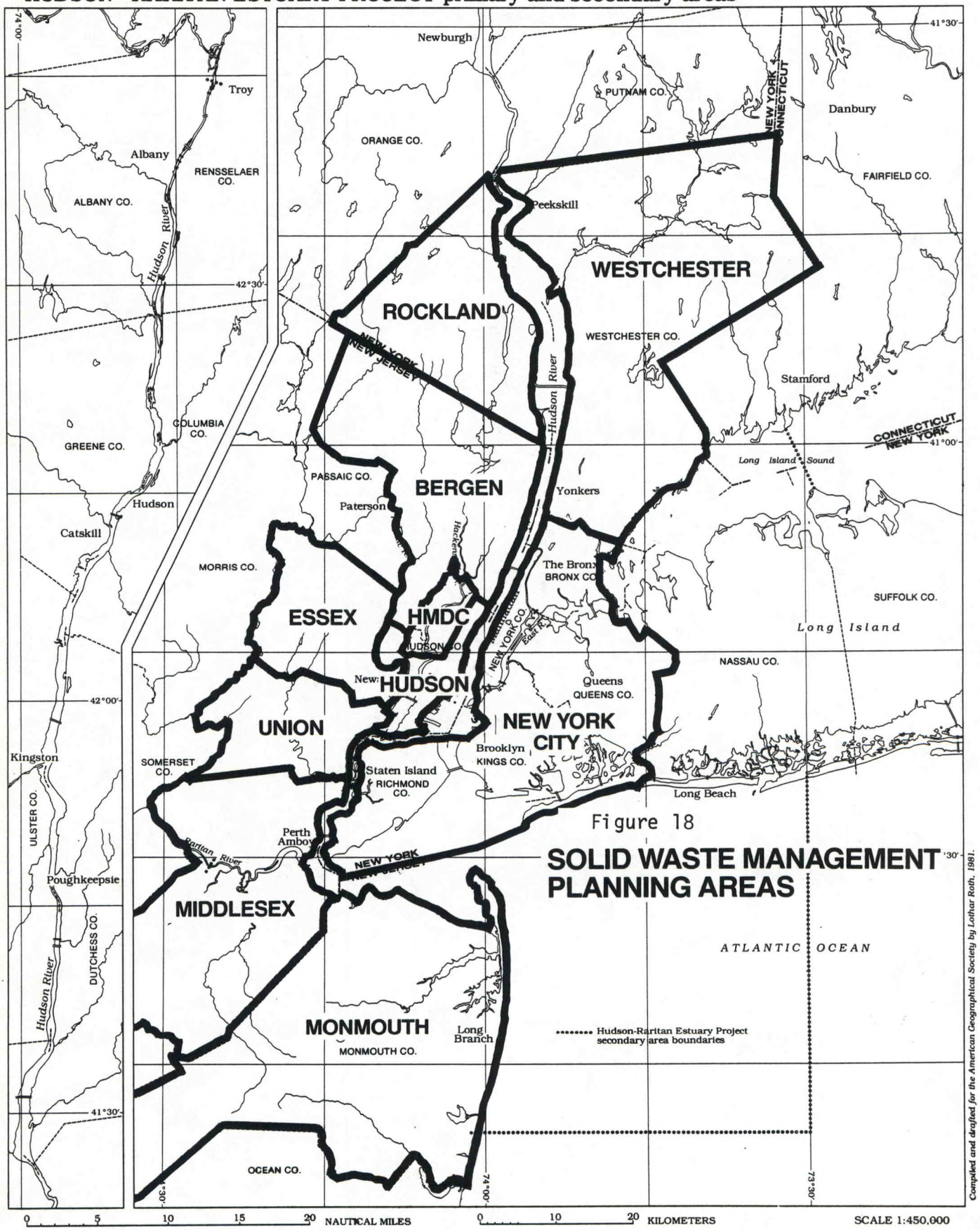



Figure 18

# SOLID WASTE MANAGEMENT PLANNING AREAS

Compiled and drafted for the American Geographical Society by Lothar Roth, 1981.

HUDSON - RARITAN ESTUARY PROJECT primary area

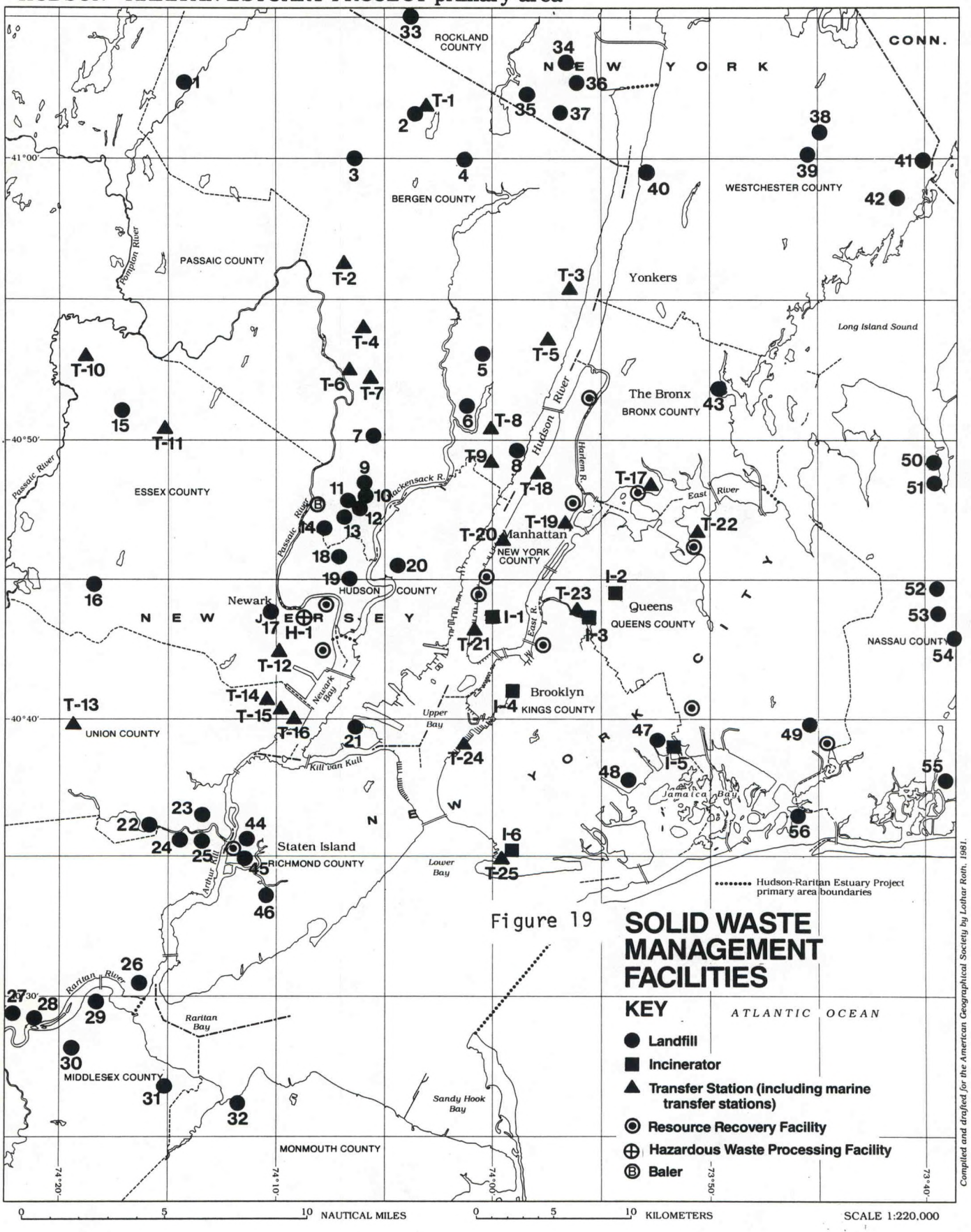



Figure 19

# SOLID WASTE MANAGEMENT FACILITIES

Compiled and drafted for the American Geographical Society by Lothar Roth, 1981.

KEY TO FIGURE 19. SOLID WASTE MANAGEMENT FACILITIES

## Landfills

1 Oakland Boro
2 Hillsdale
3 Hohokus Boro
4 Westwood Boro (leaf mulch)
5 Teaneck Twp.
6 Ridgefield Park V.
7 Morris Park Ave. Corp.
8 Edgewater
9 Avon Landfill Corp.
10 B.C. Kingsland Park
11 P & M Sanitary Landfill Development
12 HMDC Kingsland Park Landfill Extension
13 C. Egan & Sons
14 HMDC Sawmill Park Landfill Extension
15 West Caldwell Boro
16 County Park Dept. (Millburn)
17 Newark
18 MSLA 1-C (private)
19 MSLA 1-D (private)
20 Mall Landfill
21 Bayonne Municipal Landfill
22 Rahway
23 Linden Municipal
24 Carteret
25 Arace Bros.
26 Celotex
27 Middlesex County Parks Commission
28 Industrial Land Reclaiming
29 NL Industries
30 DuPont
31 Global
32 Waste Disposal Inc.(Keyport)
33 Ramapo-Torne Valley
34 Clarkstown
35 Lederle
36 #44501
37 Rockland State Hosp.
38 White Plains
39 Scarsdale
40 Hastings-on-Hudson
41 Port Chester
42 Rye
43 Pelham Bay Park
44 South Ave. (S.I.)
45 Fresh Kills(S.I.)
46 Brookfield Ave.(S.I.)
47 Fountain Ave.
48 Pennsylvania Ave.
49 Idlewild
50 Port Washington
51 Port Washington
52 Garden City
53 Franklin Square
54 Malverne/Rockville Centre
55 Oceanside

## Incinerators

I-1 Gansevoort
I-2 Betts Ave.
I-3 Greenpoint
I-4 Hamilton Ave.
I-5 Fountain Ave.
I-6 S.W. Brooklyn

## Transfer Stations

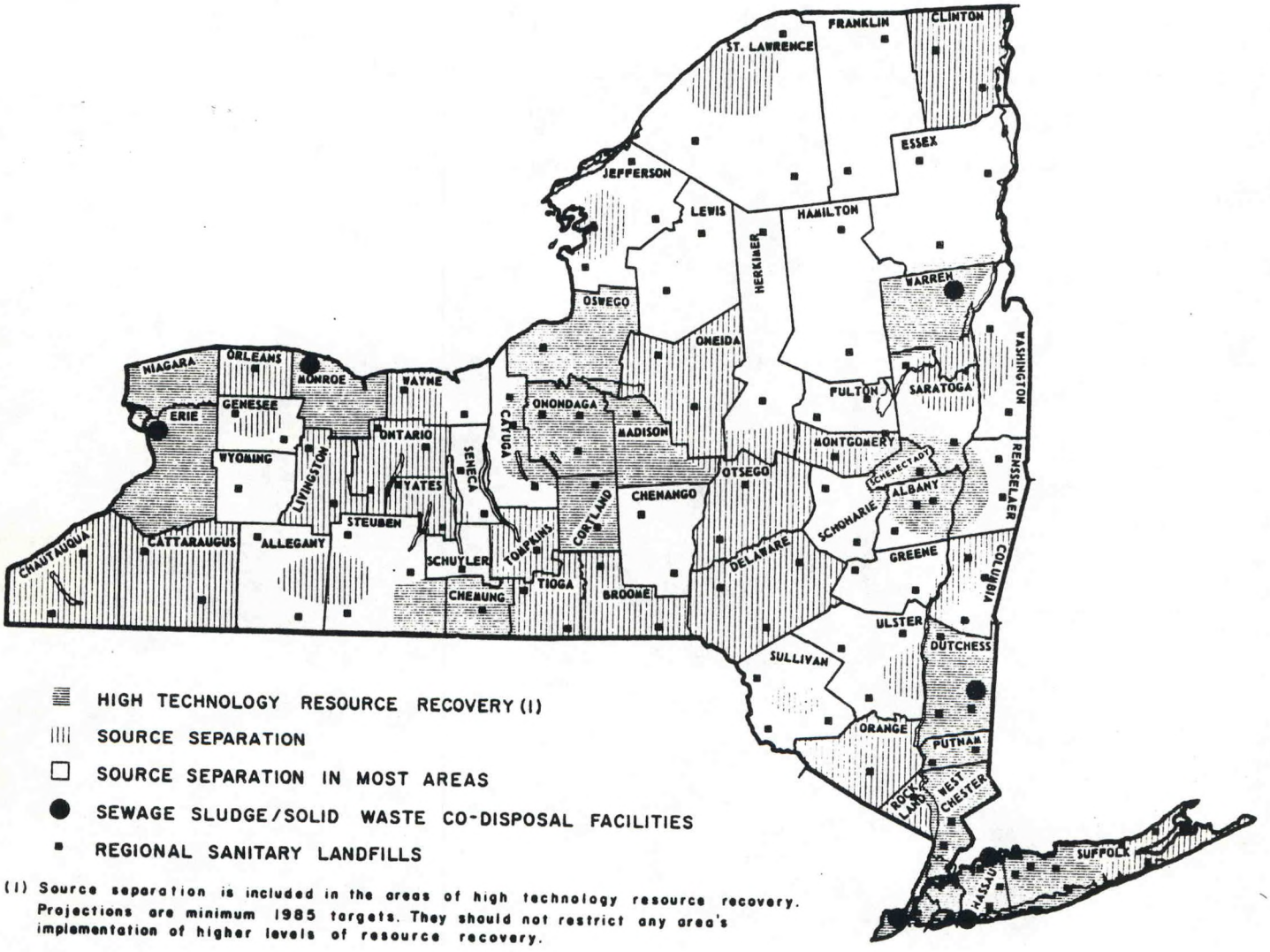
T-1 Sal-Car Transfer System
T-2 Fairlawn
T-3 Vincent M. Ippolito
T-4 Modern Industrial Waste
T-5 Englewood
T-6 Garofalo Bros.
T-7 National Transfer Inc.
T-8 Ridgefield-Pleasantview
T-9 United Carting
T-10 Fairfield
T-11 Verona
T-12 Newark
T-13 Westfield Attic Waste
T-14 Waste Disposal Inc.
T-15 Special Waste Facility (BFI)
T-16 Elizabeth City Yard
T-17 S. Bronx MTS
T-18 W. 135 St. MTS
T-19 E. 91 St. MTS
T-20 W. 59 St. MTS
T-21 Gansevoort MTS
T-22 North Shore
T-23 Greenpoint
T-24 52nd St.
T-25 S.W. Brooklyn

## Balers

No. Arlington Baler

Note: MTS=Marine Transfer Station

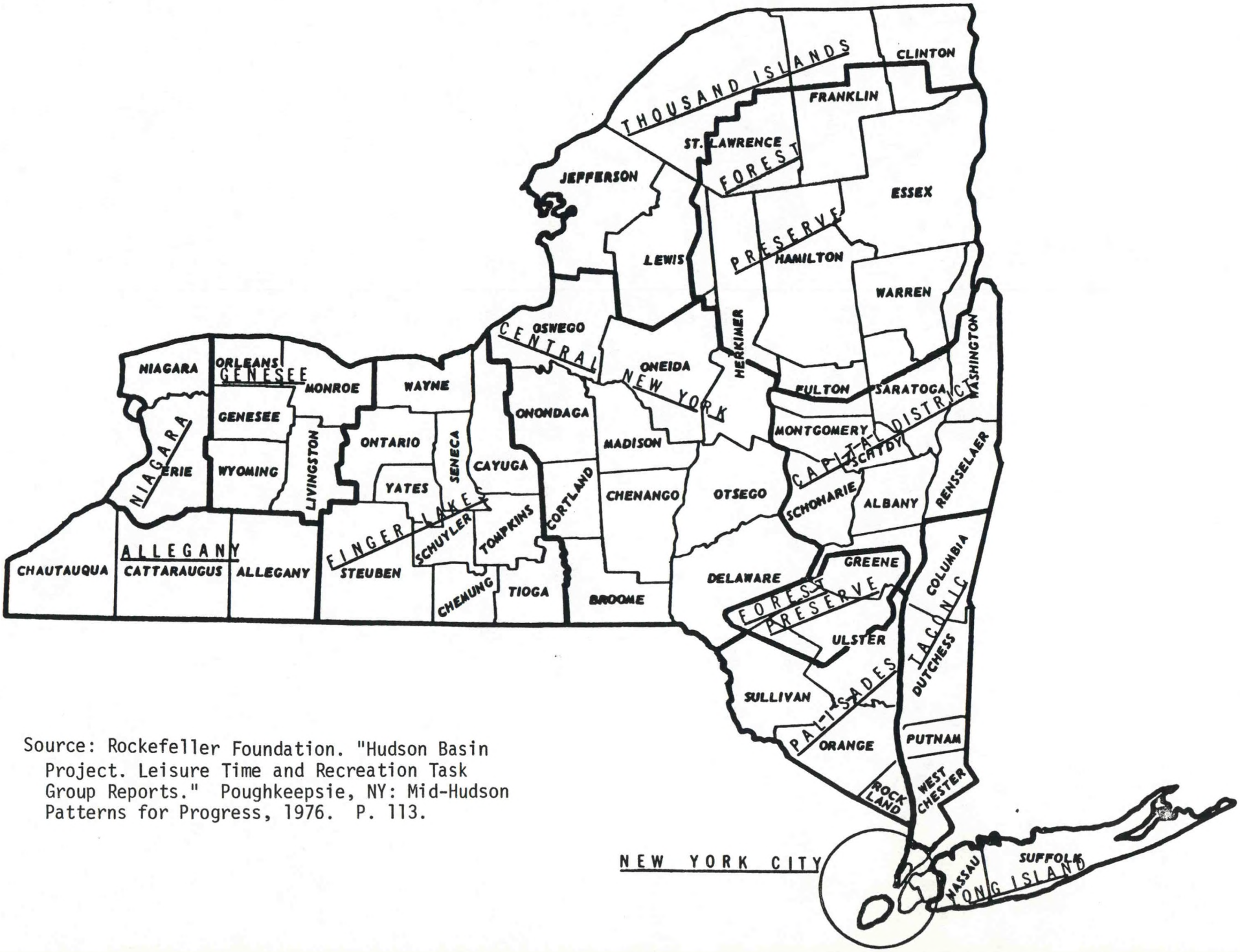
FIGURE 20. RESOURCE RECOVERY DISPOSAL SYSTEMS PROJECTED FOR NEW YORK STATE in 1985




(1) Source separation is included in the areas of high technology resource recovery. Projections are minimum 1985 targets. They should not restrict any area's implementation of higher levels of resource recovery.

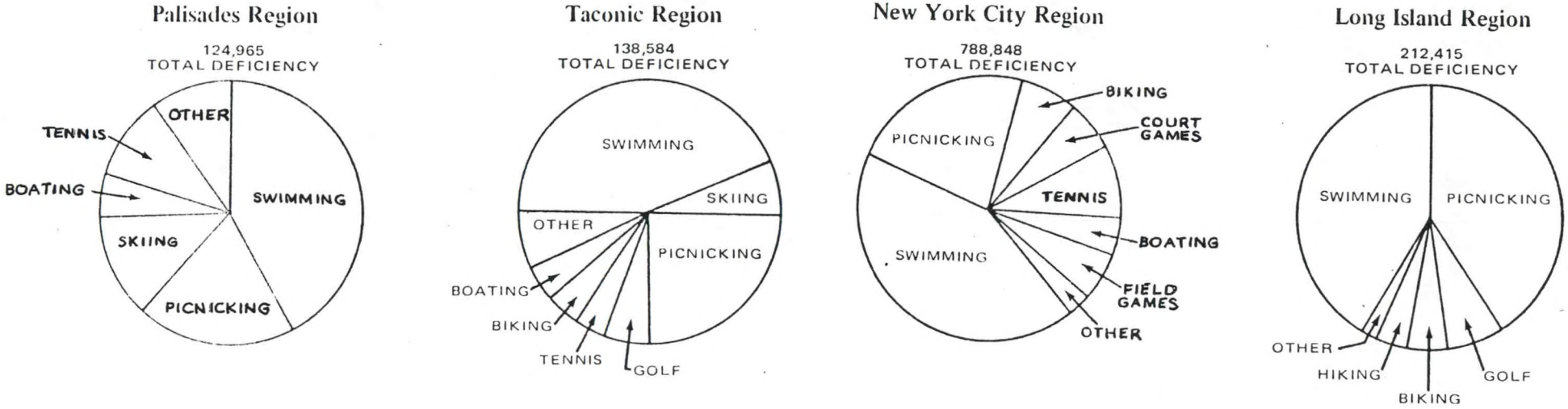
Source: New York State Department of Environmental Conservation. "Draft Plan for Resource Recovery in New York State." Albany, NY: NYSDEC, 1978.

FIGURE 21. PARK REGIONS IN NEW YORK STATE




Source: Rockefeller Foundation. "Hudson Basin Project. Leisure Time and Recreation Task Group Reports." Poughkeepsie, NY: Mid-Hudson Patterns for Progress, 1976. P. 113.

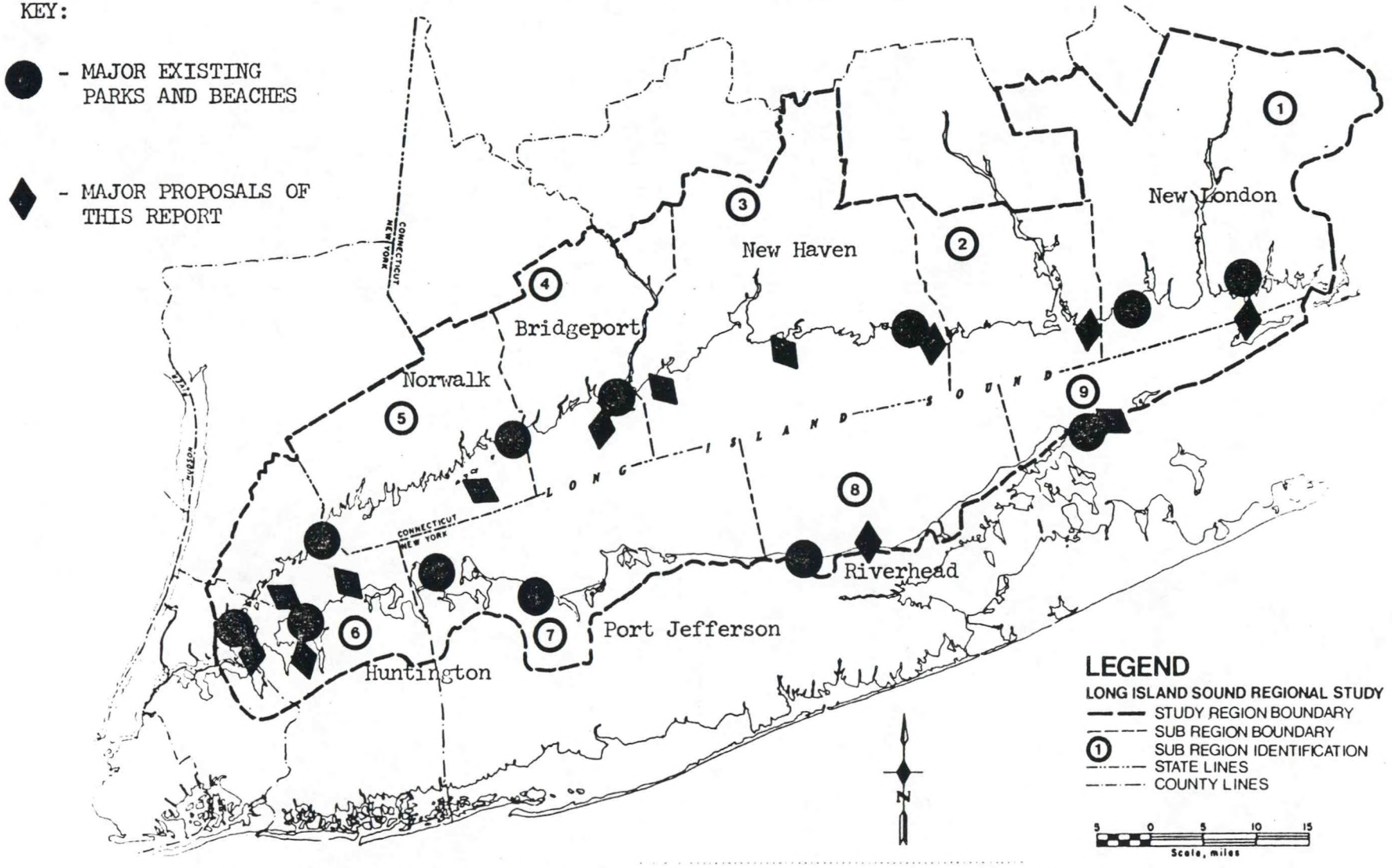
FIGURE 22. RECREATION DEFICIENCIES BY TYPE AND PARK REGION, New York State: 1978




Note: Total deficiency is measured in number of people underserved and represents those activities that will need further investment for optimum service levels to be achieved (NYSDPR, 1978: 17).

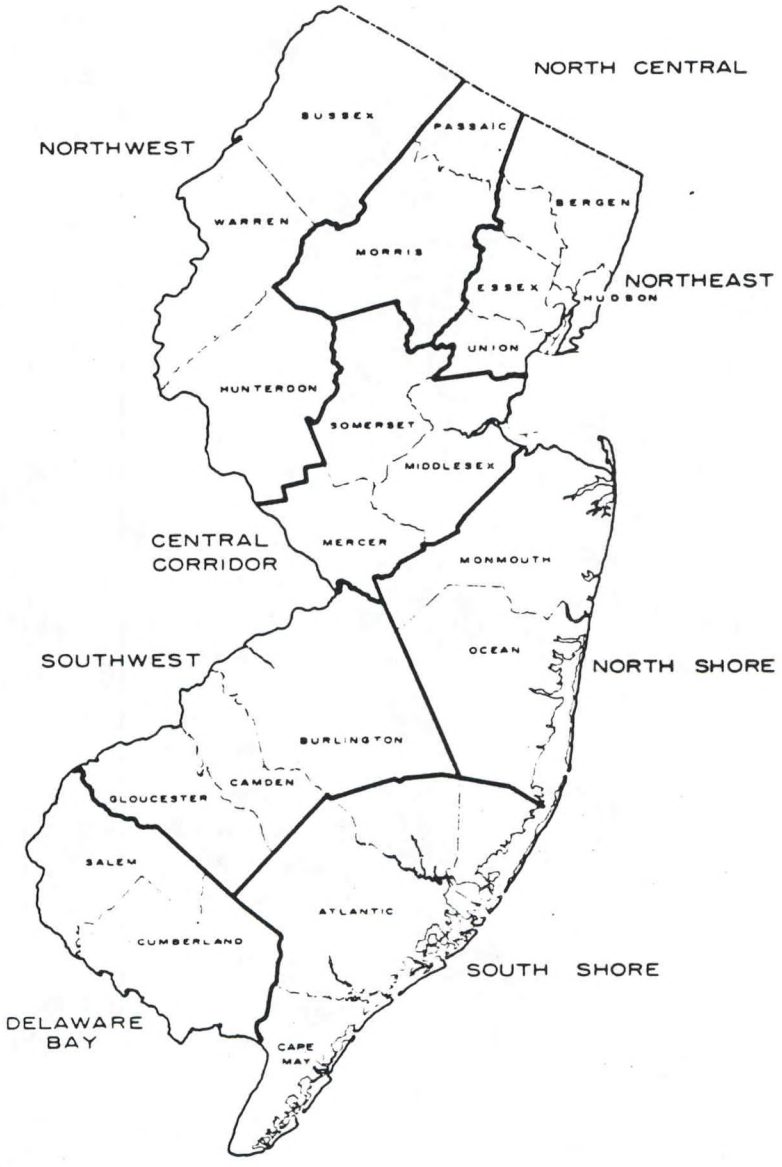
Source: New York State Department of Parks and Recreation. People Resources Recreation 1978. Albany, NY: DPR, 1978. P. 18-19.

FIGURE 23. RECREATIONAL RESOURCES OF THE LONG ISLAND SOUND STUDY AREA



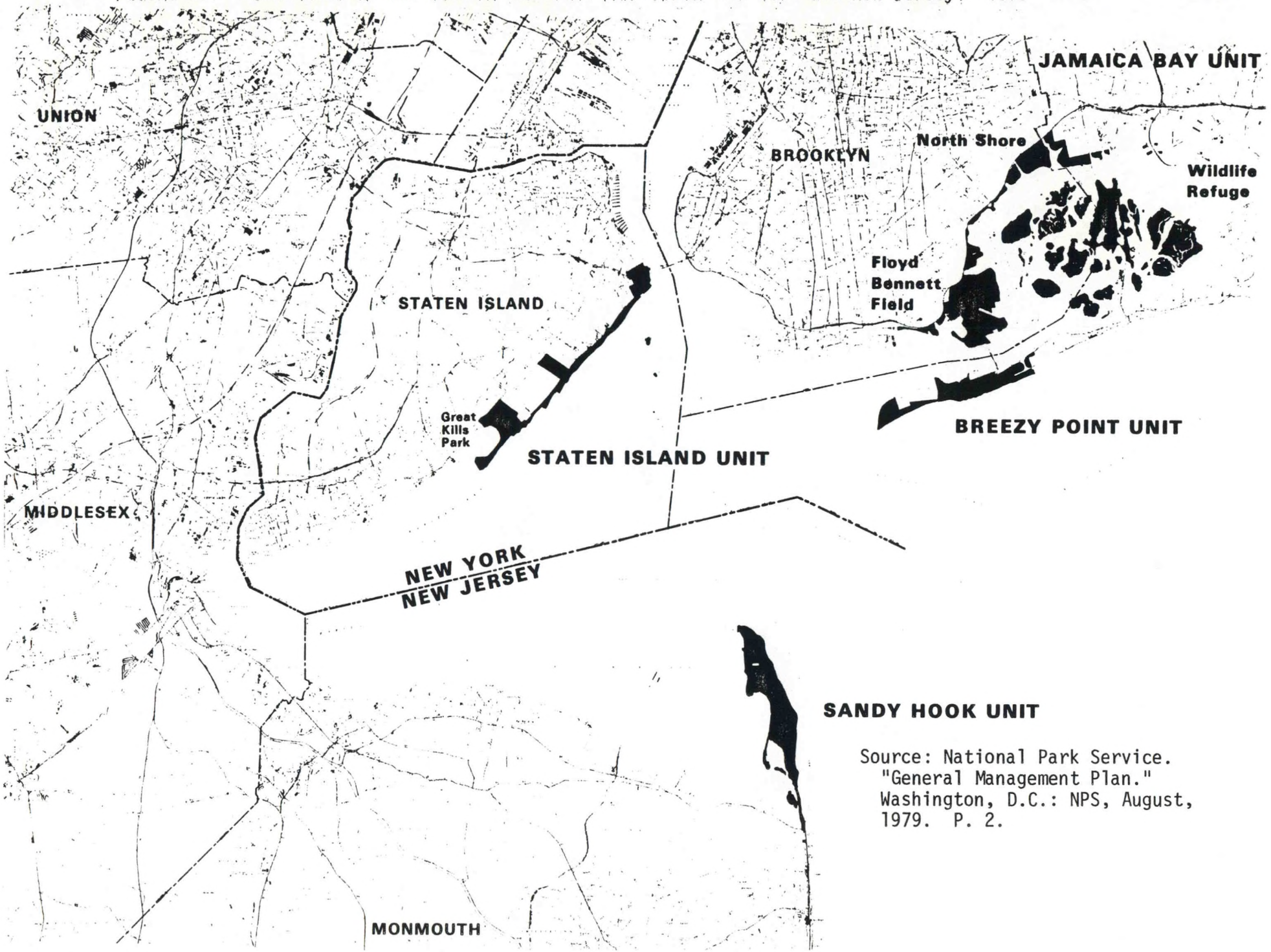

Source: New England River Basins Commission. Long Island Sound Regional Study. "Outdoor Recreation". New Haven, Conn.: NERBC, January 1975. P. 16.

FIGURE 24. NEW JERSEY RECREATION STUDY REGIONS




Source: NJ DEP. Outdoor Recreation Plan. Trenton, NJ: NJDEP, 1973.

FIGURE 25. BOUNDARIES OF THE GATEWAY NATIONAL PARK AREA, New York and New Jersey: 1979




Source: National Park Service. "General Management Plan." Washington, D.C.: NPS, August, 1979. P. 2.

# HUDSON - RARITAN ESTUARY PROJECT primary area

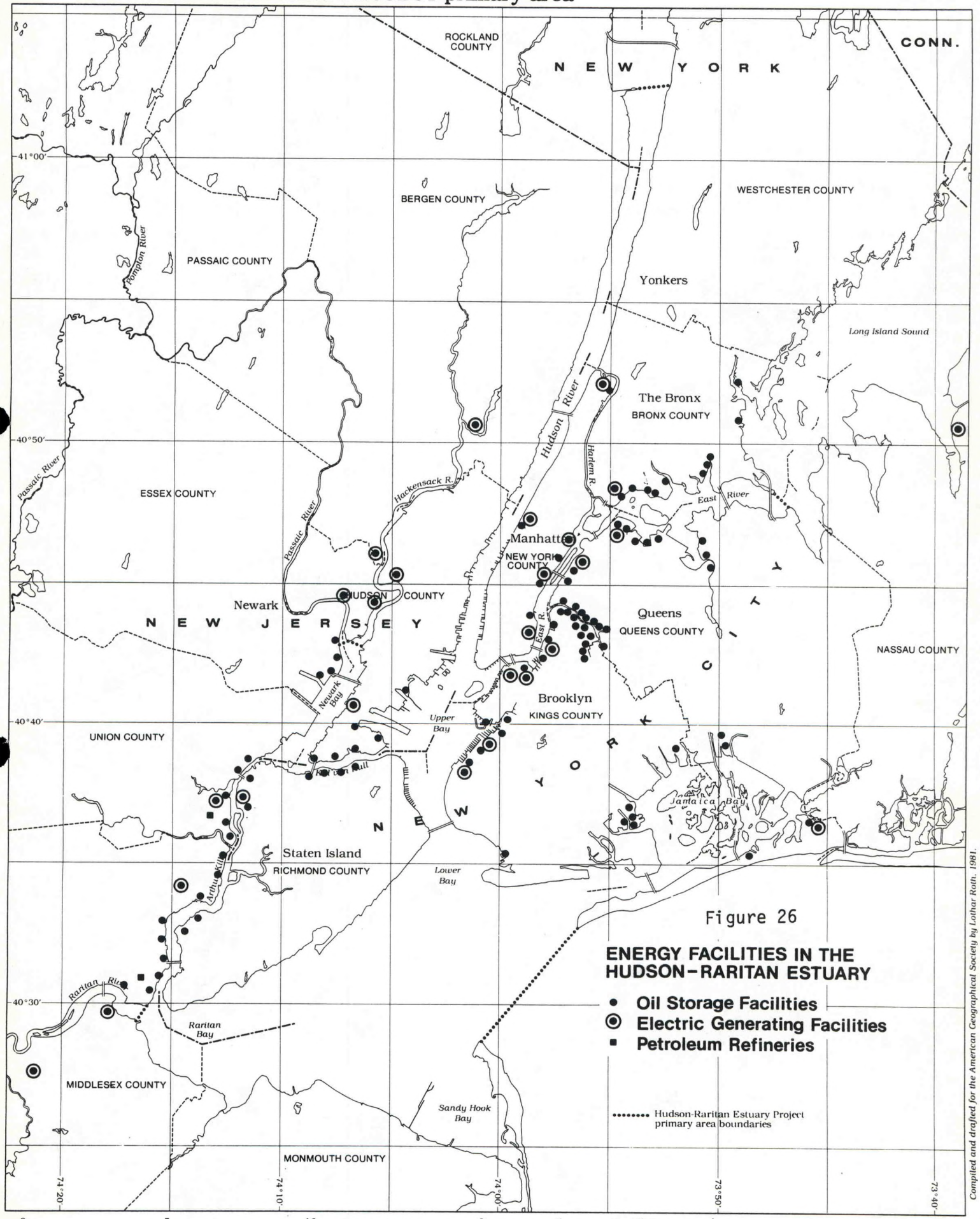



Figure 26

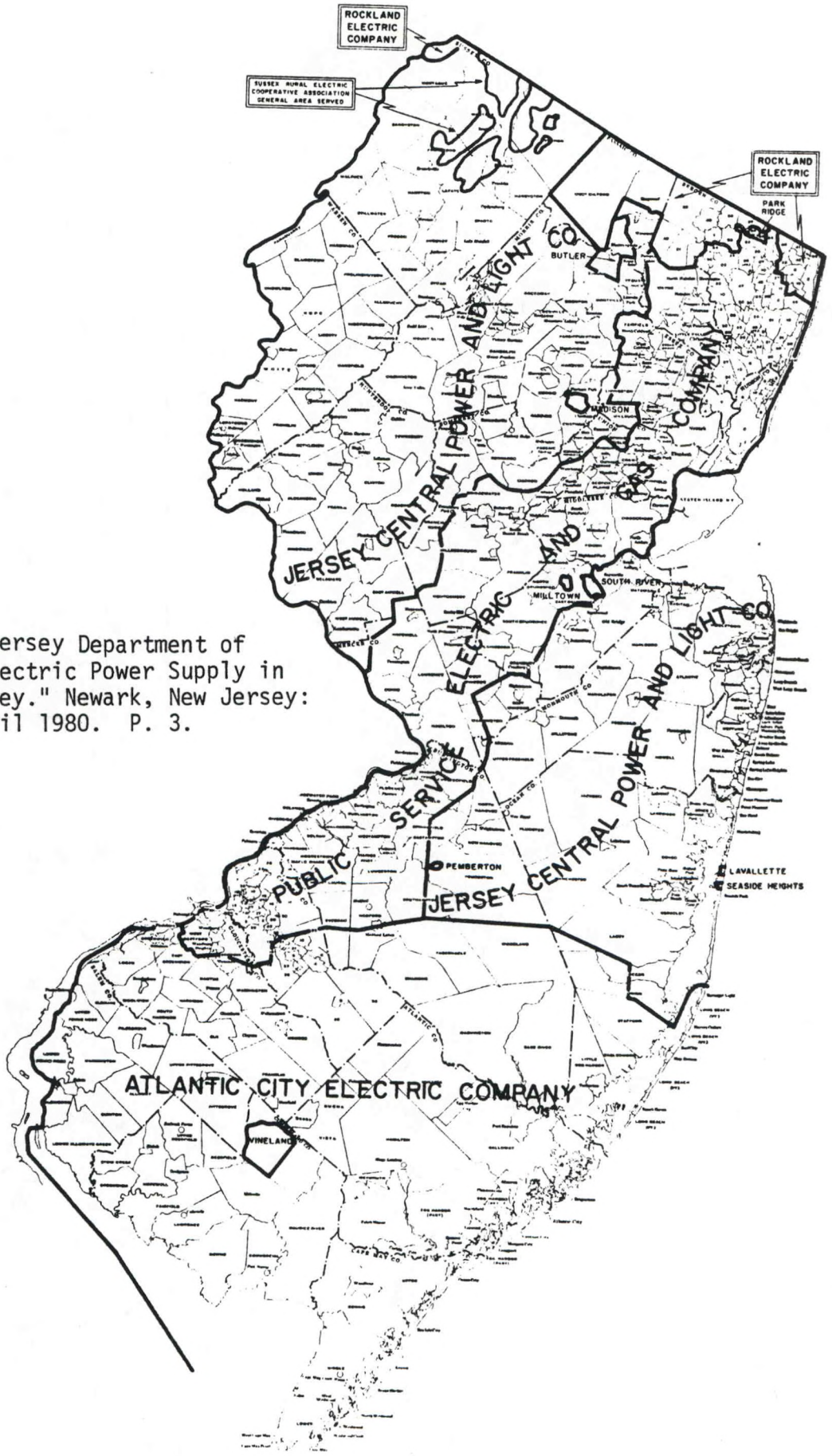
## ENERGY FACILITIES IN THE HUDSON–RARITAN ESTUARY

- Oil Storage Facilities
- Electric Generating Facilities
- Petroleum Refineries

Hudson-Raritan Estuary Project primary area boundaries

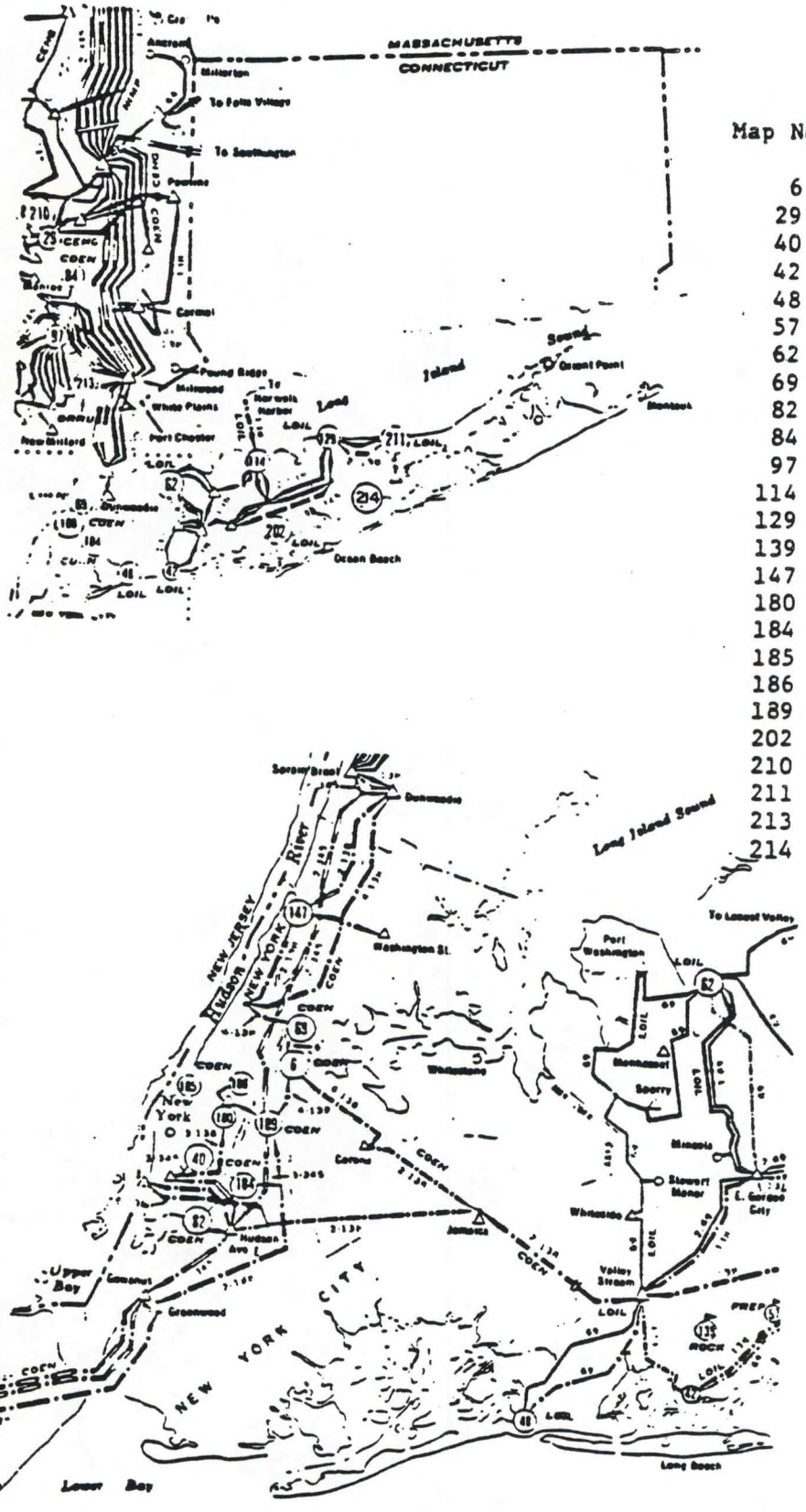
Compiled and drafted for the American Geographical Society by Lothar Roth, 1981.

FIGURE 27. ELECTRIC UTILITY SERVICE AREAS, New Jersey; 1980




Source: New Jersey Department of Energy. "Electric Power Supply in in New Jersey." Newark, New Jersey: NJ DOE, April 1980. P. 3.

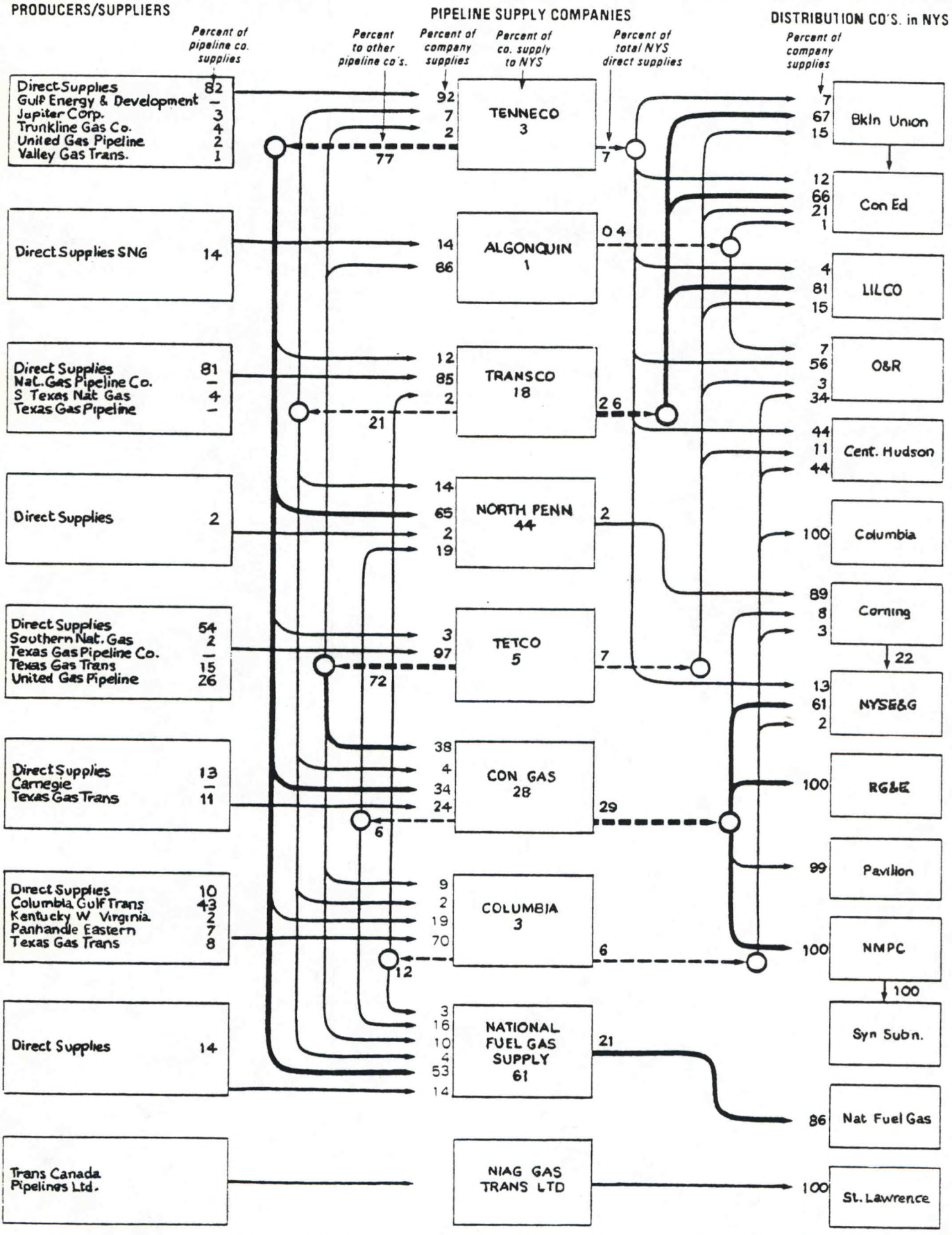
FIGURE 28. ELECTRICITY DISTRIBUTION NETWORK, New York State within the Hudson-Raritan Estuary: 1975




| Map No. | Plant Name |
|---|---|
| 6 | Astoria |
| 29 | Danskammer |
| 40 | East River |
| 42 | Barrett, E. F. |
| 48 | Far Rockaway No. 1 & 2 |
| 57 | Freeport (2 plants) |
| 62 | Glenwood Landing 2 & 3 |
| 69 | Hell Gate |
| 82 | Hudson Avenue |
| 84 | Indian Point |
| 97 | Lovett |
| 114 | Northport |
| 129 | Port Jefferson |
| 139 | Rockville Centre |
| 147 | Sherman Creek |
| 180 | Waterside No. 1 & 2 |
| 184 | Kent Avenue |
| 185 | 59th Street |
| 186 | 74th Street |
| 189 | Ravenswood |
| 202 | West Babylon |
| 210 | Roseton |
| 211 | Shoreham |
| 213 | Bowline |
| 214 | Holbrook |

Source: New England River Basins Commision. "People and the Sound. Power and the Environment". New Haven: The Commission, 1975. P. 45.

FIGURE 29. FLOW DIAGRAM: ULTIMATE SOURCES OF NATURAL GAS SUPPLY, New York State




Source: New York State Energy Office. NYS Energy Master Plan. Executive Summary. Albany, NY: NYSEO, March 1980. P. 21.

Figure 29. (continued)

NOTES:

(1) Figures do not necessarily add as they were obtained from several sources; the relative proportions give a good indication of flow volumes.

(2) Percent of Company Supplies: indicates the percentages of *total* sources for that Company and percentages of total available sources supplied to other pipeline companies. (All of these companies also supply other states.)

(3) Percent of Company Supply to New York State: indicates the percentage of available supplies which that company supplies to New York State. (The difference between the percent of supplies to other pipelines plus the percentage to New York State and 100 percent is the percentage of that companies requirements for other states.)

(4) Percent of total New York State direct supplies: indicates the percentage of total New York State *direct* supplies which come therefrom. Reliance on these figures, however, could be misleading because considering the interconnections between supply companies, actual major *indirect* supplies to New York are somewhat different (see Figure V-D-4).

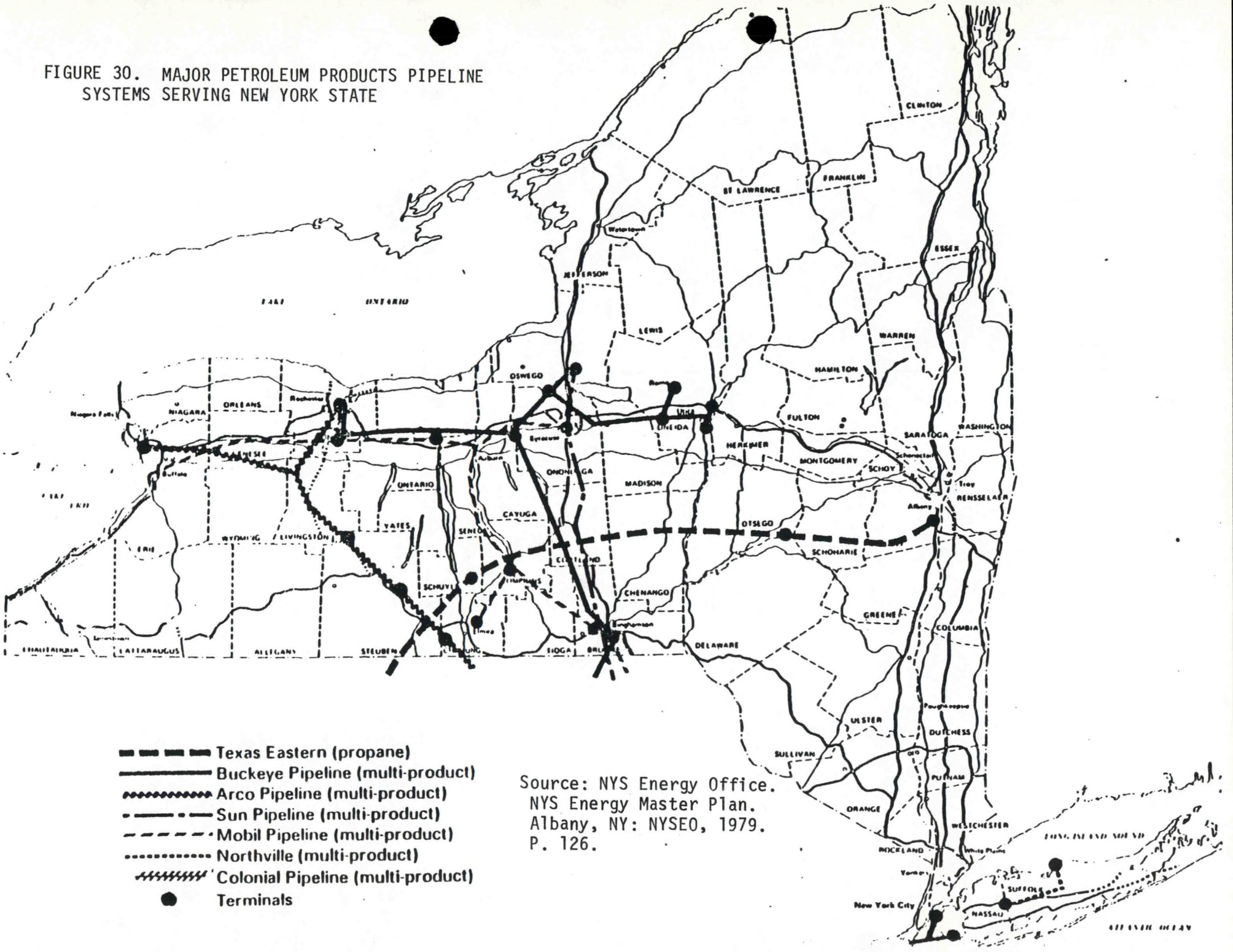
*New York State Distribution Companies*

Brooklyn Union—The Brooklyn Union Gas Company
Central Hudson—Central Hudson Gas & Electric Corp.
Columbia—Columbia Gas of N.Y., Inc.
Con Ed—Consolidated Edison Co. of N.Y., Inc.
Corning—Corning Natural Gas Corporation
LILCO—Long Island Lighting Company
National Fuel Gas—National Fuel Gas Distribution Corp.
NYSE&G—New York State Electric and Gas Corp.
NMPC—Niagara Mohawk Power Corp.
O&R—Orange & Rockland Utilities, Inc.
Pavilion—The Pavilion Natural Gas Company
RG&E—Rochester Gas and Electric Corp.
St. Lawrence—St. Lawrence Gas Co., Inc.
Syr. Suburban—Syracuse Suburban Gas Company, Inc.

*Interstate Pipeline Supply Companies*

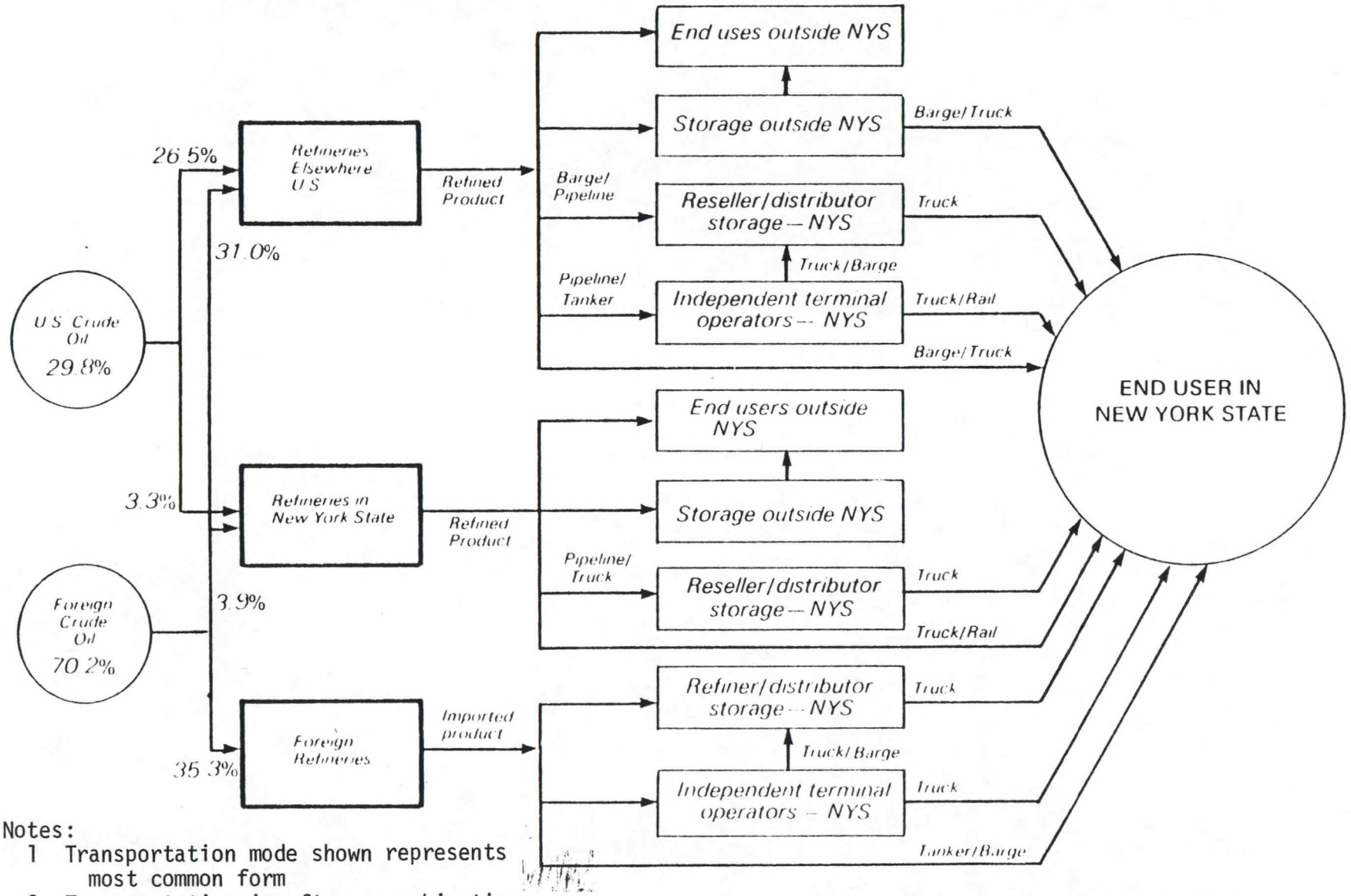
Tenneco—Tennessee Gas Pipeline Company
Algonquin—Algonquin Gas Transmission Company
Transco—Transcontinental Gas Pipe Line Corporation
North Penn—North Penn Gas Company
Tetco—Texas Eastern Transmission Corporation
Con Gas—Consolidated Gas Supply Corporation
Columbia—Columbia Gas Transmission Corporation
NFG Supply—National Fuel Gas Supply Corporation

FIGURE 30. MAJOR PETROLEUM PRODUCTS PIPELINE SYSTEMS SERVING NEW YORK STATE




Source: NYS Energy Office. NYS Energy Master Plan. Albany, NY: NYSEO, 1979. P. 126.

FIGURE 31. PETROLEUM PRODUCT DISTRIBUTION SYSTEM, New York State




Notes:

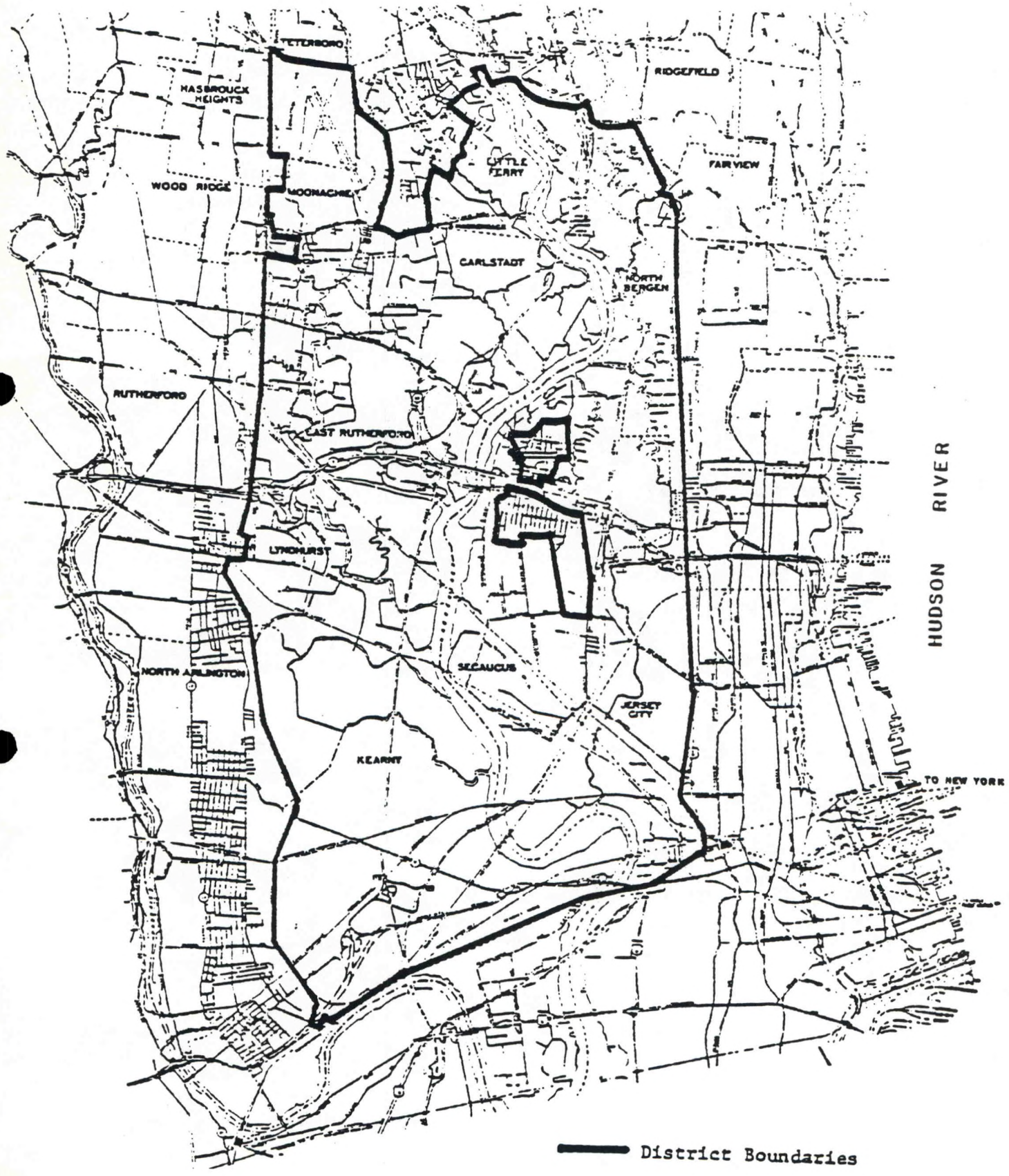
1 Transportation mode shown represents most common form
2 Transportation is often a combination of the modes shown or others
3 Numbers indicate estimated mix of petroleum products consumed in New York State by crude oil origin and refinery location

Source: New York State Energy Office. "NYS Energy Master Plan." Albany, NY: NYSEO, March 1980. P. 24.

FIGURE 32. BOUNDARY OF THE DELAWARE-RARITAN CANAL AREA

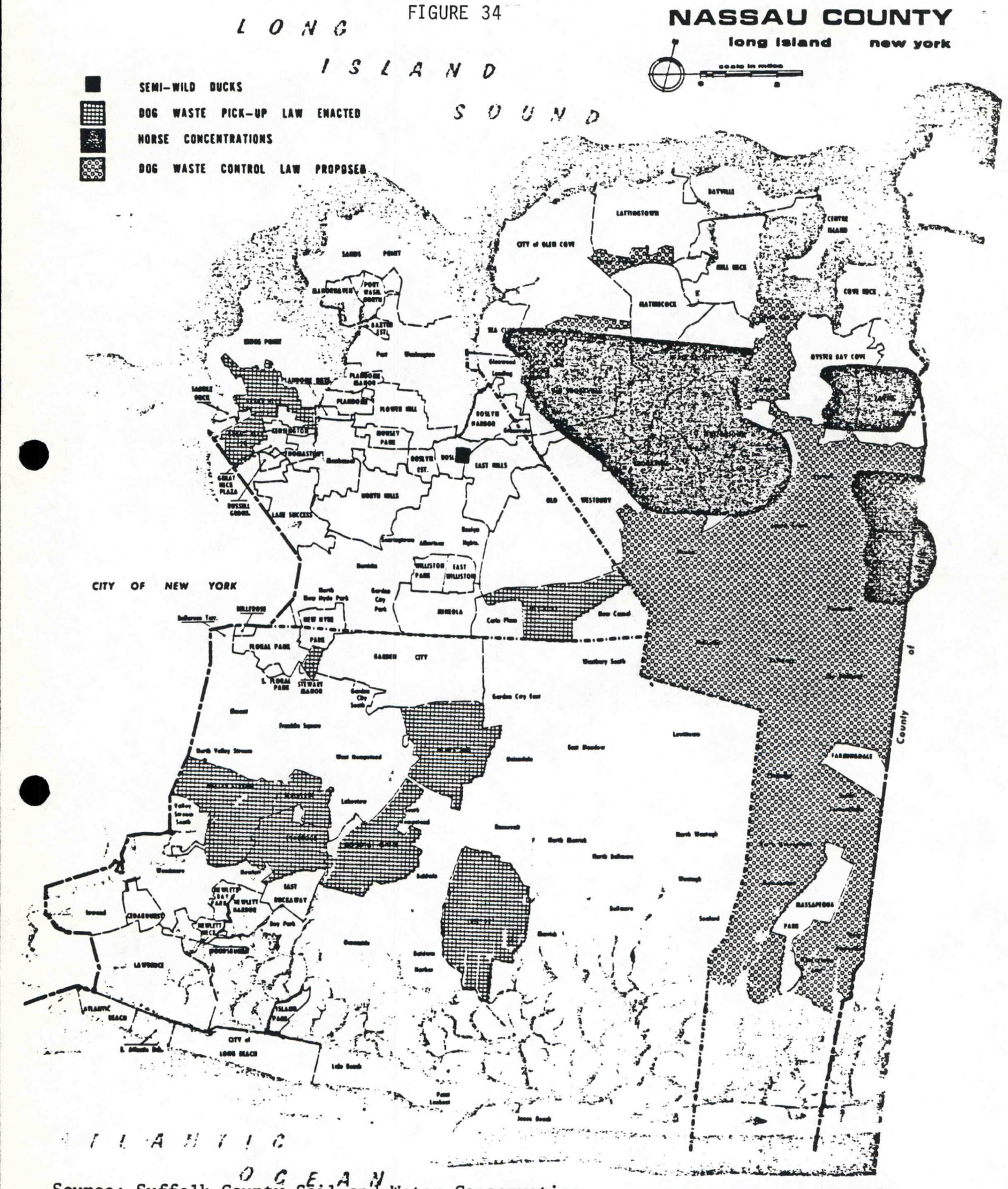

Source: D & R Canal Commission. "Regulations for the Review Zone of the D & R Canal State Park". Trenton, NJ: The Commission, November 1979. P. 30.

FIGURE 33. HACKENSACK MEADOWLANDS DISTRICT




Source: Hudson River Waterfront Study, Planning and Development Commission. "Final Report". Trenton, NJ: HRWSPDC, September 1980. P. 159.

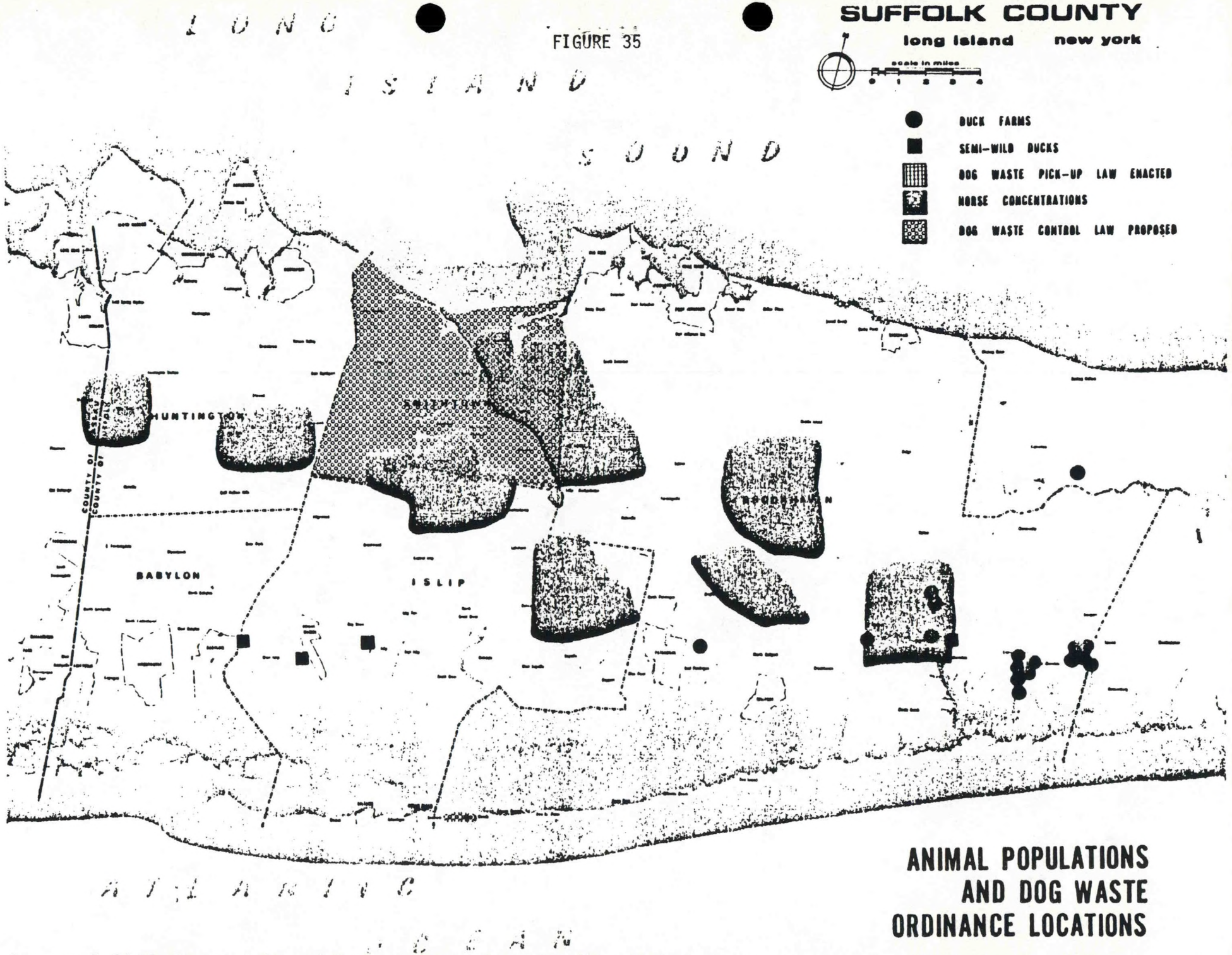
FIGURE 34




Source: Suffolk County Soil and Water Conservation District. "Animal Waste. Nassau and Suffolk Counties, NY. Hauppauge, NY: Nassau-Suffolk Regional Planning Board, 1976.

**ANIMAL POPULATIONS AND DOG WASTE ORDINANCE LOCATIONS**

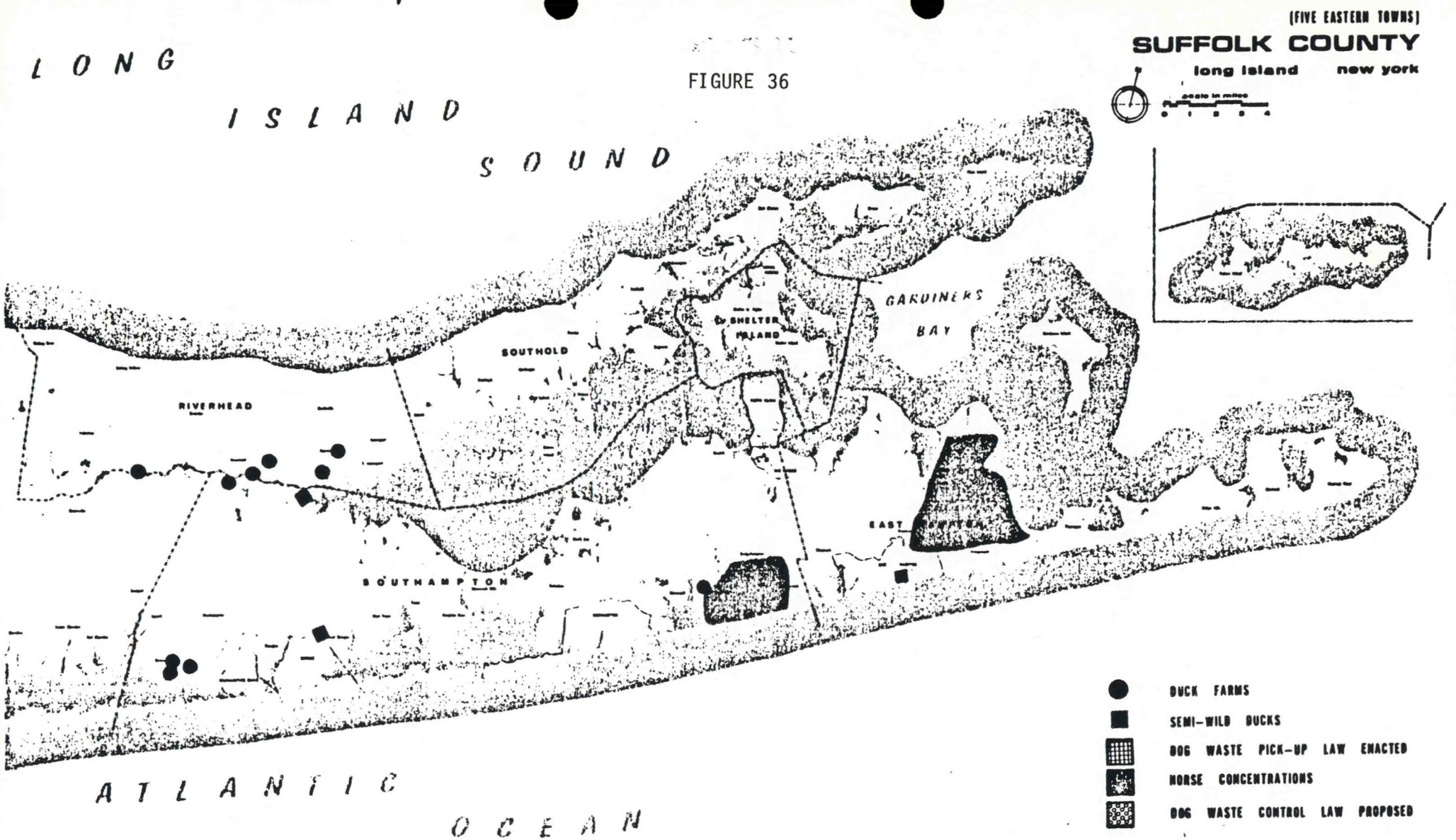
FIGURE 35




**ANIMAL POPULATIONS AND DOG WASTE ORDINANCE LOCATIONS**

Source: Suffolk County Soil and Water Conservation District. "Animal Waste. Nassau and Suffolk Counties, NY. Hauppauge, NY: Nassau-Suffolk Regional Planning Board, 1976.

FIGURE 36




**ANIMAL POPULATIONS AND DOG WASTE ORDINANCE LOCATIONS**

Source: Suffolk County Soil and Water Conservation District. "Animal Waste. Nassau and Suffolk Counties, NY. Hauppauge, NY: Nassau-Suffolk Regional Planning Board, 1976.

# TABLES

## TABLE 1. FEDERALLY MANDATED WATER RESOURCE RELATED PLANNING PROGRAMS

| Planning Program | Legislative Citation (Section Number) | Contents of the Plan | Plans Completed for the Hudson-Raritan Estuary Area | Text Reference |
|---|---|---|---|---|
| A. Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500)/Clean Water Act of 1977 (P.L. 92-217) (U.S. Environmental Protection Agency) | | | | |
| Comprehensive Pollution Control Plan – Basinwide | 102 (c) (2) (D) | – Consistency with all standards.<br>– Treatment work recommendations to maintain and improve water quality; financing of plan.<br>– Consistency with 208, 209 and 303(e) plans. | | |
| Waste Treatment Management Plans – Facility Construction | 201 | – Best practicable waste treatment technology for wastewater discharge, reclamation or recycling.<br>– Disposal of pollutants to prevent migration.<br>– Advanced waste treatment techniques.<br>– Revenue producing facilities.<br>– Areawide basis for control and treatment of wastes.<br>– Integrated facilities.<br>– Combined open space and recreation with facilities. | Numerous plans at the municipal level. | |
| Areawide Waste Treatment Management | 208 (b) (2) | – Treatment works needs including land acquisition, collection and stormwater runoff systems, financing arrangements, and open space and recreation opportunities.<br>– Construction schedule for treatment works.<br>– Regulatory program to implement 201 plans, discharges, pretreatment; agencies to implement plan.<br>– Implementation measures including financing, economic, social and environmental impacts.<br>– Non-point source controls.<br>– Salt water intrusion controls.<br>– Residual waste control.<br>– Land and subsurface disposal of wastes control. | Monmouth County, Lower Raritan, Middlesex, Upper Raritan, Northeastern New Jersey, Westchester County, New York City, Nassau-Suffolk, New York State Statewide Plan (undesignated areas). | |
| Basin Plans (Level B under Water Resources Planning Act of 1965) | 209 | – Integration of water quality, water quantity and land management problems.<br>– Inclusion of multi-objective and multi-purpose objectives in alternative plans.<br>– Recommendations for implementation. | New England River Basin Commission. "Long Island Sound Study" (1975); NYS DEC. "The Water and Related Land Resources of the Hudson River Basin" (September 1979) | |

| Planning Program | Legislative Citation (Section Number) | Contents of the Plan | Plans Completed for the Hudson-Raritan Estuary Area | Text Reference |
|---|---|---|---|---|
| State Continuing Planning Process | 303 (e)* | – Effluent limits and compliance schedules for dischargers.<br>– All elements of 208 and 209 plans.<br>– Computation of total maximum wasteloads.<br>– Authority for intergovernmental cooperation.<br>– Adequate implementation, including water quality standards setting and revision procedures.<br>– Residual waste controls.<br>– A priority ranking of waste treatment works projects for funding. | | |
| Water Quality Inventory Report | 305 (b) | – Water quality description.<br>– Analysis of ability of navigable waters to support various uses.<br>– Analysis of the extent to which pollutant sources will be eliminated according to the Act's requirements.<br>– Impacts of the achievement of the Act's goals.<br>– Nonpoint source pollution estimation and recommendations. | New York State Department of Environmental Conservation, Division of Water. "NYS Water Quality 1980" (May 1980); New Jersey Department of Environmental Protection. "Water Quality Report." | |
| B. Northeastern United States Water Supply Act (P.L. 89-298) (U.S. Army Corps of Engineers) | | | | |
| Northeastern U.S. Water Supply Plan | 101 | – A plan to prevent or mitigate against effects of future water supply problems; planning done in conjunction with other levels of government and planning efforts done under the Water Resources Planning Act of 1965.<br>– The plan may consist of construction, operation and maintenance of major (a) reservoir systems, (b) water conveyance or distribution systems for exchanges between river basins, (c) purification systems.<br>– Financial arrangements for the distribution of costs among appropriate levels of government. | U.S. Army Corps of Engineers, North Atlantic Division, *Northeastern United States Water Supply Study* (NEWS), July 1977. This plan identified the Hudson River Project (high flow skimming) as an early action project for the New York Metropolitan Area. | |
| C. Water Resources Planning Act of 1965 (P.L. 89-80) (U.S. Water Resources Planning Council)<br><br>(See entry under Basin Plans, FWPCAA (P.L. 92-500)). | | | | |

* 303 (e) and 208 planning were combined in November 1975 by U.S. Environmental Protection Agency (CFR Part 131.11 (a) (p)).

| Planning Program | Legislative Citation (Section Number) | Contents of the Plan | Plans Completed for the Hudson-Raritan Estuary Area | Text Reference |
|---|---|---|---|---|
| D. Coastal Zone Management Act of 1972 (P.L. 92-583)/ Amendments of 1976 (P.L. 94-370) (U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Coastal Zone Management) | | | | |
| State Coastal Management Plan | 302 (a), 305 | – Delineation of the boundaries of the coastal zone.<br>– Environmental and economic characteristics of the coastal zone.<br>– Implementation plan. | New Jersey Department of Environmental Protection, *Options for New Jersey's Developed Coast* (March 1979); New York State Department of State, *Coastal Management Program*, "Hudson Valley Regional Element" (March 1979); New York City Department of City Planning, *Coastal Zone Management* (September 1979); Long Island Regional Planning Board, "Long Island Regional Element" (1979). | |
| E. P.L. 685 (52 Stat. 802; 33 U.S.C. 540), Sec. 1; P.L. 429, as amended (37 Stat. 826; 33 U.S.C. 542), Sec. 4; Congressional Appropriations (U.S. Army Corps of Engineers) | | | | |
| Urban Studies Program, Urban Water Resources Plans | | The plan can address: flood control flood plain management, municipal and industrial water supply, wastewater management, bank and channel stabilization, lake, estuarine and ocean restoration and protection, recreation management at Corps projects, regional harbors and waterways, and any additional components. | No plans currently funded in the Hudson-Raritan Estuary. | |
| F. National Flood Insurance Act of 1968, National Flood Disaster Protection Act of 1973 (Federal Emergency Management Agency, formerly the Federal Insurance Administration within HUD) | | | | |
| National Flood Insurance Program – Flood Hazard Boundary Maps, Flood Insurance Rate Maps | | Land use controls for flood plain areas; detailed mapping of floodplain areas according to probability of flooding. | Numerous plans at the municipal level. | |
| G. Safe Drinking Water Act of 1974 (P.L. 93-523) (U.S. Environmental Protection Agency) | | | | |
| Sole Source Aquifer Designation | Sec. 1424 (e) | Denies federal financial assistance of all kinds to projects that may contaminate aquifers designated as recharge areas; jurisdiction is only over federally funded projects. | Designated aquifers:– New York: Long Island (parts); New Jersey: Chatham Buried Valley Aquifer. Aquifers proposed for designation – New York: Amendment to the Long Island aquifer to include portions of Brooklyn and Queens; New Jersey: Coastal Plain Area (South Jersey), Ridgewood Aquifer (North Jersey), Rockaway Valley Aquifer (North Jersey). | |

Table 2

HIERARCHY OF WATER RESOURCES PLANNING PROGRAMS PERTINENT TO THE HRE, BASED ON POTENTIAL GEOGRAPHIC SCOPE OF THE PROGRAM

| Program | Potential Geographic Scope |
|---|---|
| Northeastern U.S. Water Supply Plan | Multi-state |
| Level B Plans | Multi-state |
| State ("303(e)") Plans | Statewide |
| Water Quality Inventory ("305(b)") | Statewide |
| Coastal Management Plans | Statewide with provisions for local designations |
| Areawide water quality management plans ("208" Plans) | Substate regional |
| Wastewater Facility Plans | Substate regional and local |
| Floodplain management plans | Local |

Note: Numbers following program names refer to sections of the Federal Water Pollution Control Act Amendments of 1972, as amended by the Clean Water Act of 1977.

TABLE 3

SELECTED CHARACTERISTICS OF COASTAL ZONE MANAGEMENT AREAS IN AND ADJACENT TO THE HRE

| Coastal Zone Planning Area | Miles of Shoreline | Drainage area (sq. mi.) | Number of Municipalities | | | | Reference |
|---|---|---|---|---|---|---|---|
| New York State: | | | Cities | Towns | Villages | | |
| Total | 3,200 | | 25 | 112 | 103 | | NYS Dept. of State (NYSDOS)(3/79):I-3. |
| Long Island | 1,265* | | 2 | 11 | ** | | NYSDOS (3/79):II-1. |
| New York City | 578 | | 1 | -- | -- | | |
| Hudson River Valley*** | | 5,000 | | | | | NYS Dept. of State |
| New Jersey: | | | Cities | Towns | Townships | Boroughs | |
| Total | | | | | | | |
| Northern Waterfront | 60 | | 14 | 7 | 9 | 23 | NJDEP (March 1979): 84. |
| Hackensack Meadowlands | | 3,160**** | | | | | |

Notes:
*Includes barrier islands
**Unestimated
***Extends 150 miles inland; municipalities not calculated since coastal zone boundary not delineated precisely.
****Acreage of wetland

TABLE 4

GENERAL POLICY ISSUES OF THE COASTAL MANAGEMENT PROGRAMS OF NEW YORK AND NEW JERSEY COMPARED: 1979

| Policy and/or Issue Area | New York | New Jersey |
|---|---|---|
| Preservation of the coastal ecosystem/ fish and wildlife habitats | X | X |
| Aesthetic resource protection | X | |
| Recreation/open space | X | X |
| Public access to the waterfront | X | X |
| Economic development/port development & maintenance | X | X* |
| Energy facilities and their impacts | X** | X |
| Protection of agricultural resources | X | |
| Protection of property from coastal flooding and erosion | X | |
| General protection of public health, safety and welfare of residents, workers and vistors to the coastal zone | | X |
| Improvement of water quality | X | |
| Concern for air quality | X | X |
| Concentrated pattern for coastal development | | X |
| Mixed use pattern for coastal development | | X |
| General resource protection | | X |
| Transportation facilities | | X |

Notes: *New Jersey emphasizes the development of a decision-making technique to evaluate development in relation to environmental goals, while New York emphasizes the need to consider economic growth.

**The New York plan specifically singles out OCS energy facilities.

Table 5
GEOGRAPHIC AREAS OF PARTICULAR CONCERN (COASTAL ZONE MANAGEMENT PROGRAM)
Nassau and Suffolk Counties: 1979

| Geographic Areas of Particular Concern | Primary Objective | Other High Priorities | Lowest Priority Uses |
|---|---|---|---|
| Hempstead Harbor | Increased recreation/ public access | Power; importation of petroleum, trap rock | Oil storage, land-fills |
| Cold Spring Harbor | Wildlife habitat/ aesthetics | Recreation; increased access | Marine commercial development; active recreation |
| Huntington Harbor | Increased public access/expansion of water dependent uses | Boating; passive recreation | Oil storage |
| Kings Park-San Remo | Wetlands preservation/ aesthetics | Open space (Nissequoque River) | Marine Commercial/ waterfront residential |
| Port Jefferson Harbor | Consolidation of waterfront industry and commerce | Marine commercial related to business district | Oil storage; non-water dependent commercial |
| Shoreham-Wading River | Future energy facilities; transportation access for future LI Sound Crossing | Wetlands preservation; power generation | Shorefront transportation and recreation |
| Mattituck-Creek-Northville | Increased access; tourism | Recreational boating; agriculture, wetlands preservation | Shorefront residential |

Table 5. (continued)

| Geographic Areas of Particular Concern | Primary Objective | Other High Priorities | Lowest Priority Uses |
|---|---|---|---|
| Peconic Bluffs | Recreation | Swimming, fishing, camping | |
| Robins Island | Open space, public access for recreation | Natural resource preservation | Active recreation |
| Greenport | Public use of waterfront; waterfront commercial | Maintenance dredging, tourism | Ferry access to Connecticut |
| Shelter Island | Natural resource preservation; cluster residential | Wetlands preservation | Marine commercial; active recreation |
| Fort Pond Bay | Water dependent industry, commercial, research | | Mining of bluffs |
| Napeague | State park development for recreation | Recreation; marine fisheries; marine commercial | Residential development |
| Gardiners Island | Natural resource/ historic preservation | Outdoor education, fishing, hiking | Active recreation; camping |
| Cow Neck | Agricultural land, wetlands (tidal) and freshwater supply preservation | Existing uses, passive recreation | Residential, marine commercial |
| Shinnecock Canal | Navigation maintenance, increased public access, new tourism | Cluster tourism development | Seasonal and year-round housing |

Table 5. (continued)

| Geographic Areas of Particular Concern | Primary Objective | Other High Priorities | Lowest Priority Uses |
|---|---|---|---|
| Shinnecock Inlet | Dock/pier space for commercial fishing | Bathing; inlet improvement | Marine commercial |
| Freeport Waterfront | Residential/industrial/commercial use balance for waterfront; public access; industrial in northeast | Marine commercial | Incinerators, sewage treatment plants (waste disposal); residential |
| Oceanside-Island Park | Energy generation, oil storage, solid waste disposal | Water-dependent industry | Commercial |

Note: Only the GAPCs of Statewide Importance have been listed here; a listing of GAPCs of local concern are listed in the coastal management program element. While these areas were singled out in the original coastal management plans, the final plans will not single out "GAPCs" as such.

Source: Summarized from - Long Island Regional Planning Board. "Long Island Regional Element. NYS Coastal Management Program". Hauppauge, NY: LIRPB, April 30, 1979. Pp. 225-228.

## TABLE 6. GEOGRAPHIC AREAS OF PARTICULAR CONCERN
## HUDSON RIVER VALLEY, NEW YORK, 1979
### Areas Identified as Part of the Coastal Management Program

A. Generic Geographic Areas of Particular Cocern: Power Plants

Dutchess: Quarry site – Proposed coal-fired steam-electric generating station (an alternative to Hart Island, Arthur Kill, and Athens sites)

Orange: Danskammer Point – Six existing oil-fired steam-electric generating units
Roseton Site – Two existing oil-fired steam-electric generating units
Cornwall Pumped Storage Facility – Proposed hydro-electric

Putnam: None

Rockland: Bowline Point Site – Two existing oil-fired steam-electric generating stations
Lovett Site – Five existing oil-fired steam-electric generating stations

Ulster: None

Westchester: Indian Point Site – Three existing nuclear steam-electric generation stations (Indian Point #1 not operating)

B. Other Site-Specific Areas (with the exception of recreational areas)

| | Fish & Wildlife Area | Unique Geologic Area | Preservation Area | Scenic Area | Industrial Redevelopment | Recreation | Waterfront |
|---|---|---|---|---|---|---|---|
| Dutchess: | | | | | | | |
| North and South Tivoli Bay | X | | | | | | |
| Wappingers Creek | X | X | | | | | |
| Pollepel Island | | | X | | | | |
| Hudson Highlands | | X | | X | | | |
| Orange: | | | | | | | |
| Newburgh Waterfront | | | | | X | | |
| Hudson Highlands | | X | | X | | | |
| Putnam: | | | | | | | |
| Hudson Highlands | | X | | X | | | |
| Rockland: | | | | | | | |
| Palisades Formation | | X | | X | | | |
| Piermont | | | | X | | | |
| Hudson Highlands | | X | | X | | | |
| Ulster: | | | | | | | |
| Esopus Creek | X | | | | | | |
| Roundout Creek/Roundout Flats | X | | | | | | |
| Poughkeepsie Deepwater Habitat Area | X | | | X | | | |
| Kingston Quarry Sites | | | | | X | | |
| Ulster County | | | | | | | |
| Westchester: | | | | | | | |
| Otter Creek/Guion Creek | X | | | | | | |
| Hudson Highlands | | X | | X | | | |
| Playland Area | | | | | | X | |
| Mamaroneck Harbor | | | | | | | X |
| New Rochelle Harbor | | | | | | | X |
| Croton Area | | | X | X | | | |
| North Terrytown Area | | | | | X | | |
| Premium Marsh Complex | | | X | | | | |
| Yonker | | | | | | | X |

Source: Summarized from New York State Department of State. New York State Coastal Management Program. "Hudson Valley Regional Element." Albany, New York Department of State, March 1979.

Note: These areas have been withdrawn from the final plans. Nevertheless, they reflect the priorities developed during the coastal management planning process.

## TABLE 7: NEW YORK CITY COASTAL ZONE MANAGEMENT PROGRAM SHOREFRONT ACCESS AREAS OF CONCERN – 1979

| | Basis for Selection | | Type of Access | | | Nature of Access Issue | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proposal, plan, policy | CZM identification | Transportation | Visual | Physical (pedestrian) | Inadequate access to waterfront open space | Need for waterfront open space | Lack of upland open space | Opportunity for view/ access corridors or waterfront open space | Inadequate public transportation | Conflicting waterfront activities | Potential for generating adverse impacts such as: overuse, traffic congestion, health and safe hazards, disruption of natural features, etc. | Existing adverse impacts from current transportation (public or private) situation such as: overuse, traffic congestion, health and safety hazards, parking problems, etc. |
| Bronx Sites | | | | | | | | | | | | | |
| Bronx River | X | | | X | X | X | X | | X | | X | | |
| City Island | X | | X | | | | | | | | | | X |
| Ferry Point Park | | X | X | | | | | | X | X | | | |
| Pelham Bay Park | | X | | | | | | | X | X | | X | |
| Soundview Peninsula | X | X | X | X | X | X | | X | X | X | | | |
| Riverdale SNAD | X | | | | X | X | | | | | | | |
| Brooklyn Sites | | | | | | | | | | | | | |
| Spring Creek | X | | X | | X | | X | | X | | | X | |
| Paerdegat Basin | | X | | X | X | | X | | X | | | | |
| Sheepshead Bay | | X | X | | | | | | | X | | | X |
| Coney Island Beach | | X | X | | X | X | | | | X | | | |
| Dreier-Offerman Park | X | | X | | X | X | | | X | | | | |
| Red Hook | | X | | | X | X | X | | X | | X | | |
| Fulton Ferry | X | | | | X | X | X | X | X | | X | | |
| Northern Brooklyn Waterfront | X | | | | X | | X | X | X | | X | | |
| Manhattan Sites | | | | | | | | | | | | | |
| Manhattan Landing SD | X | | | X | X | X | | | X | | | | |
| Battery Park City SD | X | | | X | X | X | | | X | | | | |
| Greenwich Street SD | X | | | | X | X | | | | | | | |
| Westway | X | | | | X | X | X | | X | | | | |
| Chelsea Piers | | X | | | X | X | X | | X | | | | |
| Lincoln Square | X | | | | X | X | | | X | | | | |
| North River WPC | X | | | | X | X | X | | | | | | |
| Randall's Island | | X | X | | X | X | X | X | | X | | | |
| East River Waterfront | | X | | | X | X | | | | | | | |
| Queens Sites | | | | | | | | | | | | | |
| North East Shore | X | | | X | X | | | | X | | | X | |
| Flushing Meadow Park | | X | X | | | | | | | X | | | X |
| Northwest/East River Shore | | X | | X | X | | X | | | | X | | |
| Edgemere Landfill | | X | | | X | | | | X | | | | |
| Arverne URA | X | | | | X | | | | X | | | | |
| Staten Island Sites | | | | | | | | | | | | | |
| Sailor Snug Harbor | | X | X | | X | | | | X | X | | | |
| St. George Ferry Terminal | X | | | | X | X | | | | | | | |
| Alice Austen Esplanade | | X | | | X | X | | | | | | | |
| Richmond SNAD | X | | | | X | | | | | | | X | |
| South Richmond SD | X | | | | X | | X | | X | | | | |

Source: New York City Department of City Planning. Coastal Zone Management. NY:DCP, 1979. Pp. 4-39 to 43.

TABLE 8

DESIGNATED PLANNING AGENCIES FOR AREAWIDE WATER QUALITY MANAGEMENT PLANNING
Hudson-Raritan Estuary Area: 1976-1980

| 208 Planning Areas in the HRE | Name of Planning Agency |
|---|---|
| New Jersey: | |
| Middlesex County | Middlesex County Planning Board |
| Monmouth County | NJ Dept. of Environmental Protection, Division of Water Resources |
| Upper Raritan | " |
| Northeastern New Jersey | " |
| New York: | |
| Nassau-Suffolk Counties | Nassau-Suffolk Regional Planning Board |
| New York City | NYC Dept. of Environmental Protection, (Water Resources) & City Planning Dept. |
| Westchester County | Westchester County Planning Dept. |
| Mid-Hudson (New York State "undesignated area")-NYS DEC Region 3 | NYS Dept. of Environmental Conservation |

TABLE 9

STATUS OF AREAWIDE WATER QUALITY MANAGEMENT PLANS,
Hudson Raritan Estuary Area: November, 1980

| 208 Planning Areas in HRE | Major Existing Outputs/[1] | Status of Formal Actions and Dates of Action: State Review Process/[2] Conditional Certification & Adoption | Status of Formal Actions and Dates of Action: U.S. EPA Review Process Unconditional Approval |
|---|---|---|---|
| NEW JERSEY | | | |
| Lower Raritan/ Middlesex County | Draft Plan,8/77; Addendum; supplement | 8/2/78 | 4/9/79 |
| Monmouth County | Draft Plan (undated); 8/79 Addendum; 12/79 Supplement | 3/12/80 | 4/16/80 |
| Upper Raritan | Draft Plan 5/79; 7/79 Addendum; 12/79 Supplement | 3/12/80 | 4/16/80 |
| Northeastern NJ | Draft Plan, 4/79 | 3/12/80 | 4/16/80 |

Table 9. (continued

| 208 Planning Areas in HRE | Major Existing Outputs/[1] | Conditional Certification & Adoption | Unconditional Approval |
|---|---|---|---|
| NEW YORK | | | |
| Nassau-Suffolk | Final Plan, 7/78 | | |
| New York City | Executive Summary, 3/78; Final Report, 4/79 | 8/21/81 | |
| Westchester County | Initial Plan, 3/78 | 11/28/79 | 8/6/80 |
| Mid-Hudson (NYS Undesignated area) | Draft Plan, 3/79 | No formal action taken | |

Notes:

1-These outputs are exclusive of short summaries and task reports. For a complete listing of task reports prepared under the 208 Plans see the plans themselves.

2-The term conditional certification actually involves conditional certification for some plan components, unconditional certification for others. If any particular element is conditionally certified, the whole plan is considered conditionally certified.

Table 10. COMPARATIVE GEOGRAPHIC AREAS FOR SELECTED AREAWIDE OR REGIONAL WATER RESOURCE PLANNING PROGRAMS, Hudson-Raritan Estuary Area

| 208 Planning Areas | Coastal Zone Management Areas | Level B |
|---|---|---|
| New Jersey: | | |
| Monmouth | Bay and Ocean Shore Segment | none |
| Lower Raritan/Middlesex | Northern Waterfront Area | " |
| Upper Raritan | " | " |
| Northeastern NJ | " | " |
| New York: | | |
| Nassau-Suffolk | Nassau-Suffolk (Long Island) | Long Island Sound |
| New York City | New York City | " |
| Westchester | Hudson Valley Region | " |
| Mid-Hudson (DEC Region 3) | " | Hudson River |

## TABLE 11. PROBLEM IDENTIFICATION FOR WATER QUALITY MANAGEMENT PLANS

| Problem Areas Identified | 208 Planning Area | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Middlesex | | | |
| | Region 3 NYS (DEC) — Undesignated Areas | Nassau-Suffolk Regional Planning Board | NYC Dept. of Environmental Protection | Westchester County | Rockland, Mid-Hudson | Upper Raritan | Monmouth | Northeast | South River | Lawrence Brook | Lower Raritan | Green Brook |
| Municipal Discharges | 3 | 3 | 3 | 3 | | 2 | 2* | 1** | 2* | 2 | 3 | |
| Industrial Discharges | 3 | 3 | 3 | 3 | | 2 | 1 | 0 | 2* | 2 | 3 | |
| Residual Wastes | 2<br>3 | 3 | 3 | 2 | | | 2 | | | | | |
| Combined Sewer Overflows | 3 | 0 | 3 | 3 | | | | | | | | |
| Urban Storm Runoff | 3 | 3 | 2 | 3 | | 3 | 2* | 3* | 2 | | 3*** | 3 |
| Man-Made Modifications to Waterways | 3 | 2 | 2 | 3 | | | | | | | | |
| Excessive Water Use | 2 | 2 | 3 | 2 | | | | | | | | |
| Oil and Hazardous Material Spills/Toxics | 3 | 3 | 2 | 3 | | 2 | 3 | 3 | | | 3 | |
| Environmentally Unsound Development/ Sewer Extensions | 3 | 3 | 2 | 3 | | | | 3 | 2 | | | |
| On-Lot Septic Disposal | 2<br>3 | 3 | 0 | 2<br>3 | | 2 | 1 | | | | | |
| Construction | 2 | 2 | 1 | 2 | | 2 | | | | | | |
| Landfill Leachate | 2<br>3 | 3 | 2 | 2<br>3 | | 2 | 1 | 3** | | | 3 | |
| Agriculture and Irrigated Agriculture | 3 | 3 | 0 | 2<br>1 | | 3 | 2* | | | | 2 | |
| Dredging Operations and Spoil Disposal/ Accumulated Bottom Sediments | 2 | 3 | 2 | 2 | | | | | | | | |
| Silviculture | 2 | 0 | 0 | 2 | | | | | | | | |
| Vessel Wastes | 3 | 2 | 2 | 2 | | | | | | | | |
| Complex Surface/Ground and Salt Water Intrusion | 2 | 3 | 2 | 2 | | | | | | | 2 | |
| Mining | 2 | 1 | 0 | 1 | | | | | | | | |
| Thermal Discharges | 3 | 2 | 3 | 2 | | | 2* | | | | | |
| Animal Feedlots | 2 | 2 | 0 | 0 | | | | | | | | |
| Orher Nonpoint Source/General Nonpoint Sources | 3 | 3 | 2 | 2<br>3 | | | | 3 | | | | |
| Radioactive Wastes | 0 | 2 | 0 | 0 | | | | | | | 0 | |
| Snow Removal and Deicing | 1 | 2 | 1 | 2 | | | | | | | | |
| Air Pollution Residuals ad Acid Rain | 0 | 1 | 1 | 0 | | | | | | | | |
| Inadequate Quantity of Water Supplies | 2 | 2 | 2 | 2 | | | | | | | | |
| Inadequate Potable Water Supply | | | | | | 3 | 3 | 3 | | | | |
| Lake Quality Management/Eutrophication | | | | | | 3 | 2* | | | 3 | | |
| Ground Water Management | | | | | | 1 | 3 | | 3 | | | 2 |

Key: 0 = No indication of problem and/or no information.
3 = High.
2 = Medium.
1 = Low.

Notes: * Geographic area specific.
** For the Passaic and Hackensack Basins.
*** Suburban and rural runoff.

Source: NYSDEC. *Draft 208 WQMP.* (Albany, NY:DEC, March, 1979), p. III5, U.S. EPA and NJDEP. *NJ State EPA Agreement* (Trenton, NJ: DEP, May, 1979), p. 3-75; various 208 WQMP Plans.

TABLE 12

LEVEL OF DEVELOPMENTOF VARIOUS COMPONENTS OF WATER QUALITY MANAGEMENT PLANS IN THE NEW JERSEY PORTION OF THE HUDSON-RARITAN ESTUARY, 1979

| | Problem Identification | Technical Solutions | Regulatory Programs | Management Agency |
|---|---|---|---|---|
| Point Sources | | | | |
| Municipal Discharges | + | + | + | + |
| Industrial Discharges to Municipal Facilities | + | + | + | + |
| Industrial Discharges | + | + | + | + |
| Non-point Sources | | | | |
| Agricultural | P | + | - | + |
| Silviculture | P | + | - | + |
| Mining | P | + | - | - |
| Construction | P | + | + | + |
| Landfills | P | + | + | + |
| Hydrologic Modifications | - | - | - | - |
| Residual Wastes | - | - | - | - |
| Urban Stormwater | P | - | + | - |
| Septic Systems | P | P | P | P |

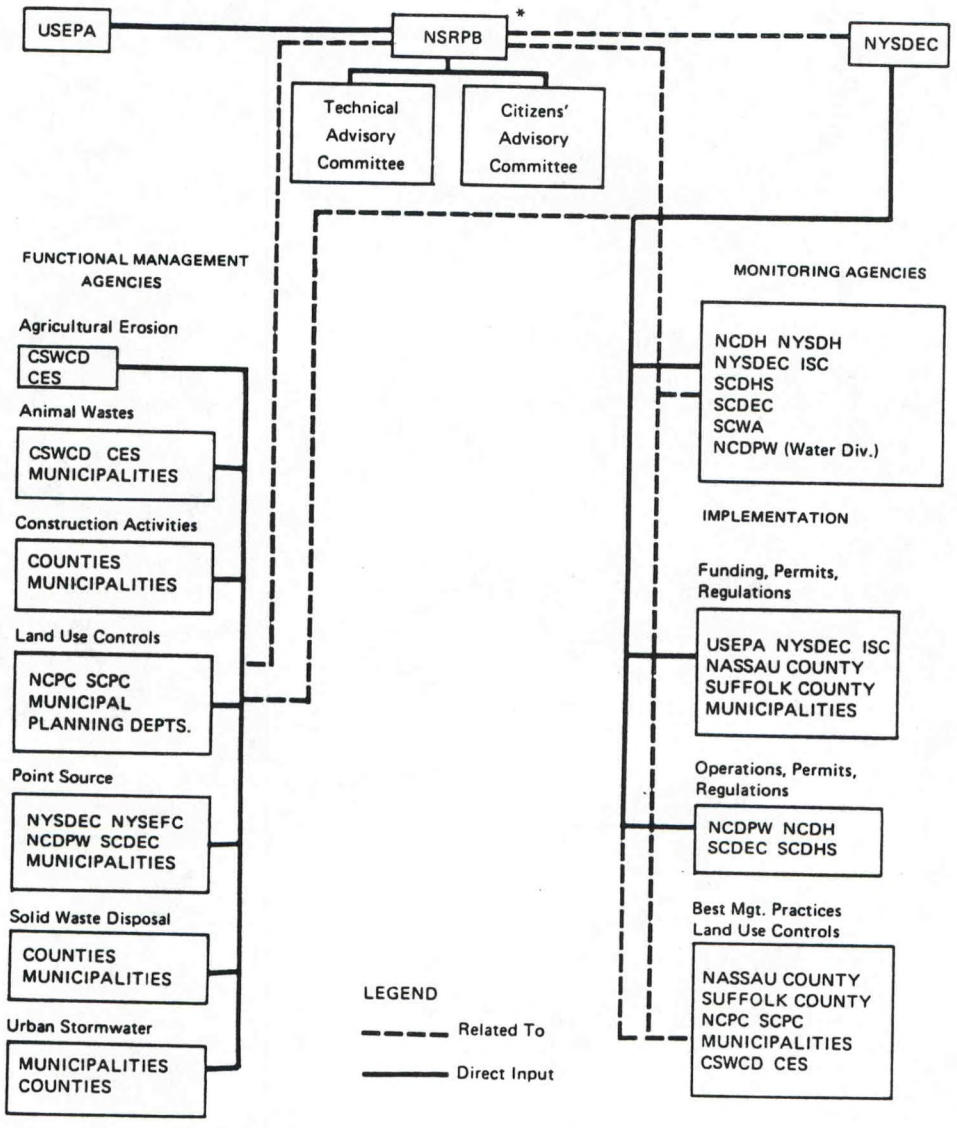
Key: + = Sufficient detail to develop complete program.
P = Partially developed in plan, not in sufficient detail to implement complete program.
- = Not developed in plan.

Notes: The Monmouth County Plan has a (+) for landfills, (-) for urban stormwater for problem identification. The Northeastern New Jersey Plan has a voluntary management program for regulation for agriculture and silviculture.

Source: New Jersey Department of Environmental Protection. Draft Water Quality Management Plans for Monmouth County, Upper Raritan, and Northeastern New Jersey. Trenton, New Jersey: New Jersey Department of Environmental Protection, 1979. P. I-19 of each of the three reports.

TABLE 13

PROPOSED MANAGEMENT ORGANIZATION FOR THE "208" CONTINUING PLANNING PROCESS, Nassau-Suffolk "208" Planning Area: 1978




* NYSDEC may be shifted in place of NSRPB

Source: Long Island Regional Planning Board. "Long Island Comprehensive Waste Treatment Management Plan". Volume I: Summary Plan. Hauppauge, LI: LIRPB, July 1978. P. 211.

TABLE 14

MANAGEMENT ORGANIZATION FOR "208" CONTINUING PLANNING PROCESS, Middlesex County, NJ: 1980

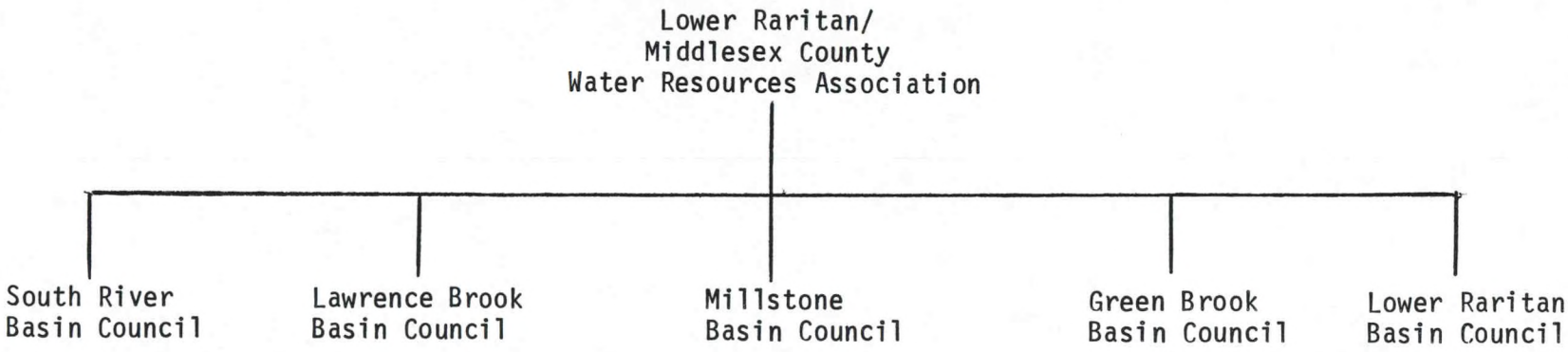


TABLE 15

PRIORITY RATING SYSTEM FOR "201" PLANNING, New Jersey

| Factor | No. of Categories | Description of Categories | Point System |
|---|---|---|---|
| **Stream Segment Priority (26 classes)** | | | |
| (1) Segment Class as an indication of Pollution severity (4 classes | 1 | Water Quality Limited | 100 |
| | 2 | Effluent Limited | 50 |
| | 3 | Sludge Management Problem Area | 30 |
| | 4 | Combined Sewer Problem Area | 20 |
| (2) Pollution Control effect in terms of use of stream segment (7 classes) | 1 | Major Freshwater Supply | 120 |
| | 2 | Shellfish Industry | 100 |
| | 3 | Primary Contact Recreation | 80 |
| | 4 | Water Supply Other than (1) above | 70 |
| | 5 | Propagation of Fish | 60 |
| | 6 | Secondary Contact Recreation | 50 |
| | 7 | Maintenance of Fish | 40 |
| (3) Population of Basin in which project is located (Based on 1970 Census plus seasonal pop. figs.; 100 possible classes) | | One point for every 10,000 population up to a maximum of 100 points. | |

TABLE 15. (continued)

| Factor | No. of Categories | Description of Categories | Point System | |
|---|---|---|---|---|
| **Discharger Characteristics*** | | | | |
| (1) Violations (3 classes) | 1 | Water Quality Standards | 120 | |
| | 2 | Areawide Non-Point Public Health Hazards | 120 | |
| | 3 | All Others | 0 | |
| (2) Nature of Waters protected by specific project (4 classes) | 1 | Shellfish | 90 | |
| | 2 | Primary Recreation | 60 | |
| | 3 | Water Supply | 45 | |
| | 4 | Secondary Recreation | 30 | |
| | | | Step 1 | Step 2 & 3 |
| (3) Nature of the project (6 major classes) | 1 | Water Quality Limited Treatment Technology | 60 | |
| | | a. BOD, NOD, Phosphorous removals and dentrification | | 75 |
| | | b. BOD, NOD and Phosphorous Removals | | 70 |
| | | c. BOD, NOD Removals and Dentrification | | 70 |
| | | d. BOD and NOD Removals | | 65 |
| | | e. BOD Removal and Land Disposal | | 65 |
| | | f. Supplementary BOD Removal | | 55 |
| | 2 | Effluent Limited Treatment Techology | 50 | 50 |
| | 3 | Transmission facilities that eliminate an existing discharge | 40 | 40 |
| | 4 | Transmission facilities | 30 | 30 |
| | 5 | Combined Sewers | 15 | 15 |
| | 6 | Collection Systems | 5 | 5 |

*only highest value which pertains to each class is used.

Source: State of New Jersey. Department of Environmental Protection. Division of Water Resources. Revisions to the New Jersey's Water Pollution Control Program Plan for Fiscal Year 1974-75.

TABLE 16

PRIORITY RATING SYSTEM FOR "201" PLANNING
New York

| Factor | Description of Factor or Categories | Point Value |
|---|---|---|
| Water Quality Needs Factor | WQNF=(40) x $\frac{\text{(D.O. standard+1)-worst D.O. value}}{\text{(D.O. standard+1)}}$ | max. 40 |
| Existing Conditions Factor | Maximum of any one of the following: | max. 40 |
| | Raw Discharge | 40 |
| | Ocean Disposal of Sludge | 40 |
| | Other Unsuitable Disposal of Sludge/Septage | 30 |
| | Primary Treatment or Less | 30 |
| | Intermediate Treatment | 20 |
| | Combined Sewer Overflows | 20 |
| | Failing Individual Systems | |
| | Formal Health Department Citation | 20 |
| | No Formal Citation | 10 |
| | Excessive Flow | |
| | Ave. Daily Flow Exceeds Plant Capacity | 20 |
| | Ave. Daily Flow Does Not Exceed Plant Capacity | 10 |
| Water Quality Classification Factor | Class-of receiving waters | max. 40 |
| | AA,SA,GA | 40 |
| | A, GSA, A special | 30 |
| | B, SB | 20 |
| | C, SC, I | 10 |
| | D, SD, II | 5 |
| Intergovernmental Need Factors | High priority in State/EPA | max. 40 |
| | Required for success of a previous project | (10 pts. for |
| | Service to Federal or State facility | each factor) |
| | Necessary to correct structural deficiency | |
| | Serves a population of 3500 or less | |
| | Necessary to complete a regional system | |
| | Pre-treatment program required | |
| | Required by a PDES permit schedule | |
| | Required by a court order | |

Table 16. (continued)

| Factor | Description of Factor or Categories | Point Value |
|---|---|---|
| Population Factor | Population of Planning or Service Area divided by 3500 | max. 40 |
| 208 Priority | Priority given in Areawide Water Quality Management Plan ("208" Plan) | max. 40 |
| Bonus Factors | Beyond a "step 1" grant: | max. 40 |
| | Innovative/alternative technology | 10 |
| | Use of individual systems | 10 |
| | Resource recovery | 10 |
| | Multiple-use benefits | 10 |

Source: NYS Department of Environmental Conservation, NYS Department of Health, and U.S. EPA. NYS/U.S. EPA Water Quality Management Agreement. "Draft Municipal Sewage Treatment Works Project Priority System and Project Priority List". Albany, NY: NYS DEC, June 1979. Pp. 6-11.

TABLE 17

EXISTING STRUCTURES IN THE NEW YORK CITY WATER SUPPLY SYSTEM BY AGE AND TYPE

| Structure | Year Completed | Age | Type of Reservoir |
|---|---|---|---|
| **Croton Watershed** | | | |
| Croton Lake | 1843 | 135 | Impounding |
| Central Park | 1843 | 135 | Distribution |
| Boyd Corners | 1874 | 104 | Impounding |
| Middle Branch | 1879 | 99 | Impounding |
| Double Res. | 1893 | 85 | Impounding |
| Amawalk | 1899 | 79 | Impounding |
| Titicus | 1896 | 82 | Impounding |
| West Branch | 1898 | 80 | Impounding |
| New Croton | 1906 | 72 | Impounding |
| Jerome Park | 1905 | 73 | Distribution |
| Muscoot | 1906 | 72 | Impounding |
| Cross River | 1908 | 70 | Impounding |
| Croton Fall Main and Diverting | 1911 | 67 | Impounding |
| New Croton | 1893 | 85 | * |
| **Catskill Watershed** | | | |
| Ashokan | 1915 | 63 | Impounding |
| Kensico | 1915 | 63 | Storage |
| Hillview | 1915 | 63 | Equalizing |
| Catskill Aqueduct | 1917 | 61 | * |
| Schoharie | 1926 | 52 | Impounding |
| Shandaken Tunnel | 1926 | 52 | Grade Tunnel |
| **Delaware Watershed** | | | |
| Roundout | 1944 | 34 | Impounding |
| Neversink | 1954 | 24 | Impounding |
| Delaware Aqueduct | - | Varies | Pressure Tunnel |
| Neversink | 1954 | 24 | Pressure Tunnel |
| Rondout | 1951 | 27 | Pressure Tunnel |
| West Branch | 1943 | 35 | Pressure Tunnel |
| Kensico | 1942 | 36 | Pressure Tunnel |
| Pepacton | 1955 | 23 | Impounding |
| East Delaware | 1955 | 23 | Pressure Tunnel |
| Connonsville | 1965 | 13 | Impounding |
| West Delaware | 1965 | 13 | Pressure Tunnel |
| Hudson River | 1968 | 10 | Stand by Pumping Station |

* Combination Grade Aqueduct and Pressure Tunnel

Source: New York City Office of the Comptroller. Rebuilding in the 1980's. New York: Comptroller, 1980. Pp. 40-42.

TABLE 18

FEDERAL LEGISLATION AND ACTIONS
PERTAINING TO FLOODPLAIN MANAGEMENT

| | |
|---|---|
| Executive Order 11296 (August 10, 1966) | Sets the policy for floodplain management |
| National Flood Insurance Act of 1968 (P.L. 90-448) | Flood insurance program is established within the Federal Insurance Administration of HUD to award insurance for flood damage in return for local management programs to prevent further damage in the floodplain. |
| Flood Disaster Protection Act of 1973 | The amount of insurance is increased; purchase of insurance is mandatory for any federally connected loans to properties in communities participating in NFIP. |
| Executive Order 11988 (May 24, 1977) | This order expands the previous emphasis of floodplain management upon property damage to include environmental considerations by linking EIS requirements of NEPA to the flood insurance program. It also places a responsibility upon existing agencies to minimize flood damage in any actions they may take with respect to project approvals, funding, construction, etc. |
| Housing and Community Development Act of 1977 (P.L. 95-128) | This act eliminates the provisions of the 1973 Act prohibiting federally connected conventional mortages from being awarded in non-participating communities and replaces it by a notification by lending institutions to purchasers of properties in the floodplain. It still requires NFIP participation for FHA mortgage insurance and VA mortgage guarantees. |

Source: Federal Insurance Administration, U.S. HUD. "Coordination During Flood Insurance Studies." Washington, D.C.: FIA, March 1979, p. 5; U.S. Water Resources Council. Floodplain Management Guidelines for Implementing E.O. 11988 (43 FR 6030, February 10, 1978).

TABLE 19

NUMBER OF MUNICIPAL FLOODPLAIN MAPS
PRODUCED, BY COUNTY, ADJACENT TO THE
Hudson-Raritan Estuary, 1971-1980

Dates of Currently Effective Flood Maps

| County | undated | '71 | '72 | '73 | '74 | '75 | '76 | '77 | '78 | '79 | '80 | Total in Program |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New Jersey | | | | | | | | | | | | |
| Bergen | 3 | | | | 2 | 5 | 21 | 11 | 10 | 4 | 5 | 61 |
| Essex | | | | | | | 4 | 6 | 2 | 4 | 4 | 20 |
| Hudson | | | | | 3 | | 4 | 4 | | | | 11 |
| Middlesex | | | | | | | 12 | 4 | 1 | 5 | 2 | 24 |
| Monmouth | 3 | | | | 1 | | 21 | 7 | 5 | 11 | 1 | 49 |
| Union | 1 | | | 1 | | 2 | 5 | 3 | 4 | 2 | 2 | 20 |
| New York | | | | | | | | | | | | |
| Dutchess | | | | | 4 | 2 | 13 | 2 | 2 | 4 | 1 | 28 |
| Orange | | | | | 3 | 7 | 18 | 2 | 2 | 2 | | 34 |
| Putnam | | | | | | 1 | 6 | 1 | 1 | | | 9 |
| Rockland | 2 | | | | 2 | 1 | 6 | 1 | 1 | 5 | 1 | 19 |
| Westchester | 1 | | | | 1 | 2 | 11 | 4 | 3 | 15 | 6 | 43 |
| NYC | | | | | | | 1 | | | | | 1 |
| Nassau | 4 | | | | 3 | 5 | 21 | 2 | 6 | 2 | | 43 |
| Suffolk | 1 | | | | 1 | 6 | 15 | 5 | 7 | 2 | 1 | 38 |

Source: Tabulated from FEMA, National Flood Insurance Program Community Status Book, New York; New Jersey. Washington, D.C.: FEMA, March 31, 1980.

TABLE 20

ORGANIZATION FOR SOLID WASTE MANAGEMENT
PLANNING AT THE COUNTY LEVEL, New Jersey Counties
in or Adjacent to the Hudson-Raritan Estuary: 1980

| County/Agency | Planning Agency | Location |
|---|---|---|
| Bergen | Sanitary Landfill Division, Department of Public Works | Hackensack, NJ |
| Essex | Essex County Department of Planning and Economic Development | Belleville, NJ |
| Hudson | Hudson County Planning Board | Jersey City, NJ |
| Passaic | Passaic County Planning Board | Paterson, NJ |
| Middlesex | Middlesex County Department of Solid Waste Management Programs | New Brunswick, NJ |
| Monmouth | Monmouth County Planning Board | Freehold, NJ |
| Hackensack Meadowlands Development Commission | Chief Engineer | East Rutherford, NJ |
| Union | Union County Planning Board | Elizabeth, NJ |
| Port Authority of NY and NJ | Industry Development Department | New York City |

## TABLE 21. RESOURCE RECOVERY FACILITIES IN AREAS ADJACENT TO THE HUDSON-RARITAN ESTUARY – 1981

| Location: Solid Waste Planning Region & Locality | Owner/Operator or Sponsor | Capacity (tons/day) | Process | Product | Status |
|---|---|---|---|---|---|
| New York | | | | | |
| Nassau-Suffolk | | | | | |
| Babylon & Huntington | Multi-Town Solid Waste Authority | 3400 | Mass burning waterwall/ semi-suspension spreader stoker | Steam, electricity, ferrous recovery | Draft environmental impact statement partially complete; Islip has withdrawn; RFP issued January 1981. |
| Smithtown | Town of Smithtown | 300 | Manual separation, mechanical separation of metals | Corrugated newsprint, ferrous and non-ferrous metals | Existing |
| Oster Bay | Plainview | 1000 | Mass-burning waterwall incinerator | Electricity | Design, operation and construction under negotiation |
| Hempstead | Hempstead Resource Recovery Corp. (Div. of Black Clawson/Parsons & Whitemore, Inc. for the Town of Hempstead) | 2000 | Wet pulping, magnetic and mechanical separation | Electricity, color sorted glass; aluminum, ferrous metals | Temporarily shut down under orders for dioxin emissions |
| North Hempstead (Port Washington) | Power Authority of State of New New York | 1000 | Mass burning | Electricity | Feasibility study in preparation |
| Glen Cove | City of Glen Cove | 250 | Mass burning with sewage sludge; stoker-fired furnace | Steam, electricity | Under construction as of July 1981 |
| New York City | | | | | |
| Brooklyn Navy Yard | City of New York Dept. of Sanitation | 3000 | Mass burning, waterwall incineration | Steam (to be distributed by Con Ed.); electricity | Proposal development |
| South Bronx | Power Authority of State of New York | 1700 | Mass burning | Electricity & steam | Agreement in principle |
| Staten Island Fresh Kills | Brooklyn Union Gas Co.; Getty Synthetic Fuels | – | Methane recovery wells from landfills | Methane | Under construction |
| Southwest Brooklyn Incinerator | Power Authority of State of New York | 1000 | | | |
| Arthur Kill | City of New York | 1500 | | Electricity | |
| West 215th Street | City of New York | 1000 | | | |
| Gansevoort | City of New York | | | | |
| Astoria | City of New York | 2000 | | | |
| JFK | City of New York | 1000 | | Gas | |
| South Shore | City of New York | 2000 | | Electricity | |
| North Shore | City of New York | 1600 | | RFD to PASNY | |
| Integrated Utility (Hell Gate Plant, Con Edison) | City of New York | 2000 | | | |

| Location: Solid Waste Planning Region & Locality | Owner/Operator or Sponsor | Capacity (tons/day) | Process | Product | Status |
|---|---|---|---|---|---|
| New York City (Continued) | | | | | |
| Spring Creek | Power Authority of State of New | 1500 | Mass burning, waterwall incineration | Electricity | Negotiation stage; to be developed in combination with Industrial Park |
| Westchester (County and 34 municipalities) Peekskill/Charles Point | Westchester IDA | 2000 | Waterwall incineration | Electricity (purchased by Con Ed.) and ferrous metals | Permit applications and draft environmental impact statement submitted; contractor selected (Wheelabrator-Frye) |
| Rockland County (Route 303; south of Clarkstown) | Rockland County | | | | Feasibility studies only |
| New Jersey (Northeastern New Jersey | | | | | |
| Bergen County (Ridgefield) | Bergen County Utilities Authority | 3000 | Mass burning, waterwall incinerator | Steam, electricity | |
| Essex County (Newark) | Essex County, Port Authority, Newark | 2000-2500 | Mass burning, waterwall incinerator | Steam, electricity | |
| Hudson County (Jersey City) | Hudson County | 1000-1500 | Mass burning, waterwall incinerator | Steam, electricity | Technical, site and implementation plans prepared; Freehold decision pending |
| Passaic County (Paterson) | Passaic County | 1100+ | Mass burning, waterwall incinerator | | |
| Union County (Rahway-Merck site) | Union County | 2000 | Mass burning, waterwall incinerator | Steam (partially to Merck) | Local referendum required; negotiations underway |
| Middlesex County (Edgeboro) | Middlesex County | 1200 | Mass burning, waterwall incinerator | Electricity | Wheelabrator-Frye submitted construction plan to Department of Environment Protection for approval |
| Monmouth County Reclamation Center (Tinton Falls) | Monmouth County | | | Shredded wastes | |
| Connecticut (Southwestern) | | | | | |
| Bridgeport | Connecticut Resource Recovery Authority | 1800 | | | Commitments for community participation being obtained |

Source: Compiled from county and state solid waste plans.

TABLE 22 MANAGEMENT SYSTEMS FOR SOLID WASTE MANAGEMENT, New Jersey

| | Management Form | | | | | |
|---|---|---|---|---|---|---|
| | Incinerator Authority | Solid Waste Management Authority | Intermunicipal Agreement | County Agency | County or Municipal Utilities Authority | County Improvement Authority |
| Legislative Reference | NJSA 40:66A-1 et seq. | NJSA 40:66A-32 et seq. | NJSA 40:48B-1 | NJSA 40:66A-31.1 et seq. | NJSA 40:14B-1; 14B-70; 66A-31 | NJSA 40:37A-45 |
| POWERS | | | | | | |
| Decision-Making: | | | | | | |
| Appointment of Members (Accountability Indicator) | | | | | | |
| All participating municipalities represented | X | X | X | | | |
| Some participating municipalities represented | | | | | | |
| Other than municipal membership allowed | | | | | X | X[6] |
| Members elected | | | | X | | |
| Members appointed | X | X | X | | X | X |
| Agreement Mechanism — Ordinance | X | | X | | | |
| Agreement Mechanism — Resolution | | X | | | | |
| Voting Procedures (Efficiency Indicator) | | | | | | |
| Unanimous vote required | X | X[1] | | | | |
| More than majority vote required | | | | | | X[7] |
| Majority vote required | | X[1] | | | X | |
| No Voting | | | | X | | |
| Regulation: | | | | | | |
| Authority to refuse wastes | | | | | | |
| Authority to assess penalties for misuse of facilities | | | | | | |
| Authority to require all users within service area to use facility | X | X | | | | |
| Regulatory authority varies with contract agreement | | | X | X | X | X |
| Financing: | | | | | | |
| Mechanisms for raising revenues (Cost Indicator) | | | | | | |
| G.O. Bonds | | | X[2] | X | | |
| Revenue Bonds | X | X | | | X | X |
| Grants | X | X | X | X | X | X |
| Special assessments | X | X | | X | X | X |
| Tax levy | | | X[2] | | | |
| Rate-Setting Restrictions (Autonomy Indicator) | | | | | | |
| Prior approval by PUC required[8] | | | | | | |
| No prior approval by PUC required | X | X | | | | |

Table 22 (continued)

| | Management Form | | | | | |
|---|---|---|---|---|---|---|
| | Incinerator Authority | Solid Waste Management Authority | Intermunicipal Agreement | County Agency | County or Municipal Utilities Authority | County Improvement Authority |
| Facilities: | | | | | | |
| Land acquisition mechanism | | | | | | |
| Direct purchase | X | X | X | X | X | X |
| Lease | X | X | X | X | | |
| Condemnation | X | X | X | X | X | X |
| Land acquisition within county boundaries only | | | | X[4] | X | X |
| Land acquisition allowed outside of county boundaries | X | | | | | |
| Contracting authority | | | | | | |
| To member municipalities only | | | | | | |
| To member and non-member municipalities | X | X | | | | |
| To private as well as public parties | | | X | X[5] | X | X |
| Limitation on duration of contracts | | X (20 yrs) | X[3] (40 yrs) | | | |
| Service area boundaries | | | | | | |
| Within the county only | | | | | | |
| Within and outside of the county (service area) | | | | | | |
| Outside of the county by contract only (not included in service area) | | | | X | | |
| Limitations on facilities operated | | | | | | |
| Restricted to only one type of facility | X | | | | | |
| Facility type unlimited | | X | | | | |
| Purchase or lease authorities for facilities, property | X | X | X | X | X | X |
| Authority to construct facilities | | | X | X | X | X |
| Authority to manage facilities | | | X | X | X | X |
| Authority to operate and maintain facilities | | | X | X | X | X |
| Potential for coordination with waste sources | | | X | | X | X |

Table 22 (continued)

NOTES:

[1]The Solid Waste Management Authority requires unanimous votes on site selection and design, decisions on bond issues, rates and fee fixing. Other decisions only require a majority vote.

[2]Financing is not the responsibility of the joint meeting; it is the responsibility of the member municipalities who can issue g.o. bonds or tax levies to finance their share of the facility.

[3]The Intermunicipal agreement contracts can last up to 40 years, but can be terminated by a resolution of 2/3 of the participating communities.

[4]County departments or agencies cannot acquire government property not owned by the County-such acquisition needs the consent of the particular government.

[5]The county agency can only serve unserved areas, unless permission is granted by the appropriate service organization.

[6]Five members are appointed by the County Improvement Authority as in the case of the Utilities Authority, however, Improvement Authority members must reside in the county.

[7]Site selection decisions by the Improvement authority require a vote by municipalities representing 75% of the county's population, plus the approval of the county planning board.

[8]PUC has the authority to review all rates charged by the private refuse collector industry, since it has been designated a public utility under state statute.

Source: Compiled from various sources including NJDEP, Solid Waste Administration. "Solid Waste Management Guide No. 9: Institutional Alternatives." Trenton, NJ: NJDEP, undated (c. 1977).

TABLE 23

TYPE OF SOLID WASTE COLLECTION PRACTICES
BY MUNICIPALITY, New Jersey: 1979

| | Total | Type of Collection System: Municipal Collection | Municipal Contract to Private Company | Privately Owned Service |
|---|---|---|---|---|
| Hudson | 12 | 3 | 9 | |
| Essex [a] | 22 | 4 | 14 | 5 |
| Bergen [b] | 54 | 18 | 31 | 6 |
| Union | 21 | 4 | 9 | 8 |
| Middlesex [c] | | | | |
| Household | 25 | 14 | 4 | 9 |
| Commercial | 25 | 12 | 3 | 18 |
| Industrial | 24 | 3 | 0 | 22 |
| Institutional | 24 | 10 | 4 | 10 |

Notes:
a Newark uses both municipal collection and municipal contract.
b Allendale uses both municipal collection and private contract.
c Many combinations exist within individual municipalities.
d No government intermediary.

Sources: Compiled from HCSWMP,1979:I-71; ECSWMP,1979:25; BCSWMP,1979:Table IV-9; UCSWMP,1979:5; MCSWMP,1979:40.

TABLE 24

HUDSON RIVER WATERFRONT PARKS, New Jersey: 1980
(as inventoried by the Hudson River Waterfront Study,
Planning and Development Commission)

| Municipality* | Existing Waterfront Parks | Plans |
|---|---|---|
| Fort Lee (4937) | . Fort Lee Historic Park<br>. South end of Palisades Interstate Park. | Entire waterfront presently open space. |
| Edgewater (15,529) | · Edgewater Municipal Park (20 acres). | None. |
| North Bergen (4000) | None on Waterfront. The River can be viewed from Hudson County Park. | None. |
| Guttenberg (1000) | None on waterfront. | The City is considering rezoning the 5.8 acre site which is presently occupied by Stokely Van Camp's storage tanks for recreation, and designating it for a river-riverfront park in a new master plan. |
| West New York (5000) | None presently on waterfront.<br>On Palisades Cliff:<br>. Old Glory Park was acquired using Green Acres funding (12 acres).<br>. Another park is between 51st and 60th Streets (20 acres).<br>. There is also a continuous linear green strip along Boulevard East. | The entire waterfront is zoned as a "Controlled Waterfront District" which requires at least 30% of any development area to be used for public park purposes; said 30% must be contiguous to the water. |

Table 24.(continued)

| Municipality* | Existing Waterfront Parks | Plans |
|---|---|---|
| Weehawken (11,000) | None on waterfront. On Palisades Cliff are:<br>. Hamilton Park (1 acre).<br>. A continuation of the linear green strip. | A 3 acre park has been proposed to be located at the foot of Pershing Road. |
| Hoboken (11,000) | None on waterfront. | Public access and waterfront parks are planned for the Fifth and Sixth Street Piers area, adjacent to Stevens Institute and at the Erie-Lackawanna Ferry Terminal. |
| Jersey City (62,000) | Liberty State Park (40 acres now open)<br>York Street Park (1.2 acres) | 800 acres planned; Two acre plaza planned at Exchange Place. |
| Bayonne (36,000) | None on the Hudson River. The City's waterfront parks are located on Newark Bay and the Kill Van Kull:<br>. Hudson County Park (96 acres)<br>. Veterans Stadium (11 acres)<br>. City Park - 16th St. (32 acres)<br>. Kill Van Kull (20 acres). | The city has historically designated the Hudson River waterfront for industrial use. In keeping with this policy, Bayonne would like to limit waterfront access only to Newark Bay. A linear strip could link the Newark Bay parks to a Hudson River path.<br><br>Note: There is not unamity on this point, with some citizens asking for park space and public access on the Hudson River. |

Source: Hudson River Waterfront Study, Planning and Development Commission. Final Report. Trenton, NJ: The Commission, September 1980. Pp.27-8.

Note: *Number in parenthesis beneath the name of the municipality indicates the number of waterfront footage devoted to parkland in the municipality.

TABLE 25

REGULATORY STATUTES PERTAINING TO ENVIRONMENTAL ASPECTS OF ENERGY DEVELOPMENT, NEW YORK AND NEW JERSEY

| Energy Development Activity | New York State Statutes | New Jersey Statutes |
|---|---|---|
| Fuel extraction | Plug and Abandonment of Oil and Gas Wells (ECL, Art. 23)<br>Drill Oil and Gas Wells<br>Oil Facility Certification (NYS Navigation Law, Art. 12, Sec. 191) | |
| Fuel transport | Use, Reporting & Recordkeeping Requirement associated with the Hazardous Waste Manifest System and Related Standards for Generators, Transporters & Facilities Dealing with Hazardous Waste (Art. 27, title 9) | |
| Fuel storage | Underground Gas Storage LNG Environmental Safety Certificate (ECL, Art. 23) | Plan Approval for Underground Petroleum or Gas Storage |
| Fuel processing | Certificate for Industrial Hazardous Waste Facilities (ECL Art.27, title 11) | |
| Energy production | Public Service Law, Article VIII-Siting of electric generation facilities (certificate of environmental compatability<br>Diversion of Water for Power | |

Table 25. (continued)

| Energy Development Activity | New York State Statutes | New Jersey Statutes |
|---|---|---|
| Byproduct disposal | SPDES Permit<br>Air pollution control permit | Treatment Works Approval (NJSA 58:10A-1)<br>Wastewater discharge permit<br>Air pollution control permit |
| Energy transmission | Public Service Law, Article VII-electric and natural gas transmission facilities (certificate of environmental compatability | |
| All facilities | Protection of Waters Permit (ECL, Art. 15)<br>Freshwater Wetlands Permit (ECL, Art. 24)<br>Tidal Wetlands Permit (ECL, Art. 24)<br>Construction in Flood Hazard Areas (ECL, Art. 36) | CAFRA Permit (NJSA 13:19-1 et seq.)<br>Wetlands Act Permit (NJSA 13: 9A-1 et seq.)<br>Riparian Permit (NJSA 12:5-1 et seq.)<br>Stream Encroachment Permit (NJSA 58:1-26 et seq.)<br>Special areas (Pinelands, Delaware R. Basin Hackensack Meadowlands D & R Canal) |

TABLE 26. RECENT FEDERAL LAWS IMPACTING ON COAL

| Federal Act | Implementing Federal Agency | Purpose | Impact on Coal Production, Consumption and/or Costs | New York State Administrative Jurisdiction |
|---|---|---|---|---|
| The Federal Coal Mine Health and Safety Act of 1976 (Amended (1977) | Department of Interior, Department of Health, Education and Welfare | To remedy unsafe conditions and practices and to reduce the number of mining fatalities and injuries. | Health and safety procedures add additional costs to coal production which may be offset by increased productivity. One estimate shows that 50¢/ton may be added to the cost of coal. | |
| The National Environmental Policy Act of 1969 (NEPA) | Environmental Protection Agency | To bring environmental factors into the decision-making process by requiring an environmental impact statement (EIS) for major Federal activities. | All coal-related activities that have a significant impact on the environment require an EIS; i.e. the leasing of federal lands for coal production. | Department of Environmental Conservation (DEC) |
| The Clean Air Act (and amendments) | Environmental Protection Agency | To improve air quality through the establishment of both National Ambient Air Quality Standards (NAAQS), and new source review requirements. | EPA regulations may make it more difficult or costly to burn coal in many instances. For a complete analysis, see Environmental Costs section under "Coal Outlook." | DEC |
| The Energy Supply and Environmental and Coordination Act of 1974. | Department of Energy | To reduce the use of natural gas in large boilers, and oil imports by substituting the use of coal. | Although ESECA appeared to grant broad powers for coal conversion, lack of financial incentives, lack of commitment and environmental problems have prevented large-scale impact. | DEC<br>Public Service Commission (PSC)<br>State Energy Office (SEO) |
| The Resource Conservation and Recovery Act of 1976 (RCRA) | Environmental Protection Agency | To improve waste disposal practices by controlling disposal of hazardous and non-hazardous wastes. | The determination of whether coal pile run-off, flyash and scrubber sludge is defined as hazardous is currently in the rulemaking process. Current costs of disposal are estimated to be between $1.30 and $5.00 per ton of waste. These costs may increase significantly depending on how the wastes are classified under RCRA. | DEC |
| The Surface Mining and Reclamation Act of 1977 | Department of Interior, Office of Surface Mining | To change surface coal mining practices that generate severe social and environmental costs and to prohibit mining operations in areas that cannot be reclaimed. | Reclamation costs are estimated between $8.00 and $10.00/ton if the Act is fully administered or a 0.25% increase in the cost of electricity to the average customer in 1985. | — |
| The Clean Water Act of 1970 (and amendments) | Environmental Protection Agency | To control and eliminate water pollution and protect and propagate fish, shellfish and wildlife. | The principal coal-based activities to which this Act applies are steam electric generating stations. This adds an additional cost to the future use of coal for electricity. | DEC |
| The Powerplant and Industrial Fuel Use Act of 1978 (PIFUA) | Department of Energy | To prohibit the use of natural gas and petroleum as a primary energy source in new powerplants and major fuel-burning installations (MFBI's) with few exceptions, and in existing MFBI's and powerplants with more exceptions. | PIFUA's success in achieving coal conversions will be highly dependent on environmental regulations and future costs of using alternative fuels. | DEC<br>PSC<br>SEO |

Source: New York State Energy Office. "New York State Energy Master Plan". Final Report. Albany, NY: NYS EO, March 1980. P. 172.

TABLE 27

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS OF ALTERNATIVE TYPES OF FUELS BY TYPE OF ENERGY PRODUCTION ACTIVITY APPLICABLE TO THE HUDSON-RARITAN ESTUARY

| | Type of Fuel | | | |
|---|---|---|---|---|
| | Oil | Coal | Gas | Nuclear |
| Energy Production Activity | Potential Environmental Impact | | | |
| Fuel extraction | OCS drilling and associated spills and blowouts | none in HRE* | OCS drilling and associated spills and blowouts | none in HRE* |
| Fuel transport | Spills associated with tanker rupture and pipeline breaks | Potentially extensive new channel dredging and underground slurry pipelines | Pipeline ruptures | Radioactivity releases from potential accidents |
| Fuel processing | Oil refineries and associated air and water pollution | Coal gasification and associated water pollution | N.A. | none in HRE* |

Table 27. (continued)

| Energy Production Activity | Type of Fuel: Oil | Coal | Gas | Nuclear |
|---|---|---|---|---|
| | Potential Environmental Impact | | | |
| Fuel storage | Oil storage tanks- water pollution and air emissions related to spills and leakages | negligible | LNG terminals- water and air pollution related to spills and explosions | none in HRE* |
| Energy production | Conventional electric power plants and associated thermal pollution, water pollution, air pollution (sulfur oxides, hydrocarbons, nitrogen oxides); conversions to coal powered plants and associated increases in hydrocarbon emissions. | | | Nuclear power plants and associated radioactivity releases |
| Energy transmission | High voltage transmission lines - aesthetic and noise pollution problems; land disruption; herbicide use for vegetation control along transmission routes | | | |

*Severe secondary effects would potentially be felt elsewhere.
For a more extensive discussion of these effects see: National Academy of Sciences. Implications of Environmental Regulations for Energy Production and Consumption. Washington, D.C.: NAS, 1977. Pp. 177-188.

TABLE 28

LIST OF OIL STORAGE FACILITIES
IN THE HUDSON RARITAN ESTUARY
1980

## New York City

Harlem River:
- Belcher

East River (Bronx):
- Metropolitan
- Cibro
- Texaco

Westchester Creek
- Schildwachter
- Hess
- Cibro

Hutchinson River:
- Co-op City
- Mt. Vernon Energy Terminal

East River
- Con Edison Astoria
- Power Authority of the State of New York
- Greater New York Terminal

Flushing Bay:
- Port Authority-La Guardia

Flushing Creek
- Skaggs Walsh
- Bandolene
- Metropolitan

Hudson River:
- Con Edison

East River(Manhattan & Queens):
- Con Edison,73rd St.
- Con Edison, Waterside
- Con Edison,14th St.
- Con Edison,Ravenswood
- Royal Petroleum

Newtown Creek (Queens):
- Ditmas
- Prolerized Sciabau Neu
- Getty Oil
- Quanta Resources Corp.
- Phelps Dodge
- Exxon

Newtown Creek (Brooklyn):
- Shell
- Exxon
- Metropolitan
- Mobil
- Amoco
- Gulf Oil
- Calleia
- Cibro
- Bandolene

East River (Brooklyn):
- Paragon
- NEPCO
- Con Edison-Kent Ave.
- Con Edison-Hudson Ave.
- Patchogue

Gowanus Canal:
- Bayside Fuel
- Cibro

East River:
- Con Edison,Gowanus
- Con Edison, Narrows

Gravesend Bay:
- Paragon Oil

Mill Basin:
- Metropolitan
- Sunmark Industries
- A.R. Fuel
- Mobil

Jamaica Bay:
- Starrett City
- Jamaica Bay Fuel
- Port Authority-JFK
- Tepco
- Long Island Lighting Co.

Arthur Kill:
- Fort Mobil
- Gulfport
- Proctor & Gamble

Kill van Kull:
- Sipco
- Riche Fuel
- Quinlan
- Taverna

Source: New York City Department of City Planning. "Bulk Oil Facilities in New York City". New York: DCP, August 1981. P. 9. The list is derived from those registered with the NYS Department of Transportation.

Note: An analogous listing for the New Jersey portion of the HRE was not available on a consistent basis.

TABLE 29

OIL REFINERIES IN AREAS ADJACENT TO THE HUDSON-RARITAN ESTUARY: 1972

| Company | Location | Crude Capacity | |
|---|---|---|---|
| | | Barrels per calendar day(b/cd) | Barrels per stream or operating day (b/sd) |
| Amerada-Hess Corp. | Port Reading, NJ | 70,000 | 75,000 |
| Chevron Oil Co. | Perth Amboy, NJ | NA | 80,000 |
| Exxon Co. | Linden, NJ | 255,000 | 268,000 |

Source: H.G. Mike Jones, H. Bronheim and P.F. Palmedo. "Electricity Generation and Oil Refining". Albany, NY: Sea Grant Institute, July 1975. P. 18.

TABLE 30

NEW YORK STATE PETROLEUM SUPPLIERS
1978

| Majors | Independents | Suppliers of Propane Only |
|---|---|---|
| Atlantic Richfield | Agway Petroleum Corp. | Conservative Gas Division of National Propane Gas Co. |
| Cities Service Co. | Amerada Hess Corp. | Consolidated Gas Supply Corp. |
| Continental Oil Co. | Ashland Oil, Inc. | Northern Propane Gas Co. |
| Exxon Corp. | Belcher Co. of N.Y., Inc. | Pargas, Inc. |
| Getty Oil Co. | Castle Coal & Oil Co. | Petrolane, Inc. |
| Gulf Oil Corp. | Central Petroleum Corp. | Pyrofax Gas Corp. |
| Mobil Corp. | Cibro Sales Corp. | Suburban Propane Gas Corp. |
| Phillips Petroleum | Champlin Petroleum Corp. | |
| Scallop Petroleum Corp. | Coastal States Marketing, Inc. | |
| Shell Oil Co. | Commonwealth Oil & Refining | |
| Standard Oil of California (Chevron East) | Crown Central Petroleum Corp. | |
| Standard Oil of Indiana (Amoco) | Metropolitan Petroleum Co. | |
| Standard Oil of Ohio (BP) | New England Petroleum Corp. | |
| Sun Co., Inc. | Northville Industries Corp. | |
| Tenneco Oil Co. | Pennzoil Co. | |
| Texaco, Inc. | Quaker State Oil Co. | |
| Triangle Oil Co. | Royal Petroleum Corp. | |
| Union Oil of California | Sears Oil Co. | |
| | United Refining Co. | |

Source: New York State Energy Office. Energy Master Plan. Albany, NY: State Energy Office, 1979. P. 122.

TABLE 31

EXISTING ELECTRIC GENERATING UNITS WITHIN THE PUBLIC SERVICE ELECTRIC & GAS COMPANY SERVICE AREA, New Jersey: 1980

**Base Load Plants**

| Name, Location & Unit # | | Type of Plant | Summer Cap (MW) | Primary Fuel | Alternate Fuel |
|---|---|---|---|---|---|
| Bergen | 1 | Steam | 287 | #6 Oil | Nat. Gas |
| Ridgefield, NJ | 2 | Steam | 283 | #6 Oil | Nat. Gas |
| Burlington | 6 | Steam | 120 | #6 Oil | x |
| Burlington, NJ | 7 | Steam | 180 | #6 Oil | x |
| Conemaugh | 1 | Steam | 191 | Bit. | x |
| W. Wheatfield, PA | 2 | Steam | 191 | Bit. | x |
| Hudson | 1 | Steam | 383 | #6 Oil | Nat. Gas |
| Jersey City, NJ | 2 | Steam | 600 | Bit. | #6 Oil |
| Kearny | 7 | Steam | 146 | #6 Oil | x |
| Kearny, NJ | 8 | Steam | 146 | #6 Oil | x |
| Keystone | 1 | Steam | 192 | Bit. | x |
| Plum Creek, PA | 2 | Steam | 192 | Bit. | x |
| Linden | 1 & 4 | Steam | 234 | #6 Oil | x |
| Linden, NJ | 2 | Steam | 225 | #6 Oil | x |
| Mercer | 1 | Steam | 306 | Bit. | Nat. Gas |
| Hamilton, NJ | 2 | Steam | 300 | Bit. | Nat. Gas |
| Peach Bottom | 2 | Nuclear/BWR | 446 | Uranium | x |
| Peach Bottom, PA | 3 | Nuclear/BWR | 440 | Uranium | x |

TABLE 31. (continued)

| Base Load Plants<br>Name, Location & Unit # | | Type of Plant | Summer Cap. (MW) | Primary Fuel | Alternate Fuel |
|---|---|---|---|---|---|
| Salem<br>Lower Alloways Creek, NJ | 1 | Nuclear/PWR | 459 | Uranium | x |
| Sewaren | 1 | Steam | 104 | #6 Oil | Nat. Gas |
| Sewaren, NJ | 2 | Steam | 111 | #6 Oil | Nat. Gas |
| | 3 | Steam | 107 | #6 Oil | Nat. Gas |
| | 4 | Steam | 124 | #6 Oil | Nat. Gas |
| | 5 | Steam | 326 | #6 Oil | Nat. Gas |
| Total | | | 6093 | | |
| **Peak Load Plants** | | | | | |
| Bayonne | 1 | Gas Turb. | 19 | Kerosene | x |
| Bayonne, NJ | 2 | Gas Turb. | 19 | Kerosene | x |
| Bergen | 3 | Gas Turb. | 17 | Nat. Gas | x |
| Ridgefield, NJ | 4 | Gas Turb. | 44 | #2 Oil | x |
| Burlington | 8 | Gas Turb. | 17 | Kerosene | x |
| Burlington, NJ | 9 | Gas Turb. | 176 | Kerosene | x |
| | 10A | Gas Turb. | 88 | Kerosene | x |
| | 10B | Com. Cycle | 120 | Kerosene | x |
| | 11 | Gas Turb. | 176 | Kerosene | x |
| Conemaugh<br>W. Wheatfield, PA | A,B,C,D | Int. Comb./Diesel | 3 | #2 Oil | x |
| Edison | 1 | Gas Turb. | 154 | Kerosene | Nat. Gas |
| Edison, NJ | 2 | Gas Turb. | 116 | Kerosene | Nat. Gas |
| | 3 | Gas Turb. | 154 | Kerosene | Nat. Gas |

TABLE 31. (continued)

Peak Load Plants

| Name, Location & Unit # | | Type of Plant | Summer Cap. (MW) | Primary Fuel | Alternate Fuel |
|---|---|---|---|---|---|
| Essex | 9 | Gas Turb. | 57 | Kerosene | Nat. Gas |
| Newark, NJ | 10 | Gas Turb. | 155 | Kerosene | Nat. Gas |
| | 11 | Gas Turb. | 176 | Kerosene | Nat. Gas |
| | 12 | Gas Turb. | 176 | Kerosene | Nat. Cas |
| Hudson | 3 | Gas Turb. | 124 | Kerosene | x |
| Jersey City, NJ | | | | | |
| Kearny | 9 | Gas Turb. | 17 | Nat. Gas | x |
| Kearny, NJ | 10 | Gas Turb. | 122 | Kerosene | Nat. Gas |
| | 11 | Gas Turb. | 121 | Kerosene | Nat. Gas |
| | 12 | Gas Turb. | 192 | Kerosene | x |
| Keystone | 3,4,5,6 | Int. Comb/Diesel | 2 | #2 Oil | x |
| Plum Creek, PA | | | | | |
| Linden | 3 | Gas Turb. | 17 | Nat. Gas | x |
| Linden, NJ | 5 | Gas Turb. | 23 | #2 Oil | Nat. Gas |
| | 6 | Gas Turb. | 23 | #2 Oil | Nat. Gas |
| | 7 | Gas Turb. | 23 | #2 Oil | Nat. Gas |
| | 8 | Gas Turb. | 23 | #2 Oil | Nat. Gas |
| | 9 | Gas Turb. | 192 | Kerosene | x |
| Mercer | 3 | Gas Turb. | 124 | Kerosene | Nat. Gas |
| Hamilton, NJ | | | | | |
| National Park | 1 | Gas Turb. | 17 | Kerosene | x |
| National Park, NJ | | | | | |

TABLE 31. (continued)

Peak Load Plants

| Name, Location & Unit # | | Type of Plant | Summer Cap. (MW) | Primary Fuel | Alternate Fuel |
|---|---|---|---|---|---|
| Salem<br>Lower Alloways Creek, NJ | 3 | Gas Turb. | 16 | #2 Oil | x |
| Sewaren<br>Sewaren, NJ | 6 | Gas Turb. | 62 | Kerosene | x |
| Yards Creek<br>Blairstown, NJ | 1,2,3 | Pumped Hydro | 165 | Water | x |
| Total | | | 2930 | | |

Source: New Jersey Department of Energy. Office of Technical Assistance. "Electric Power Supply in New Jersey". Trenton, NJ: NJDOE, April 1980. Pp. 25-28.

TABLE 32. PROPOSED CHANGES IN ENERGY FACILITIES, New Jersey

| Summer of | Date | Capacity Change | UNIT TYPE | CAPACITY (MW) ACE | JCP&L* | PSE&G | TOTAL |
|---|---|---|---|---|---|---|---|
| | | Installed Capacity (12/31/79) | | 1385 | 2796 | 9023 | 13204 |
| | 5/80 | Increase Gilbert #8 | CT | X | 8 | X | |
| 1980 | | | | 1385 | 2804 | 9023 | 13212 |
| | 9/80 | Indian River #4 (Purch.) | - | 50 | X | X | |
| | 10/80 | Salem II | PWR | 83 | X | 475 | |
| | 11/80 | Inactivate Burl, #6 | ST | X | X | (120) | |
| | | Inactivate Burl. #105 | ST | X | X | (32) | |
| | | Inactivate Nat. Park | CT | X | X | (17) | |
| | | Inactivate Sewaren #6 | CT | X | X | (62) | |
| | 1/81 | Derate Edison #2 | CT | X | X | (39) | |
| | | PE Purchase | - | X | 160 | X | |
| 1981 | | | | 1518 | 2964 | 9228 | 13710 |
| | 1/82 | Susquehanna #1 (Purch.) | - | 62 | X | X | |
| | 4/82 | Decrease PE Purchase | - | X | (40) | X | |
| | 5/82 | Increase PE Purchase | - | X | 188 | X | |
| 1982 | | | | 1580 | 3112 | 9228 | 13920 |
| | 1/83 | Susquehanna #2 (Purch.) | - | 63 | X | X | |
| | 5/83 | Decrease PE Purchase | - | X | (204) | X | |
| | | Rerate Edison #2 | CT | X | X | 77 | |
| | | Return Burl. #105 | ST | X | X | 32 | |
| | | Return Nat. Park | CT | X | X | 17 | |
| | | Return Sewaren #6 | CT | X | X | 62 | |
| 1983 | | | | 1643 | 2908 | 9416 | 13967 |

TABLE 32. (continued)

| Summer of | Date | Capacity Change | UNIT TYPE | CAPACITY (MW) ACE | JCP&L* | PSE&G | TOTAL |
|---|---|---|---|---|---|---|---|
| 1983 | - | - | | 1643 | 2908 | 9416 | 13967 |
| | 12/83 | End PE Purchase | - | x | (104) | x | |
| | 6/84 | Rerate Sewaren #6 | CT | x | x | 61 | |
| 1984 | | | | 1643 | 2804 | 9477 | 13924 |
| | 5/85 | Hope Creek #1 | BWR | 53 | x | 1024 | |
| | | End Indian River #4 (Purch.) | - | (50) | x | x | |
| | 6/85 | Inactivate Var. C.T.'s | CT | x | x | (400) | |
| 1985 | | | | 1646 | 2804 | 10091 | 14541 |
| | 5/86 | Forked River | PWR | x | 1120 | x | |
| 1986 | | | | 1646 | 3924 | 10091 | 15661 |
| | 5/87 | Hope Creek #2 | BWR | 54 | x | 1013 | |
| | | Vienna #9 | ST | 125 | x | x | |
| | 6/87 | Inactivate Kearny #7 | ST | x | x | (146) | |
| | | Inactivate Kearny #8 | ST | x | x | (146) | |
| 1987 | | | | 1825 | 3924 | 10812 | 16561 |
| | 1/88 | Retire Deepwater #3 & #4 | ST | (77) | x | x | |
| | 5/88 | ACE Coal Unit #1 | ST | 250 | x | x | |
| 1988 | | | | 1998 | 3924 | 10812 | 16734 |

* Includes capacity of TMI - 1 but not TMI-2. TMI-1 (194MW) expected on line during 1980, TMI-2 (220MW) not expected back during forecast period.

Source: New Jersey Department of Energy. Office of Technical Assistance. "Electric Power Supply in New Jersey". Trenton, NJ: NJDOE, April 1980. Pp. 29-30.

TABLE 33

EXISTING ELECTRIC GENERATING PLANTS IN THE HUDSON-RARITAN ESTUARY, New York

| Plant | Capacity | Type | Ownership |
|---|---|---|---|
| Arthur Kill | 912 | ST | CE |
| | 18 | GT | CE |
| Astoria | 1551 | ST | CE |
| | 700 | GT | CE |
| Danskammer | 532 | ST | CH |
| East River | 734 | ST | CE |
| | 60 | ST | CE |
| Barrett | 375 | ST | LILCO |
| | 330 | GT | LILCO |
| Far Rockaway | 114 | ST | LILCO |
| Freeport | 34 | IC | Municipal |
| Glenwood Landing | 377 | ST | LILCO |
| | 16 | GT | LILCO |
| | 100 | GT* | LILCO |
| Hell Gate | 70 | ST | CE |
| | 401 | ST | CE |
| Hudson Ave | 715 | ST | CE |
| | 90 | ST | CE |
| Indian Point | 275 | N* | CE |
| | 2138 | N* | CE |
| | 60 | GT | CE |
| Lovett | 495 | ST | OR |
| Neversink | 25 | Hydro | CH |
| Northport | 774 | ST | LILCO |
| | 387 | ST* | LILCO |
| | 16 | GT | LILCO |
| Port Jefferson | 467 | ST | LILCO |
| | 16 | GT | LILCO |
| Rockville Centre | 27 | IC | Municipal |
| | 6 | IC* | Municipal |
| Sherman Creek | 217 | ST | CE |
| Waterside | 140 | ST | CE |
| | 572 | ST | CE |
| | 14 | GT | CE |
| Kent Ave | 108 | ST | CE |
| | 28 | GT | CE |
| 59th Street | 185 | ST | CE |
| | 35 | GT | CE |
| 74th Street | 65 | ST | CE |
| | 144 | ST | CE |
| | 37 | GT | CE |
| Ravenswood | 1828 | ST | CE |
| | 471 | GT | CE |

Table 33. (continued)

| Plant | Capacity | Type | Ownership |
|---|---|---|---|
| East Hampton | 6 | IC | LILCO |
| | 22 | GT* | LILCO |
| West Babylon | 109 | GT | LILCO |
| Roseton | 1153 | ST | CH |
| Shoreham | 850 | N* | LILCO |
| | 53 | GT | LILCO |
| | 3 | IC* | LILCO |
| Hillburn | 42 | GT | OR |
| Bowline | 1246 | ST | CE & OR |
| Shoemaker | 42 | GT | OR |
| Gowanus | 344 | GT | CE |
| | 344 | GT* | CE |
| Hudson Ave | 28 | ST | CE |
| | 8 | Hydro | CE |
| Narrows | 348 | GT* | CE |
| Southold | 14 | GT | LILCO |
| South Hampton | 11 | GT | LILCO |
| Montauk | 6 | GT | LILCO |

KEY: CH-Central Hudson Gas and Electric Corporation
CE-Consolidated Edison Co.
LILCO-Long Island Lighting Co.
OR-Orange and Rockland Utilities

*Under construction
ST-Conventional Steam
GT-Gas turbine
IC-Internal combustion
N-Nuclear
Hydro-Hydro-electric

Source: Jones, H.G. Mike, et al. "Electricity Generation and Oil Refining." Albany, NY: Sea Grant Institute, July 1975. P. 11.

TABLE 34

ELECTRIC GENERATION PLANT (1979-1994), New York State

| New Facilities | Capacity (MW) | Fuel | Date |
|---|---|---|---|
| Under Construction | | | |
| Oswego | 850 | Oil | 1980 |
| Shoreham | 820 | Nuclear | 1980 |
| Nine Mile Pt. 2 | 1080 | Nuclear | 1984 |
| Somerset | 850 | Coal | 1984 |
| Planned | | | |
| Pumped Storage Hydro | 1000 | Ps Hydro | 1987 |
| Coal and/or Coal-RDF (5 units) | 3100-3600 MW* | Coal/RDF | 1986-1992 |
| TOTAL | 7700-8200 | | |
| Conversions | | | |
| Danskammer 3 | 122 | oil to coal | 1982 |
| Danskammer 4 | 220 | oil to coal | 1982 |
| Albany 1-4 | 400 | oil to coal | 1984 |
| Ravenswood 3 | 928 | oil to coal | 1984 |
| Arthur Kill 2 | 350 | oil to coal | 1984 |
| Arthur Kill 3 | 501 | oil to coal | 1984 |
| Port Jefferson 3&4 | 380 | oil to coal | 1984 |
| Lovett 4&5 | 399 | oil to coal | 1986 |
| Ravenswood 1&2 | 770 | oil to coal | 1987 |
| E.F. Barrett 1&2 | 380 | oil to coal | 1988 |
| Northport 1-4 | 1532 | oil to coal | 1989 |
| | 5982 | | |

| Other (cumulative additions) | 1984 | 1989 | 1994 |
|---|---|---|---|
| Small Hydro Total (MW) | 282 | 402 | 725 |
| Solid Waste Total (MW) | 208 | 298 | 298 |
| Cogeneration Total (MW) | 42 | 132 | 222 |
| Canadian Imports | 1979-83 | 1984-87 | 1988-94 |
| Capacity (MW) | 800 | 800 | 800 |
| Energy (Billions of KHW per year) | 8.0 | 12.3 | 6.0 |

Source: New York State Energy Office. "New York State Energy Master Plan". Albany, NY: NYS EO, March 1980. Final Report - Executive Summary, p. 26.

TABLE 35

STATEWIDE STRATEGIES FOR MANAGING ENVIRONMENTALLY SENSITIVE AREAS, New York

| Type of Environmentally Sensitive Area | Legislation | Citation | Type of Program/Output |
|---|---|---|---|
| Floodplains | Construction in flood hazard area | ECL Art. 36 | Permit |
| Stream corridors | Protection of waters | ECL Art. 15 | Permit for dam and dock construction, stream disturbance, and dredge and fill. |
| Wetlands | Freshwater Wetlands Act | ECL Art. 24 | Permit, maps |
| | Tidal Wetlands Act | ECL Art. 24 | Permit, maps |
| Soil erosion | Erosion and Sediment Control Law of 1975 (amendment to the Soil and Water Conservation District Law) | 6 NYCRR, Part 701 | Plan for agricultural land owners provided by the soil and water conservation district by 1980 |

Table 35. (continued)

STATEWIDE STRATEGIES FOR MANAGING ENVIRONMENTALLY SENSITIVE AREAS, New York

| Type of Environmentally Sensitive Area | Legislation | Citation | Type of Program/Output |
|---|---|---|---|
| Special areas<br>Adirondack Park | Memorandum of Understanding Adirondack Park Agency, NYS Departments of Environmental Conservation and Department of Health (9/76) | | Plan and coordinated permit processes |

TABLE 36

STATEWIDE STRATEGIES FOR MANAGING ENVIRONMENTALLY SENSITIVE AREAS, New Jersey

| Type of Area | Legislation | Citation | Type of Program/Output |
|---|---|---|---|
| Natural resource areas | Municipal Land Use Law | NJSA 40:55D-1 et seq. | Land use planning-local environmentally based master plans |
| | Natural Areas Systems Act | NJSA 13:1B-15.12 a et seq. | |
| Floodplains* | Flood Hazard Area Control Act | NJSA 58:16-050 et seq. | Floodplain maps, local land use controls |
| Stream corridors* | Stream Encroachment Act | NJSA 58:1-26 et seq. | Permit for facility siting |
| | Wild and Scenic River Act | NJSA 13:8-45 et seq. | Area designation |
| Wetlands* | Coastal Wetlands Act | NJSA 13:9A-1 et seq. | Permit for facility siting |
| | Riparian Lands Act | NJSA 12:3-1 et seq. | Permit for facility siting |
| Waterfront areas* | Waterfront and Harbor Facilities Act | JNSA 12:5-3 et seq. | Waterfront Development permit |
| Coastal areas | Coastal Areas Facility Review Act | NJSA 13:19-1 et seq. | Permit for facility siting |
| Soil erosion | Soil Erosion and Sediment Control Act | NJSA 4:24-39 et seq. | Erosion control plans |
| Special areas | Pinelands Environmental Council Act | NJSA 13:18-1 et seq. | |
| | Delaware and Raritan Canal State Park Law | NJSA 13:13A | Certificate of approval |
| | Hackensack Meadowlands | NJSA 13:17-1 et seq. | Building permit |

(*) asterisk indicates those programs of particular importance to the HRE primary area because of the extent of applicability.

TABLE 37

GENERAL COUNTY PLANNING AND REGULATORY AUTHORITY RELATED TO ENVIRONMENTAL MANAGEMENT

A. New Jersey

| | |
|---|---|
| County and Regional Planning Enabling Act (NJSA 40:27-1 to 27-11) | A county may create a planning board, and the board shall make and adopt a master plan for the physical development of the county in cooperation with municipalities. The plan may include the following environmentally related elements: waterway and waterfront developments, forests, parks, open-development areas for purposes of conservation, and water supply and sanitary and drainage facilities. (NJSA 40:27-2).<br><br>The county has the right to review all subdivision and site plans within the county and approve those that impact county road or drainage facilities. The reviews and approvals have to be in conformance with plans and standards that the county has formally adopted. (NJSA 40:27-6.2).<br><br>Authority to form regional planning boards from municipalities or counties. (NJSA 40:27-9).<br>The planning powers of any municipality or county may be delegated to such a board. (NJSA 40:27-11). |
| County Environmental Health Act of 1978 | Formulation and enforcement of environmental health ordinances for the control of air pollution, solid waste, noise and water pollution.<br>(Relationship to state laws - consistency requirement;<br>state can delegate environmental health programs to counties). |
| Local Health Services Act (26:3A2-1 et seq.; P.L. 1975, Ch. 329) | Local boards of health are given the authority to transfer powers to county health departments or regional health commissioners. |

Table 37 (continued).

B. New York

| | |
|---|---|
| General Municipal Law, Article 12B Subsections 239 l, m, n | County Planning Boards must be notified of zoning and planning activities of local government that are within 500 feet of a municipal boundary, a county or state park or road right-of-way or stream or drainage channel that is county owned or for which channel lines have been established by the county, and state or county owned land that has a building; the Boards have the right of review and comment, but not approval. Water quality concerns are not directly cited as mandatory review criteria. Many environmentally sensitive areas are omitted. |
| Subsection 239-k | A County Planning Board or Commissioner of Public Works must be notified of the application for a building permit or subdivision plat approval for any existing or proposed right-of-way on the county official map. The approval procedures of the county can include drainage among other criteria. |
| Soil and Water Conservation District Law of 1940 as amended | Creation of county-wide soil and water conservation districts. |

TABLE 38

GENERAL MUNICIPAL PLANNING AND REGULATORY AUTHORITY RELATED TO ENVIRONMENTAL MANAGEMENT

| | |
|---|---|
| New Jersey: | |
| Municipal Planning Enabling Act (1953) (NJSA 40:55-1.1 to 40:55-1.29) | The governing body of a municipality may create a planning board (NJSA 40:55-1.4); the board shall have the authority and duty of acting as the zoning commission (NJSA 40:55-1.8).<br><br>The board may prepare, adopt and amend a master plan "for the physical development of the municipality" (NJSA 40:55-1.10).<br><br>The environmentally related components of the master plan can include: services like water supply, sewerage "and other like matters", conservation - "water, forest, soil, flood control, and other like matters;" (NJSA 40:55-1.11).<br><br>A municipality can regulate subdivisions by review and approval of all plats; the planning board can assume this function where it exists (NJSA 40:55-1.14).<br>A municipality can exempt certain subdivisions from these regulations in the form of size constraints, roadway characteristics, etc.<br><br>Prerequisites for plan approval can include the following improvements (related to environmental considerations) - water mains, storm sewers, sanitary sewers or other means of sewage disposal, and drainage structure (NJSA 40:55-1.21). |
| Official Map and Building Permit Act (NJSA 40:55-1.30 to 40:55-1.42) | Where an official map exists, a municipality can issue permits for a building in a drainage right-of-way, flood control basin or park that appears on the official map (NJSA 40:55-1.38). |

Table 38 (continued).

New Jersey Municipalities (continued)

| | |
|---|---|
| Municipal Zoning Enabling Act (NJSA 40:55-30 to 40:55-51) | Zoning powers of local government (optional) regulating the location, size and type of buildings and structures (NJSA 40:55-30);<br>The zoning regulations "shall be in accordance with a comprehensive plan" (NJSA 40:55-32). The purposes of zoning are not directly related to water resources except flooding and public health purposes.<br>Variances from the zoning ordinance can be granted. |
| Municipal Land Use Law (1975) (NJSA 40:55D-1 et seq.) | Requires that municipal planning boards prepare master plans to guide local land use.<br>Requires that zoning be consistent with the land use element of the plan.<br><br>The plan must contain a number of environmental elements.<br><br>Coordination between municipal and county plans is required. |
| Municipal Planned Unit Development Act (1967) (NJSA 40:55-54 to 40:55-67) | Encourages innovative construction to encourage open space planning along with residential development, bringing in new town concepts into construction - municipalities may adopt PUD ordinances. |
| Establishment of Environmental Commissions (NJSA 40:56A-1 to 40:56A-7) | A municipality may adopt an ordinance to "establish an environmental commission for the protection, development or use of natural resources, including water resources located within its territorial limits." (40:56A-1).<br><br>The commission can conduct research and create an environmental inventory, and acquire property with the approval of the municipality. |

TABLE 39

STATUS OF ENVIRONMENTALLY BASED MASTER PLANS AT THE COUNTY LEVEL,
for counties adjoining the Hudson-Raritan Estuary area: 1980

| | | | Environmental Categories Included | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Existence of an environmental plan | Date of Map (if any) | Flood-plains | Erosion | Slopes/ Drainage | Vegeta-tive Cover | Ground-water | Wet-lands | Surface Water |
| New Jersey Counties | | | | | | | | | |
| Bergen | no | | | | | | | | |
| Essex | no | | | | | | | | |
| Hudson | no | | | | | | | | |
| Monmouth | yes | 4/74 | X | | X | X | | X | X |
| Middlesex | yes | 1980 | X | | | X | X | X | X |
| Union | yes | | | | | | | | |
| New York Counties | | | | | | | | | |
| Westchester | yes | | | | | | | | |
| Rockland | no | | | | | | | | |
| Dutchess | yes | 1974 | X | | X | | X | | |
| Nassau | yes | 1980 | | | | | | | |
| Suffolk | yes | 1980 | | | | | | | |
| New York City | no | | | | | | | | |

TABLE 40

STATUTES PERTAINING TO THE ESTABLISHMENT OF LOCAL ENVIRONMENTAL COMMISSIONS OR COUNCILS: AN HISTORICAL PERSPECTIVE
New York and New Jersey

A. New York

| | | |
|---|---|---|
| 1967 | New York State Town Law, Section 64-b (superceded by Article 12-F) | Provides legislation enabling the creation of conservation advisory councils by Towns in New York State |
| 1970 | General Municipal Law, Article 12-F, Section 239 - x (amended in 1972) | Allows cities and villages also to establish these councils. The New York State Department of Environmental Conservation is designated the agency to deal with the councils. |
| 1970 | Environmental Conservation Law, Article 47, Section 0101-0115 (amended in 1972) | Authorizes the creation of some county or multi-county (regional) environmental management councils; muncipal representation; 50% state fundings. |
| 1971 | General Muncipal Law, Article 12-F, Section 239-y | Allows for the conversion of conservation advisory councils to conservation boards. |
| 1972 | General Muncipal Law, Article 12-F, Section 239-x as amended | Allows councils to acquire land. |
| 1972 | -------- | Formation of the New York State Association of Conservation Commissions |
| 1973 | -------- | Formation of the New York State Association of County and Regional Environmental Management Councils. |

Table 40 (continued).
Environmental Commissions and Councils (continued)

B. New Jersey

| | | |
|---|---|---|
| 1968 | R.S. 40: Chapter 245, NJ L. of 1968 | Establishment of conservation commissions at the municipal level; the planning board required to be represented. |
| 1969 | ------- | Formation of the Association of New Jersey Conservation Commissions |
| 1972 | R.S. 40:56A-2 et seq. Chapter 35 Laws of 1972 | Name of conservation commissions changed to environmental commissions. |

Source: Summarized from Kundell, 1977:83-95 and NYS Dept of Environmental Conservation, Bureau of Community Assistance. "Guidelines for Establishing Local Environmental Conservation Councils in New York State." Albany, NY: DEC, undated (c.1973).

TABLE 41

BUDGET LEVELS FOR SELECTED ENVIRONMENTAL COMMISSIONS,
New York State: 1972-1976

| County | Date Established | Budget Allocations (in dollars) by Fiscal Year 72/3 | 73/4 | 74/5 | 75/6 |
|---|---|---|---|---|---|
| Dutchess | 2/72 | 1,262 | 34,092 | 40,499 | 41,097 |
| Nassau | 6/71 | 90,760 | 314,570 | 346,769 | 200,000 |
| Rockland | 10/73 | | | | 30,000 |
| Sullivan | 8/70 | 14,290 | 49,725 | 43,040 | 52,450 |
| Ulster | 11/72 | 965 | 4,720 | 7,220 | 7,170 |
| Westchester | 10/72 | | 37,710 | 53,706 | 48,278 |

Source: Compiled from Kundell, 1977: Appendix V

TABLE 42

THE EXTENSIVENESS OF CONSERVATION ADVISORY COUNCILS (CACs) IN WESTCHESTER COUNTY, NEW YORK
as of December 1977

| | |
|---|---|
| **CITIES** | |
| Mount Vernon | |
| New Rochelle | X |
| Peekskill | X |
| Rye | X |
| White Plains | X |
| Yonkers | X |
| **VILLAGES** | |
| Ardsley | X |
| Briarcliff Manor | X |
| Bronxville | - |
| Buchanan | X |
| Croton-on-Hudson | X |
| Dobbs Ferry | X |
| Elmsford | - |
| Hastings | X |
| Irvington | X |
| Larchmont | X |
| Mamaroneck | |
| Mount Kisco | X |
| North Tarrytown | X |
| Ossining | X |
| Pelham | - |
| Pelham Manor | - |
| Pleasantville | X |
| Port Chester | X |
| Scarsdale | X |
| Tarrytown | X |
| Tuckahoe | |

| | |
|---|---|
| **TOWNS** | |
| Bedford | X |
| Cortlandt | X |
| Eastchester | X |
| Greenburgh | X |
| Harrison | - |
| Lewisboro | X |
| Mamaroneck | X |
| Mount Pleasant | X |
| New Castle | X |
| North Castle | X |
| North Salem | X |
| Ossining | - |
| Pound Ridge | X |
| Rye | - |
| Somers | X |
| Yorktown | X |

Source: Westchester County Department of Planning."Water Quality Management Plan". White Plains, New York: Westchester Planning Department, 1979. Exhibit III-29.

Note: "X's" in the table indicate municipalities that currently have CACs in Westchester.

TABLE 43

SUMMARY OF FEDERAL AND STATE-RELATED REGULATORY PROGRAMS THAT AFFECT THE HUDSON-RARITAN ESTUARY AREA

| Legislation | Purpose or Form of Regulation | Federal role & agency | State role in federally issued permits | State-Related Regulatory Program | |
|---|---|---|---|---|---|
| | | | | New York | New Jersey |
| Resource Conservation & Recovery Act (RCRA) (P.L. 94-580) | Permit for hazardous waste storage, treatment and disposal | Issuing agency, unless delegated to states, is U.S. EPA; oversight authority for state delegated permits. | Comment on applications | Solid wastes transport permit (ECL, Art. 27)<br>Disposal facility construction & operation permit (ECL, Art. 27) | Collector-hauler certificate<br>Disposal facility registration (NJSA 13:1E-1 et seq.)<br>Disruption of SW disposal area approval (NJSA 13:1E et seq.) |
| Safe Drinking Water Act (P.L. 93-523) | (1)Exemptions for treatment facility construction for public water systems not meeting MCLs;<br>(2)Variances for facilities not meeting MCLs even with best available treatment | EPA implementation in states not given primary enforcement authority; EPA monitors and overviews state-delegated programs(no veto power on V/Es) | Not specified | Public Water Supply Applic.(Art. 15)<br>Long Island Wells<br>Water Supply Completed Works Approval<br>Potability of Public Water Supplies<br>Approval-water systems in realty subdivisions (Art. 17)<br>Connection to public supplies | Water Diversion for supply (58:1-17)<br>Divert Surface Water (58:1-36)<br>Divert Groundwater (58:14A-2)<br>Water Lowering(58:4-9; 58:5-29)<br>Well Drilling(58:4A-14)<br>Public Potable Water Works Approval(58:12A)<br>Supply Potability(58:12A<br>Supply in realty subdivision approval(50+ units(58:11-25.1)<br>Supply in realty subdiv. in critical areas (58:11-44 & 45 et seq.)<br>Connections(58:12A) |

*MCL=maximum contaminant levels established for finished water in the primary drinking water regulations

Table 43 (continued).

| | | | | | |
|---|---|---|---|---|---|
| Safe Drinking Water Act | Underground Injection Program - permit for well disposal to ground | Issuing agency, unless delegated to states, is U.S. EPA;for delegated states EPA can issue Notices of Violation(no veto power) | Not specified | | Subsurface Disposal and Water Supply (58:11-23) |
| Marine Protection, Research and Sanctuaries Act (P.L. 92-532) | Permit for shipment of materials for dumping; | U.S. EPA | None; no delegation possible | | |
| | Permit for dumping of dredged material in the ocean | U.S. Army Corps of Engineers | | | |
| Clean Water Act of 1977 (P.L. 95-217) | Permit for discharges into U.S. Waters (National Pollutant Discharge Elimination System) | Issuing agency, unless delegated to states, is U.S. EPA | Certification of permits | SPDES program<br>Application for Approval of Plans for Wastewater Disposal Systems (Art. 17) | Adoption of NPDES Treatment Works Approval(58:10A-1)<br>System extension approval (<br>Treatment facility operation<br>Sewerage approval in realty subdiv.(50+ units,critical areas) (58:11-25.1 et seq.; 58:11-44 & 45)<br>Exemption from Sewer Ban(58:10A-1) |
| | | | | Water Quality Certification (33 U.S.C. 1251, Sec. 401) | |
| Clean Water Act of 1977 (P.L. 95-217) | Permit to discharge dredged or fill material in U.S. waters | U.S. Army Corps of Engineers; U.S. EPA-review & advisory role;Eis prep.,disposal site guidelines;National Marine Fisheries Serv. -permit review. | Optional certification of permits;Delegation possible (404 (g)) | Protection of WAters-excavation & fill (Art. 15) | Stream encroachment (58:1-26 et seq.); Dam Construction & Repair (58:4-2 et seq.) |

TABLE 44

SUMMARY OF
STATUTES PERTAINING TO RESIDUAL WASTE MANAGEMENT

A. Federal Statutes

| | |
|---|---|
| Marine Sanctuaries, Research and Protection Act (P.L. 92-532) | Prohibition of ocean dumping of domestic and industrial waste treatment sludges |
| Resource Conservation and Recovery Act of 1976 (P.L. 94-580) | Prohibition of open dumps;<br>Regulation of the treatment, storage, transportation and disposal of hazardous wastes - cradle to grave manifest system;<br>Guidelines for solid waste management;<br>Development of resource recovery systems. |
| Toxic Substances Control Act of 1976 (P.L. 94-469) | Inventory and categorization of toxic chemicals;<br>Regulation by pre-market notification statements. |
| Clean Air Act of 1970, as amended (P.L. 95-95) | Emission limits for incinerators |

B. State Statutes

| Function | New York | New Jersey |
|---|---|---|
| Transport | Septic Tank Cleaner and Industrial Waste Collector Registration (ECL, Art. 27; 6NYCRR 364)-vehicles must display registration number. | Collector Hauler Certificate |

Table 44 (continued).

Residual Waste Management Statutes (continued)

| | | |
|---|---|---|
| Construction and operation of disposal facilities | Solid Waste Management Facilities (ECL, Art. 27; 6NYCRR 360) - permit requirement | Solid Waste Disposal Facility Registration (13:1E-1 et seq.) |
| Other | Disruption of solid waste disposal area approval (13:1E et seq.) | |

C. Local Statutes

New York: Municipal Home Rule Law, General Municipal Law, County Law, Town Laws and charters of local governments contain provisions for the enactment of laws, ordinances, or regulations to manage residuals.

| | | |
|---|---|---|
| New Jersey: | Incinerator Authorities Law of 1948 | Incinerator authorities can be formed by two or more municipalities. |
| | Solid Waste Management Authorities Law of 1968 | Solid waste management authorities can be created by two or more municipalities. |
| | Joint Service Contract (NJSA 49:48B-1) | A joint meeting may be formed between two or more municipalities |
| | County Municipal Utilities Authority Law | The County Board of Freeholders may establish a County Utilities Auth. |
| | County Improvement Authorities Law | The County Bd. of Freeholders may establish an Improvement Auth. |
| | County Solid Waste Disposal Financing Law | A county department or agency may undertake the financing and management of solid waste disposal. |

TABLE 45

TYPE OF INDUSTRIES REPRESENTED AMONG NPDES PERMIT HOLDERS IN COUNTIES SURROUNDING the Hudson Raritan Estuary Area, 1980

| SIC Code | Industry Type | Number of Permit Holders |
|---|---|---|
| 20 | Food and kindred products | 105 |
| 21 | Tobacco manufacturers | 1 |
| 22 | Textile mill products | 33 |
| 23 | Apparel and other fabric products | 3 |
| 24 | Lumber and wood products, except furniture | 4 |
| 25 | Furniture and fixtures | 5 |
| 26 | Paper and allied products | 42 |
| 27 | Printing, publishing, and allied industries | 9 |
| 28 | Chemicals and allied products | 266 |
| 29 | Petroleum refining and related industries | 24 |
| 30 | Rubber and misc. plastics products | 73 |
| 31 | Leather and leather products | 0 |
| 32 | Stone, clay, glass and concrete products | 72 |
| 33 | Primary metal industries | 77 |
| 34 | Fabricated metal products | 95 |
| 35 | Machinery, except electrical | 42 |
| 36 | Electrical and electronic machinery | 58 |
| 37 | Transportation equipment | 7 |
| 38 | Measurement, photographic, medical, optical goods | 28 |
| 39 | Misc. manufacturing industries | 14 |
| 49 | Electric, gas and sanitary services (including sewage treatment plants) | 775 |

TABLE 46. NPDES PERMIT HOLDERS IN COUNTIES SURROUNDING the Hudson-Raritan Area by S.I.C. CODE, 1980

| | 2-digit SIC Code | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 49 |
| NEW YORK | | | | | | | | | | | | | | | | | | | | | |
| Nassau | 2 | | | | | | | | 2 | | | | 4 | 1 | | | 1 | 2 | 3 | | 49 |
| Suffolk | 12 | | | | | | | | | | | | | | 3 | | 4 | | 2 | | 36 |
| Bronx | | | | | | | | | | | | | 6 | | | | 2 | | | | 4 |
| Brooklyn | 6 | | 2 | | | | | | 9 | 1 | | | 5 | 2 | 2 | | 1 | 2 | | | 28 |
| Queens | 8 | | | | | | | | 2 | | | | 4 | 1 | 1 | | | | | | 26 |
| Manhattan | | | | | | | | | 2 | | | | 5 | | | | | | | | 18 |
| Staten Island | 2 | | | | | | | | 1 | | | | 6 | | | | | | | | 8 |
| Putnam | | | | | | | | | | | | | | | | | 2 | | | | 29 |
| Dutchess | 8 | | 2 | 1 | | | 1 | 1 | 13 | | 4 | | 4 | | 8 | 2 | 2 | | 2 | | 66 |
| Rockland | | | 2 | | | | 3 | | 9 | | | | | | | | | | | | 30 |
| Orange | 6 | | 10 | | | | 13 | | 8 | | 2 | | 6 | 5 | 6 | 1 | 1 | | | | 151 |
| Ulster | 6 | | | | | | 4 | | 2 | | | | | 1 | | 4 | 4 | | | | 22 |
| Westchester | 3 | | | | | | | 2 | 7 | | | | 2 | 6 | 4 | | 2 | | | | 60 |
| NEW JERSEY | | | | | | | | | | | | | | | | | | | | | |
| Bergen | 11 | | 12 | 2 | | 4 | 6 | 1 | 49 | 5 | 18 | | 2 | 13 | 22 | 11 | 8 | 8 | 9 | 1 | 40 |
| Essex | 7 | | | | 4 | | 2 | 4 | 38 | 2 | 15 | | 5 | 11 | 25 | 16 | 13 | 1 | 7 | 3 | 36 |
| Middlesex | 10 | 1 | | | | | 6 | | 59 | 6 | 21 | | 17 | 15 | 13 | 2 | 5 | 3 | 3 | 3 | 62 |
| Monmouth | 3 | | | | | | 2 | | 7 | | 3 | | 5 | 5 | 2 | | 1 | | 2 | 1 | 58 |
| Union | 5 | | | | | 1 | 3 | 1 | 30 | 4 | 9 | | | 12 | 5 | 3 | 5 | | | 3 | 20 |
| Hudson | 16 | | 5 | | | | 2 | | 28 | 6 | 1 | | 1 | 5 | 4 | 3 | 7 | 2 | | 3 | 42 |

Source: Tabulated from U.S. EPA Retrieval, October 1980(Region II office, NYC)

TABLE 47. INTERIM AND FINAL INDUSTRY EFFLUENT STANDARDS UNDER THE NPDES SYSTEM

| Industrial category | Number of subcategories | Date proposed | Date promulgated |
|---|---|---|---|
| Group I Phase I | | | |
| Cooling water intake structures | 1 | 12/13/73 | 4/26/76 |
| Dairy products processing | 11 | 1/14/74 | 5/28/74 |
| Grain mills | 6 | 10/11/73 | 3/20/74 |
| Canned and preserved fruits and vegetables | 5 | 11/30/73 | 3/21/74 |
| Canned and preserved seafood processing | 14 | 1/3/74 | 6/26/74 |
| Sugar processing (beet and cane) | 2 | 10/29/73 | 3/20/74 |
| Textile industry | 7 | 2/5/74 | 7/5/74 |
| Beet sugar | 1 | 8/22/73 | 1/31/74 |
| Cement manufacturing | 3 | 9/7/73 | 2/20/74 |
| Feedlots | 2 | 7/7/73 | 2/14/74 |
| Electroplating | 1 | 12/7/73 | 3/28/74 |
| Organic chemicals | 3 | 12/7/73 | 4/25/74 |
| Inorganic chemicals | 22 | 10/11/73 | 3/12/74 |
| Plastics and synthetics | 13 | 11/9/73 | 4/4/74 |
| Soap and detergent manufacturing | 19 | 12/14/73 | 4/12/74 |
| Fertilizer manufacturing | 5 | 12/26/73 | 4/8/74 |
| Petroleum refining | 5 | 12/14/73 | 5/9/74 |
| Iron and steel manufacturing | 12 | 2/19/74 | 6/28/74 |
| Nonferrous metals manufacturing | 3 | 12/4/73 | 4/8/74 |
| Phosphate manufacturing | 3 | 10/7/73 | 2/20/74 |
| Steam electric power generating | 4 | 3/4/74 | 10/8/74 |
| Ferroalloy manufacturing | 3 | 10/18/73 | 2/22/74 |
| Leather tanning and finishing | 6 | 4/8/73 | 4/9/74 |
| Fiberglass | 1 | 8/22/73 | 1/22/74 |
| Glass manufacturing | 6 | 9/7/73 | 2/14/74 |
| Asbestos manufacturing | 7 | 10/5/73 | 2/26/74 |
| Rubber processing | 4 | 10/11/73 | 2/21/74 |
| Timber products processing | 8 | 12/20/73 | 4/18/74 |
| Pulp, paper, and paperboard | 5 | 2/6/74 | 5/29/74 |
| Builders paper and roofing felt | 1 | 12/17/73 | 5/9/74 |
| Meat products and rendering | 4 | 10/30/73 | 2/28/74 |
| Poultry | 5 | 4/24/75 | 4/26/76 |
| Group I Phase II | | | |
| Cooling water intake structures | | | |
| Grain mills | 4 | 9/17/74 | 1/3/75 |
| Canned and preserved fruits and vegetables | 51 | [1]10/21/75 | 4/16/76 |
| Canned and preserved seafood processing | 19 | [1]1/30/75 | 12/1/75 |
| Sugar process | 5 | [1]2/27/75 | |
| Electroplating | 3 | [1]4/25/75 | |
| Organic chemicals | 4 | [1]1/5/76 | |
| Inorganic chemicals | 41 | [1]5/22/75 | |
| Plastics and synthetics | 11 | 9/20/74 | 1/23/75 |
| Fertilizer manufacturing | 2 | 10/7/74 | 1/14/75 |
| Petroleum refining | | | |
| Iron and steel manufacturing | 23 | [1]3/29/76 | |
| Nonferrous metals manufacturing | 5 | [1]2/27/75 | 12/15/76 |
| Phosphate manufacturing | 3 | [1]1/27/75 | |
| Ferroalloy manufacturing | 5 | [1]2/24/75 | |
| Glass manufacturing | 6 | 8/21/74 | 1/16/75 |
| Asbestos manufacturing | 4 | 8/29/74 | 1/9/75 |
| Rubber processing | 7 | 8/23/74 | 1/10/75 |
| Timber products processing | 7 | [1]8/26/74 | 1/16/75 |
| Pulp, paper, and paperboard | 10 | 2/19/76 | 1/6/77 |
| Meat products and rendering | 6 | 8/28/74 | 1/3/75 |
| Poultry | | | |
| Group II | | | |
| Cooling water intake structures | | | |
| Machinery and mechanical products | | | |
| Timber products processing | 4 | 11/14/74 | 6/2/75 |
| Coal mining | 4 | [1]10/17/75 | |
| Petroleum and gas extraction | 4 | [1]9/15/75 | |
| Mineral mining and processing | 17 | [1]10/16/75 | |
| Water supply | 15 | | |
| Miscellaneous foods and beverages processing | 12 | | |
| Pharmaceutical industry | 5 | | |
| Ore mining and dressing | 7 | [1]11/6/75 | 7/11/78 |
| Transportation industries | 7 | | |
| Fish hatcheries and farms | 3 | | |
| Paving and roofing materials (tars and asphalt) | 4 | [1]1/10/75 | 7/24/75 |
| Auto and other laundries | 9 | | |
| Converted paper products | 1 | | |
| Paint formulation | 1 | [1]2/26/75 | 7/28/75 |
| Ink formulation | 1 | [1]2/26/75 | 7/28/75 |
| Printing | 17 | | |
| Steam supply | 2 | | |
| Pretreatment for oil and grease | | | |
| Clay and gypsum | 12 | | |
| Concrete products | 2 | | |
| Shore receptor and bulk terminals | 4 | | |
| Gum and wood chemicals industries | 6 | [1]5/18/76 | |
| Pesticides and agricultural chemicals | 5 | [1]11/1/76 | 4/25/78 |
| Adhesives and sealants industries | 6 | | |
| Explosives industries | 4 | [1]3/9/76 | |
| Carbon black industries | 4 | [1]5/18/76 | 1/9/78 |
| Photographic point source category | 6 | [1]7/14/76 | |
| Hospitals | 4 | [1]5/6/76 | |
| Battery manufacturing | 13 | | |
| Edible oils | 2 | | |
| Plastic processing | 5 | | |
| Foundries | 9 | | |
| Coil coating | 3 | | |
| Porcelain enamel | 5 | | |
| Aluminum and aluminum alloy products | 6 | | |
| Copper and copper alloy products | 6 | | |
| Electronics | 18 | | |
| Shipbuilding | 1 | | |

[1] Interim final guidelines.

Source: U.S. Environmental Protection Agency, Office of Water and Hazardous Substances.

Source: Council on Environmental Quality,"Ninth Annual Report". Washington, D.C.: CEQ, 1979. P. 104-5.

TABLE 48

SCHEDULE FOR ISSUANCE OF "BEST AVAILABLE TECHNOLOGY (BAT) GUIDELINES FOR THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM, as of March 5, 1982

| Industry | Proposal Date | Promulgation Date |
|---|---|---|
| Aluminum Forming | 8/82 | 9/83 |
| Battery Manufacturing | 8/82 | 9/83 |
| Coal Mining | 1/81 | 10/82 |
| Coil Coating | 1/81 | 11/82 |
| Copper Forming | 12/82 | 1/84 |
| Electrical & Electronic Products | 8/82 | 8/83 |
| Foundries | 11/82 | 1/84 |
| Ink Formulation | 1/80 | 8/82 |
| Inorganic Chemicals (Phase I) | 7/80 | 7/82 |
| Iron & Steel Manufacturing | 1/81 | 5/82 |
| Leather Tanning & Finishing | 7/79 | 12/82 |
| Metal Finishing | 8/82 | 10/83 |
| Nonferrous Metals (Phase I) | 1/83 | 2/84 |
| Ore Mining | 5/82 | 3/83 |
| Organic Chemicals and Plastics & Synthetic Materials | 3/83 | 6/84 |
| Paint Formulation | 1/80 | 7/82 |
| Pesticides | 10/82 | 11/83 |
| Petroleum Refining | 12/79 | 9/82 |
| Pharmaceuticals | 10/82 | 11/83 |
| Porcelain Enameling | 1/81 | 12/82 |
| Pulp & Paper | 1/81 | 11/82 |
| Steam-Electric | 10/80 | 3/83 |
| Textile Mills | 10/79 | 9/82 |
| Timber | 10/79 | 1/81 |

Source: U.S. Environmental Protection Agency, March 5, 1982

TABLE 49. INDUSTRIES FOR WHICH "BEST CONTROL TECHNOLOGY" (BCT) REGULATIONS WERE ISSUED, August 1978

**Dairy products processing**

- Receiving stations
- Fluid products
- Cultured products
- Butter
- Cottage cheese and cultured cream cheese
- Natural and processed cheese
- Fluid mix for ice cream and other frozen desserts
- Ice cream, frozen desserts, novelties, and other dairy desserts
- Dry milk
- Condensed whey
- Dry whey
- Condensed milk

**Grain mills**

- Corn wet milling
- Corn dry milling
- Bulgur wheat flour milling
- Parboiled rice processing
- Ready-to-eat cereal
- Wheat starch and gluten

**Canned and preserved fruits and vegetables processing**

- Apple juice
- Apple products
- Citrus products
- Frozen potato products
- Dehydrated potato products
- Canned and preserved fruits
- Canned and preserved vegetables
- Canned and miscellaneous specialties

**Canned and preserved seafood processing**

- Farm raised catfish
- Conventional blue crab
- Mechanized blue crab
- Nonremote Alaskan crab meat
- Remote Alaskan crab meat
- Nonremote Alaskan whole crab and crab section
- Non-Alaskan scallop processing
- Remote Alaskan whole crab and crab section
- Dungeness and tanner crab processing in the contiguous states
- Nonremote Alaskan shrimp
- Remote Alaskan shrimp
- Northern shrimp processing in the contiguous states
- Sout hern nonbreaded shrimp processing in the contiguous states
- Non-Alaskan whole crab and crab section processing
- Breaded shrimp processing in the contiguous states
- Tuna processing
- Fish meal processing
- West Coast hand-butchered salmon processing
- West Coast mechanized salmon processing
- Non-Alaskan conventional bottom fish
- Non-Alaskan mechanized bottom fish processing
- Hand-shucked clam processing
- Mechanized clam processing
- Pacific Coast hand-shucked oyster processing
- Atlantic and Gulf Coast hand-shucked oyster processing
- Steamed and canned oyster processing
- Sardine processing
- Non-Alaskan herring fillet processing
- Abalone processing

**Sugar processing**

- Beet sugar processing
- Crystalline cane sugar refining
- Liquid cane sugar refining

**Cement manufacturing**

- Leaching

**Feedlots**

- Ducks

**Phosphate manufacturing**

- Sodium phosphates

**Ferroalloys manufacturing**

- Open electric furnaces with wet air pollution control devices
- Covered electric furnaces and other smelting operations with wet air pollution control devices
- Slag processing
- Covered calcium carbide with wet air pollution control devices
- Electrolytic manganese products
- Electrolytic chromium

**Electroplating**

- Electrolytic chromium

**Glass manufacturing**

- Insulation fiberglass
- Plate glass manufacturing
- Float glass manufacturing
- Automotive glass tempering
- Automotive glass laminating
- Glass container manufacturing
- Glass tubing (Danner) manufacturing
- Television picture tube envelope manufacturing
- Incandescent lamp envelope manufacturing
- Hand pressed and blown glass manufacturing

**Asbestos manufacturing**

- Asbestos-cement pipe
- Asbestos-cement sheet
- Asbestos paper (starch binder)
- Asbestos paper (elastomeric binder)
- Asbestos roofing
- Asbestos floor tile
- Wet dust collection

**Meat products**

- Simple slaughterhouse
- Complex slaughterhouse
- Low processing packinghouse
- High processing packinghouse
- Small processor
- Meat cutter
- Sausage and luncheon meats processor
- Ham processor
- Canned meats processor
- Renderer

Source: 43 Federal Register 37570 (1978); Council on Environmental Quality, "Tenth Annual Report". Washington, D.C.: CEQ, 1980. Pp. 140-141.

TABLE 50

INDUSTRIES NOT ANALYZED FOR NEW "BEST CONTROL TECHNOLOGY" (BCT) STANDARDS as of 1980

| | |
|---|---|
| **Grain mills** | |
| Normal wheat flour milling | Animal feed |
| Normal rice milling | Hot cereal |
| **Cement manufacturing** | |
| Nonleaching | Materials storage piles, runoff |
| **Feedlots** | |
| All subcategories except ducks | |
| **Fertilizer** | |
| Phosphate | Ammonium sulfate production |
| Ammonia | Mixed and blend fertilizer production |
| **Phosphate manufacturing** | |
| Defluorinated phosphate rock | Defluorinated phosphoric acid |
| **Ferroalloys manufacturing** | |
| Other calcium carbide furnaces | |
| **Glass manufacturing** | |
| Sheet glass manufacturing | Rolled glass manufacturing |
| **Asbestos manufacturing** | |
| Asbestos millboard | Solvent recovery |
| Coating or finishing of asbestos textiles | Vapor absorption |

Source: 43 Federal Register 37570 (1978); Council on Environmental Quality, "Tenth Annual Report". Washington, D.C.: CEQ, 1980. P. 142.

TABLE 51

NUMBER OF NPDES DISCHARGERS OF SELECTED TOXIC SUBSTANCES, Hudson-Raritan Estuary: 1980 /1

| Substance /2 | Number of Establishments |
|---|---|
| Arsenic | 13 |
| Asbestos | 1 |
| Barium | 8 |
| Cadmium | 1 |
| Chromium, Total | 303 |
| Cyanide | 21 |
| Lead, dissolved | 1 |
| Lead, total | 35 |
| Mercury, total | 9 |
| Zinc, soluble | 2 |
| Zinc, total | 325 |
| Algicides | 1 |
| Carbon Tetrachloride | 2 |
| Chlorinated Organics | 1 |
| Chloroform | 3 |
| PCBs | 4 |
| Pesticides | 2 |
| Phenols | 35 |
| Trichloroethane | 2 |
| Trichloroethylene | 2 |
| Vinyl Chloride | 2 |

Notes:

1. Data derived from U.S. EPA data retrieval (Region II), October 1980, for the Lower Hudson Basin.

2. Substances are some of those listed in the Toxics Consent Decree, 1976.

TABLE 52

NPDES COMPLIANCE STATUS BY COUNTY in the Hudson-Raritan Estuary area:
July 1, 1980-September 30, 1980

| Location of NPDES Permit Holder (County) | Type of Violation | |
|---|---|---|
| | Compliance Schedule[1] | Effluent Limitations[2] |
| New York: | | |
| Westchester | 4 | 3 |
| Rockland | 3 | 3 |
| New York City[3] | 2 | 1 |
| Nassau | 1 | 11 |
| Suffolk | 2 | 9 |
| New Jersey: | | |
| Bergen | 5 | 1 |
| Hudson | 9 | 3 |
| Essex | 0 | 1 |
| Union | 2 | 4 |
| Middlesex | 6 | 4 |
| Monmouth | 1 | 2 |

Notes: [1]Includes untimely plan submissions, submissions of monthly sampling reports
[2]Includes failing to achieve or exceeding effluent limits where such limits have been assigned
[3]Brooklyn only for industrial dischargers

Source: U.S. EPA (for New Jersey)/NYS DEC. Quarterly Non-Compliance Report. July 1, 1980 - September 30, 1980.

TABLE 53

FEDERAL LAWS AND AGENCIES AFFECTING TOXIC SUBSTANCES CONTROL

| Statute | Year Enacted | Responsible Agency | Toxic Substances Sources Covered |
|---|---|---|---|
| Toxic Substances Control Act | 1976 | EPA | Chemical substances, except tobacco, nuclear materials, alcohol, pesticides, and foods, food additives, drugs, cosmetics, and devices covered by FDA authority |
| Clean Air Act | 1970, amended 1977 | EPA | Hazardous air pollutants |
| Clean Water Act (formerly Federal Water Pollution Control Act) | 1972, amended 1977 | EPA | Toxic water pollutants |
| Safe Drinking Water Act | 1974, amended 1977 | EPA | Drinking water contaminants |
| Federal Insecticide, Fungicide, and Rodenticide Act | 1947, amended 1972, 1975, 1978 | EPA | Pesticides |
| Act of July 22, 1954 (codified as Section 346(a) of the Food, Drug, and Cosmetic Act) | 1954, amended 1972 | EPA | Pesticide residues in food |
| Resource Conservation and Recovery Act | 1976 | EPA | Solid wastes, including hazardous wastes |
| Marine Protection, Research and Sanctuaries Act | 1972 | EPA | Ocean dumping |

Table 53 (continued) . .

| Statute | Year Enacted | Responsible Agency | Toxic Substances Sources Covered |
|---|---|---|---|
| Federal Food, Drug, and Cosmetic Act | 1938 | FDA | Basic coverage of food, drugs, and cosmetics |
| Food additives amendment | 1958 | FDA | Food additives |
| Color additives amendments | 1960 | FDA | Color additives |
| New drug amendments | 1962 | FDA | Drugs |
| New animal drug amendments | 1968 | FDA | Animal drugs and feed additives |
| Medical device amendments | 1976 | FDA | Medical devices |
| Federal Meat Inspection Act | 1967 | USDA | Food, feed, and color additives and pesticide residues in meat and poultry products |
| Poultry Products Inspection Act | 1957 | USDA | |
| Egg Products Inspection Act | 1970 | USDA | |
| Fair Packaging and Labeling Act | 1976 | FDA | Packaging and labeling of food and drugs for humans or animals, cosmetics, and medical devices |
| Public Health Service Act | 1944 | FDA | Sections relating to biological products |
| Occupational Safety and Health Act | 1970 | OSHA, NIOSH | Workplace toxic chemicals |
| Federal Hazardous Substances Act | 1960 | CPSC | Hazardous (including toxic) household products (often the same as consumer products) |

Table 53 (continued).

| Statute | Year Enacted | Responsible Agency | Toxic Substances Sources Covered |
|---|---|---|---|
| Consumer Product Safety Act | 1972 | CPSC | Hazardous consumer products |
| Poison Prevention Packaging Act | 1970 | CPSC | Packaging of hazardous household products |
| Lead-Based Paint Poisoning Prevention Act | 1973, amended 1976 | CPSC, HEW, HUD | Use of lead paint: on toys or furniture, on cooking, drinking, and eating utensils, in federally-assisted housing |
| Hazardous Materials Transportation Act | 1975, amended 1976 | DOT (Materials Transportation Bureau) | Transportation of toxic substances generally |
| Federal Railroad Safety Act | 1970 | DOT (Federal Railroad Administration) | Railroad safety |
| Ports and Waterways Safety Act<br>Dangerous Cargo Act | 1972<br>1952 | DOT (Coast Guard) | Shipment of toxic materials by water |
| Federal Mine Safety and Health Act | 1977 | Labor (Mine Safety and Health Administration), NIOSH | Toxic substances and other harmful physical agents in coal or other mines |

Source: Council on Environmental Quality, Toxic Substances Strategy Committee. Toxic Chemicals and Public Protection. Washington, D.C.: U.S. Government Printing Office, 1980. Pp. 11-13. Quoting from - Environmental Law Institute, An Analysis of Past Federal Efforts to Control Toxic Substances (Springfield, Va.: NTIS, 1978) and agency data.

## TABLE 54. SUMMARY OF RESULTS OF SELECTED TOXIC SUBSTANCE SAMPLING PROGRAMS MONMOUTH COUNTY, NEW JERSEY – 1979

| Substance | Swimming River Reservoir (Nevesink) | | | | | | Watershed | | | | | | | | Other (Non-Priority Areas) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Manasquan River | | | | | | | | | | | |
| | Willow Brook | Yellow Brook | Ramahesson Brook | Big Brook | Mine Brook | Glendola River System (Shark River) | Headwaters | Debois Creek and Tributaries | Mainstream to Fairfield | Timber Swamp Brook | Marsh Bog Brook | Mainstem-Squankum Gaging Station | Mingamabone Brook | Squankum Brook | Doctors Creek | Manalapan Brook | McGeliards Brook | Mahoras Brook |
| Halogenated Hydrocarbons | | | | | | | | | | | | | | | | | | |
| Chloroform | | t | | t | t | t | | t | t | | | | | | | | | |
| Bromoform | | | | | | t | | t | | | | | | | | | | |
| 1,1,2,2-tetrachloroethane | | | | | | t | | t | t | | | | | | | | | |
| 1,1,2-trichlorethane | | t | | t | t | t | | t | t | | | | | | | | | t |
| Dibromochloromethane | | | | t | | t | | t | | | | | | | | | | t |
| Carbon tetrachloride | | | | t | t | t | | t | | | | | | | t | t | t | t |
| 1,1,1-trichloroethane | t | t | t | t | t | t | | t | t | t | t | | | | t | | t | t |
| 1,1,2,2-tetrachloroethylene | t | t | t | t | t | t | | t | t | | | | | | | | | |
| Methyl chloride | | | | | | | | | | | | | | | | | | |
| Methylene chloride | | | | | | | | | | | | | | | | | | |
| Vinyl chloride | | | | | | | | | | | | | | | | | | |
| Trihalomethanes | | | | | | | | | | | | | | | | | | |
| Phenol | h* | | | | | | h* | | | | | | | | | | | |
| Pesticides | | | | | | | | | | | | | | | | | | |
| 2,4,D | | | | | | | h | h | h | h | h | h | | | | | | |
| 2,4,5-D | | | | | | | | h | | | | h | | | | | | |
| PCB | h | | | t | t | | t | h*,t | h* | h | h | h | h | h | | | | t |
| Lindane | t,s | | | | | | h | t | | | | | | | | | | |
| Chlordane | t,h | h | | | | | h | h* | | h | h | h | h | h | | | | |
| BHC-B | s | s | s | s | s | | | t | | | | | | | | | | |
| Heptachlor/epoxide | t,s | s | s | | s | | | h,t | | | | | | | | | | |
| Aldrin | | h | s | | | | | h* | | | | | | | | | | |
| Dieldrin | h | h | | | | | h | h* | | h | h | h* | h | h | | | | |
| DDD | h | h | | | | | h | h | | h | h | h | h | h | | | | |
| DDE | h | h | | | | | h | h | | h | h | h | h | h | | | | |
| DDT | h | h | | | | | h | h | | h | h | h | h | h | | | | |
| Diazinon | | | | | | | | h | | | | | | | | | | |
| Endrin | h | h | | | | | | | | | | | | | | | | |
| Silvex | | | | | | | | h | | | | h | h | | | | | |
| Polynuclear Aromatic Hydrocarbons | | | | | | | | | t | | | | | | | | | |
| Metals | | | | | | | | | | h | h | | | | | | | |
| Arsenic | h | h | | | | | h | | t | | h | | | | t | | | |
| Cadmium | h | h | | | | | h | | | h | h | | | | | | | |
| Chromium | h | h | h | t | | | h | | t | h | h | | | | | | | |
| Cobalt | | h | | | | | h | | | h | h | | | | | | | |
| Copper | h | h | h | | | | h | t | | h | h | | | | | | | |
| Lead | h | h | | | | | h | t | | h | h | | | | | | | |
| Mercury | h | h | | | t | | h | t | | h | h | | | | | | | |
| Nickel | | h | | | | | h | | | h | h | | | | | | | |
| Zinc | h | h | | | | | h | | | h | h | | | | | | | |

Key: h = Based on historical sampling surveys from the U.S. EPA STORET System, Monmouth Consolidated Water Company and Citizens Against Water Pollution, through March 1977.

t = Toxic & Carcinogenic Substances Monitoring Program – first round (grab samples).

s = Surface Toxic Sampling Program (summer, 1978) – second round, including source identification.

An asterisk (*) means that the value for the sample exceeds either the potable drinking water standard or the standard for aquatic organisms.

Blanks indicate no sampling data.

Data are for water column and/or sediments.

## TABLE 55. SUMMARY OF RESULTS OF SELECTED TOXIC SUBSTANCE SAMPLING PROGRAMS MIDDLESEX COUNTY, NEW JERSEY – 1976

| Substance | South Branch Raritan River | North Branch Raritan River | Lower Millstone River | Mainstem Raritan River |
|---|---|---|---|---|
| Halogenated Hydrocarbons | | | | |
| Chloroform | | | | |
| Bromoform | | | | |
| 1,1,2,2-tetrachloroethane | | | | |
| 1,1,2-trichlorethane | | | | |
| Dibromochloromethane | | | | |
| Carbon tetrachloride | | | | |
| 1,1,1-trichloroethane | | | | |
| 1,1,2,2-tetrachloroethylene | | | | |
| Methyl chloride | | | | |
| Methylene chloride | | | | |
| Vinyl chloride | | | | |
| Trihalomethanes | | | | |
| Phenol | | | | X* |
| Pesticides | | | | |
| 2,4,D | | | | |
| 2,4,5-D | | | | |
| PCB | X | X | X | |
| Lindane | | | | |
| Chlordane | X | | X | |
| BHC-B | | | | |
| Heptachlor/epoxide | | | | |
| Aldrin | | | | |
| Dieldrin | X | | X | |
| DDD | | | | |
| DDE | | | | |
| DDT | X | X | X | |
| Diazinon | | | | |
| Endrin | | | | |
| Silvex | | | | |
| Toxaphene | X | | | |
| Polynuclear Aromatic Hydrocarbons | | | | |
| Metals | | | | |
| Arsenic | | | | |
| Cadmium | | | | |
| Chromium | X | | | |
| Cobalt | X | | | |
| Copper | X | | | X |
| Lead | X | | X | X* |
| Mercury | X | X | | X* |
| Nickel | X | | X | |
| Zinc | X | | X | |

## TABLE 56. TOXIC SUBSTANCE SAMPLING RESULTS, NORTHEASTERN NEW JERSEY

| Parameters \ Segment | Upper Passaic | Whippany | Rockaway | Mid Passaic | Pequannock | Wanaque | Ramapo | Pompton | Lower Passaic | Peckman | Saddle River | Ho-Ho-Kus Brook | Rahway | Arthur Kill | Newark Bay | Kill Van Kull | Upper New York Bay | Hudson | Hackensack |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diiodomethane | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 2 | |
| Polychlorinated Biphenyl (PLBS) | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 2 | 2 | | 3 | 2 | 4 |
| BHC | | 1 | | | | | | | 1 | | | | | 2 | 2 | | | | |
| BHCB | 3 | 2 | 1 | 4 | | | 2 | 2 | 2 | | | | 1 | 3 | 2 | 4 | | 2 | 2 |
| Lindane | 1 | | | 3 | | | | 2 | | | | | | | | | | | 1 |
| Aldrin | | 1 | | | | | | | | | | | | | | | 3 | 2 | 1 |
| Dieldrin | 1 | 2 | 1 | | | | | 2 | | | | | | | | | | | |
| Heptachlor | | 1 | | | 1 | | | 3 | | 1 | | | 1 | 3 | 3 | 4 | | 3 | 1 |
| Toxaphene | | | | | | | | | | | | | | | | | | | |
| O,P'-DDE | 1 | 1 | | | | | | 3 | | | | | | | 2 | | | | 1 |
| O,P'-DDT | 1 | 1 | | | | | | | | | | | | | | 3 | | 2 | 1 |
| P,P'-DDD | 1 | | | | | | | | | | | | | | | 3 | | 3 | 1 |
| P,P-DDT | 1 | | | | | | | | | | | | | | | 3 | | 2 | 1 |
| Methyoxychlor | | | | | | | | | | | | | | | | | | | |
| Mirex | | | | | | | | | | | | | | | | 3 | | 2 | |
| Endrin | 1 | | | | | | | 2 | | | | | | | 2 | 3 | | | 1 |
| $\gamma$ Chloradane | 2 | 1 | | 2 | | | | 3 | 1 | | | | | | 2 | 3 | | | 1 |
| Heptachlor Epoxide | 1 | 2 | 1 | 4 | | | 2 | 2 | 1 | | | | 1 | 2 | 2 | 3 | | | 1 |
| Wethylene Chloride | | | | | | | | | | | | | | | 2 | | 3 | 3 | |
| Methyl Chloride | | | | | | | | | | | | | | | | | | | |
| Methyl Bromide | | | | | | | | | | | | | | | | | | | |
| Chloroform* | 2 | 4 | 3 | 4 | 3 | | 3 | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Bromoform* | 1 | | | | 2 | 1 | 2 | 2 | 1 | 3 | 4 | | 1 | 3 | 4 | 4 | 4 | 4 | 2 |
| Bromodichloromethane+ 1,1,2-Trichlorethylene | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 4 |
| 1,1,2,2 Tetrachloroethane | 1 | 1 | | 1 | 2 | 3 | 2 | 4 | 2 | | | | | | | | | | |
| 1,1,2 Trichloroethane | 1 | | 1 | 3 | 1 | | 2 | 2 | 2 | 1 | | 2 | 1 | | | 3 | 2 | | |
| Dibromochloromethane* | 2 | 1 | 1 | 4 | 1 | 1 | 4 | 4 | 3 | 3 | 2 | | 1 | 4 | 4 | 4 | 4 | 3 | 3 |
| Trifluromethane* | | | | | | | | | | 1 | | | | | 4 | 4 | 3 | 3 | |
| Carbon Tetrachloride | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 3 | 4 |
| 1,2 dibromoethane | | 1 | | | | 1 | 2 | | 1 | | | | 4 | 3 | | | | | |
| 1,2 dichloroethane | | | | | | | | | | | | | 4 | 3 | 2 | 3 | | | |
| 1,1,1 Trichloroethane | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 |
| Vinyl chloride | | | | 4 | | | | | | | | | | | | | | | |
| 1,1,2,2 Tetrachloroethylene | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| o,m,p dichlorobenzene | | | | | | | | | | | | | | 2 | 3 | | | 2 | |
| Trichloro Benzene | | | | | | | | | | | | | | 2 | | | | | |
| Silver | | | | | | | | | | | | | 1 | | | | | | 1 |
| Arsenic | 3 | 3 | 1 | 2 | 1 | | | | 4 | 2 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Beryllium | | | | | | | | | | | | | | 2 | | | 3 | | |
| Cadmium | | | 1 | | | | | | | | | | | | 3 | 3 | 4 | | |
| Copper | 3 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | | 4 | 4 | 4 | 4 | 4 | 4 |
| Chromium | 3 | 2 | 3 | 4 | | | 3 | | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Lead | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Mercury | 1 | 1 | 1 | 1 | | | | | 3 | 1 | 1 | | | 3 | 3 | 3 | 4 | 3 | 4 |
| Nickel | 1 | 4 | 1 | 4 | | 3 | 4 | 2 | 1 | 3 | 2 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Zinc | 3 | 4 | 3 | 4 | 3 | | 2 | | 4 | 4 | 2 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

Key: Percentage of samples in which substance detected: 1 = 1-24
2 = 25-49
3 = 50-74
4 = 75-100

Number of samples taken ranged from 2 to 19. Blanks indicate that none of the samples taken showed the presence of the substance.

Source: Compiled from — NJDEP. *Draft Water Quality Management Plan,* Northeastern NJ. Trenton, NJ: NJDEP, April, 1979, Pp. III-75 to III-77.

## TABLE 57. SUMMARY OF RESULTS OF SELECTED TOXIC SUBSTANCE SAMPLING PROGRAMS

## NEW YORK CITY – 1976

| Substance | New York City | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Hudson River | Long Island Sound | East and Harlem Rivers | Upper Bay | Arthur Kill, Kill van Kull, Newark Bay | Lower Raritan & Sandy Hook Bays | Jamaica Bay | Atlantic Ocean |
| Halogenated Hydrocarbons | | | | | | | | |
| Chloroform | | | | | | | | |
| Bromoform | | | | | | | | |
| 1,1,2,2-tetrachloroethane | | | | | | | | |
| 1,1,2-trichlorethane | | | | | | | | |
| Dibromochloromethane | | | | | | | | |
| Carbon tetrachloride | | | | | | | | |
| 1,1,1-trichloroethane | | | | | | | | |
| 1,1,2,2-tetrachloroethylene | | | | | | | | |
| Methyl chloride | | | | | | | | |
| Methylene chloride | | | | | | | | |
| Vinyl chloride | | | | | | | | |
| Trihalomethanes | | | | | | | | |
| Phenol | | | | | | | | |
| Pesticides | | | | | | | | |
| 2,4,D | | | | | | | | |
| 2,4,5-D | | | | | | | | |
| PCB | X* | X | X* | X | X* | X | X | X |
| Lindane | | | | | | | | |
| Chlordane | | | | | | | | |
| BHC-B | | | | | | | | |
| Heptachlor/epoxide | | | | | | | | |
| Aldrin | | | | | | | | |
| Dieldrin | | | | | | | | |
| DDD | | | | | | | | |
| DDE | | | | | | | | |
| DDT | | | | | | | | |
| Diazinon | | | | | | | | |
| Endrin | | | | | | | | |
| Silvex | | | | | | | | |
| Polynuclear Aromatic Hydrocarbons: Oil | | | X* | X* | X* | | X* | |
| Metals | | | | | | | | |
| Arsenic | | | | | | | | |
| Cadmium | X | X | X | X | X | X | X | X |
| Chromium | X | X | X | X | X | X | X | X |
| Cobalt | | | | | | | | |
| Copper(1) | X* | X* | X* | X* | X* | X* | X* | X* |
| Lead-2 | X* | X* | X* | X* | X* | X* | X* | X* |
| Mercury(1) | X* | X* | X* | X* | X* | X* | X* | X* |
| Nickel | X* | | X* | | | X* | | |
| Zinc(2) | X* | X* | X* | X* | X* | X* | X* | X* |

Notes: (1) Exceeds levels hazardous to marine environment 90% of the time.
(2) Exceeds levels hazardous to marine environment 60% of the time.

# TABLE 58. SUMMARY OF RESULTS OF SELECTED TOXIC SUBSTANCE SAMPLING PROGRAMS

## WESTCHESTER COUNTY – 1976

| Substance | Stream Bottoms (1976) | | | | | | | | | | | | | Lakes (1976) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rye | New Rochelle | Larchmont | Mamaroneck | Bronxville | Mount Vernon | Van Cortlandtville | Croton-on-Hudson | Amawalk | Mount Kisco | Yorktown | Elmsford | Yonkers | Trinity | Kitchawan | Katonah | Mohegan | Lincolndale | Peace |
| Halogenated Hydrocarbons | | | | | | | | | | | | | | | | | | | |
| Chloroform | | | | | | | | | | | | | | | | | | | |
| Bromoform | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-tetrachloroethane | | | | | | | | | | | | | | | | | | | |
| 1,1,2-trichlorethane | | | | | | | | | | | | | | | | | | | |
| Dibromochloromethane | | | | | | | | | | | | | | | | | | | |
| Carbon tetrachloride | | | | | | | | | | | | | | | | | | | |
| 1,1,1-trichloroethane | | | | | | | | | | | | | | | | | | | |
| 1,1,2,2-tetrachloroethylene | | | | | | | | | | | | | | | | | | | |
| Methyl chloride | | | | | | | | | | | | | | | | | | | |
| Methylene chloride | | | | | | | | | | | | | | | | | | | |
| Vinyl chloride | | | | | | | | | | | | | | | | | | | |
| Trihalomethanes | | | | | | | | | | | | | | | | | | | |
| Phenol | | | | | | | | | | | | | | | | | | | |
| Pesticides | | | | | | | | | | | | | | | | | | | |
| 2,4,D | | | | | | | | | | | | | | | | | | | |
| 2,4,5-D | | | | | | | | | | | | | | | | | | | |
| PCB | X* | X* | | | X* | X* | X | | | X* | | X | X | | | | | X* | |
| Lindane | | | | | | | X | | | | | | | | | | | | |
| Chlordane | X,X | X,X | X | X | X | X | X | | X | X | X | X | X | | | | | | |
| BHC-B | | | | | | | | | | | | | | | | | | | |
| Heptachlor/epoxide | X,X | | | | | | | | | | | | | | | | | | |
| Aldrin | | | X | | X | X | | | | | | | | | | | | | |
| Dieldrin | X,X | X,X | X | X | X | X | | | | X | X | | | | | | | | |
| DDD | X,X | X,X | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | X |
| DDT | X,X | X,X | | X | X | X | X | | X | X | X | X | X | | | | | | |
| DDE | X | X | X | | | | X | X | X | X | X | | | X | X | X | X | | X |
| Diazinon | | X | | | | | | | | | | | | | | | | | |
| Endrin | | | | | | | | | | | | | | | | | | | |
| Silvex | | | | | | | | | | | | | | | | | | | |
| Polynuclear Aromatic Hydrocarbons | | | | | | | | | | | | | | | | | | | |
| Metals | | | | | | | | | | | | | | | | | | | |
| Arsenic | X,X | X | X | X | X | X | X | X | X | X | X | | | | | | | | |
| Cadmium | X | X | | X | X | X | X | X | X | X | X | X | X | | | | | | |
| Chromium | X,X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| Cobalt | | | | | | | | | | | | | | | | | | | |
| Copper | X,X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| Lead | X,X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| Mercury | | X | X | X | | | | | | | | | | | | | | | |
| Nickel | X,X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | |
| Zinc | | | | | | | | | | | | | | | | | | | |

## TABLE 59A. TOXIC SUBSTANCE WASTE DISCHARGERS UNDER NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM, HUDSON-RARITAN ESTUARY, 1980 – LEAD

| | County | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | New York City | | | | | | |
| | Monmouth | Middlesex | Morris | Union | Essex | Hudson | Bergen | Passaic | Rockland | Westchester | Brooklyn | Bronx | Manhattan | Queens | Staten Island | Nassau | Suffolk |
| SIC Code | | | | | | | | | | | | | | | | | |
| Manufacturing: | | | | | | | | | | | | | | | | | |
| 20 Food and Kindred Products | | | | | | | | | | | | | | | | | |
| 201 Meat | | | | | | | | | | | | | | | | | |
| 202 Dairy | | | | | | | | | | | | | | | | | |
| 203 Vegetable | | | | | | | | | | | | | | | | | |
| 204 Grain | | | | | | | | | | | | | | | | | |
| 205 Bakery | | | | | | | | | | | | | | | | | |
| 206 Sugar | | | | | | | | | | | | | | | | | |
| 207 Fats and Oils | | | | | | | | | | | | | | | | | |
| 208 Beverages | | | | | | | | | | | | | | | | | |
| 209 Miscellaneous | | | | | | | | | | | | | | | | | |
| 22 Textiles | | | | | | | | | | | | | | | | | |
| 226 Dyeing and Finishing | | | | | | 1 | | | | | | | | | | | |
| 23 Apparel | | | | | | | | | | | | | | | | | |
| 24 Lumber and Wood | | | | | | | | | | | | | | | | | |
| 25 Furniture | | | | | | | | | | | | | | | | | |
| 26 Paper | | | | | | | | | | | | | | | | | |
| 261 Pulp Mills | | | | | | | | | | | | | | | | | |
| 262 Paper Mills | | | | | | | | | | | | | | | | | |
| 263 Paperboard | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| 27 Printing, Publishing | | | | | | | | | | | | | | | | | |
| 28 Chemicals | | | | | | | | | | | | | | | | | |
| 281 Industrial, Inorganic | | 1 | | 1 | 1 | | | 1 | | | | | | | | | |
| 282 Plastics, Synthetic | | | | | | | | | | | | | | | | | |
| 283 Drugs | | | | | | | | | | | | | | | | | |
| 284 Soaps | | | | | | | | | | | | | | | | | |
| 285 Paints | | | | | | | | | | | | | | | | | |
| 286 Industrial, Organic | | | | | | | | | | | | | | | | | |
| 287 Agricultural | | | | | | | | | | | | | | | | | |
| 2879 Pesticides | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| 289 Miscellaneous | | | | | | | | 1 | | | | | | | | | |
| 29 Petroleum Refining | | | | | | | | | | | | | | | | | |
| 291 Petroleum Refining | | | | | | | | | | | | | | | | | |
| 292 Paving and Roofing | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| 30 Rubber, etc. | | | | 1 | | | | | | | | | | | | | |
| 31 Leather | | | | | | | | | | | | | | | | | |
| 32 Stone, Clay, Glass, Concrete | | | | | | | | | | | | | | | | | |
| 33 Primary Metals | | | | | | | | | | | | | | | | | |
| 331 Blast Furnace | | | | | | | | 1 | | | | | | | | | |
| 332 Iron and Steel | | | | | | | | | | | | | | | | | |
| 333 Primary Smelting | | 1 | | | | | | | | | | | | | | | |
| 334 Secondary Smelting | | | | | | | 1 | | | | | | | | | | |
| 335 Rolling, etc. | | | | 1 | | 1 | | | | | | | | | | 1 | |
| 336 Nonferrous | | 1 | | | | | | | | | | | | | | | |
| 339 Miscellaneous | | | | | | | | 1 | | | | | | | | | |
| 34 Fabricated Metal | | | | | | 1 | | | | | | | | | | | |
| 35 Machinery, except Electrical | | | | | | | | | | | | | | | | | |
| 36 Electrical & Electronic Equipment | | | | | | 1 | | 1 | | | | | | | | | |
| 37 Transportation Equipment | | | | | | | 1 | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| Non-manufacturing | | | | | | | | | | | | | | | | | |

## TABLE 59B. TOXIC SUBSTANCE WASTE DISCHARGERS UNDER NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM, HUDSON-RARITAN ESTUARY, 1980 – CHROMIUM

| | County | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | New York City | | | | | | | |
| | Monmouth | Middlesex | Morris | Union | Essex | Hudson | Bergen | Passaic | Rockland | Westchester | Brooklyn | Bronx | Manhattan | Queens | Staten Island | Nassau | Suffolk |
| SIC Code | | | | | | | | | | | | | | | | | | |
| Manufacturing: | | | | | | | | | | | | | | | | | | |
| 20 Food and Kindred Products | | | | | | | | | | | | | | | | | | |
| 201 Meat | | | | | | | | | | | | | | | | | | |
| 202 Dairy | | 1 | 1 | | | | 1 | 1 | | | | | | | | | | |
| 203 Vegetable | | | | | 1 | | 1 | | | | | | | | | | | |
| 204 Grain | | | | | | | | | | | | | | | | | | |
| 205 Bakery | | | | | | | 2 | | | | | | | | | | | |
| 206 Sugar | | | | | | | | | | | | | | | | | | |
| 207 Fats and Oils | 1 | | | | | 1 | | | | | | | | | | | | |
| 208 Beverages | | | 1 | 1 | 1 | | 2 | | | | | | | | | | | |
| 209 Miscellaneous | | | | | 1 | 1 | 1 | | | | | | | | | | | |
| 22 Textiles | | | | | | | | | | | | | | | | | | |
| 226 Dyeing and Finishing | | | | | | 1 | | | | | | | | | | | | |
| Other | | | | | | | 3 | 2 | | | | | | | | | | |
| 23 Apparel | | | | | | | | | | | | | | | | | | |
| 24 Lumber and Wood | | | 1 | | | | | | | | | | | | | | | |
| 25 Furniture | | | | 1 | | | | | | | | | | | | | | |
| 26 Paper | | | | | | | | | | | | | | | | | | |
| 261 Pulp Mills | | | | | | | | | | | | | | | | | | |
| 262 Paper Mills | | | | | | | | | | | | | | | | | | |
| 263 Paperboard | | | 1 | | | | | 1 | | | | | | | | | | |
| Other | | 1 | 1 | 1 | | | 1 | | | | | | | | | | | |
| 27 Printing, Publishing | | | | 1 | | | 1 | | | | | | | | | | | |
| 28 Chemicals | | | | | | | | | | | | | | | | | | |
| 281 Industrial, Inorganic | | 4 | 2 | 2 | 1 | 1 | 2 | 1 | | 1 | | | | | | | | |
| 282 Plastics, Synthetic | | 2 | 1 | | | | 3 | 1 | | | | | | | | | | |
| 283 Drugs | 1 | 1 | 2 | 3 | 1 | 1 | 1 | 2 | | | | | | | | | | |
| 284 Soaps | | 1 | 1 | | 1 | 1 | | 2 | | | | | | | | | | |
| 285 Paints | | | 1 | | 1 | | 1 | 2 | | | | | | | | | | |
| 286 Industrial, Organic | | 5 | 1 | 2 | 1 | 1 | 5 | 2 | | | | | | | | | | |
| 287 Agricultural | | | | | | | | | | | | | | | | | | |
| 2879 Pesticides | | | | | | | | | | | | | | | | | | |
| Other | | | | | | | 1 | | | | | | | | | | | |
| 289 Miscellaneous | | 1 | | | 3 | | 2 | 4 | | | | | | | | | | |
| 29 Petroleum Refining | | | | | | | | | | | | | | | | | | |
| 291 Petroleum Refining | | 1 | | 2 | | 1 | | | | | | | | | | | | |
| 292 Paving and Roofing | | | | | | | | | | | | | | | | | | |
| Other | | | | | | | 1 | | | | | | | | | | | |
| 30 Rubber, etc. | | 4 | 2 | 2 | 6 | 1 | 6 | 6 | | | | | | | | | | |
| 31 Leather | | | | | | | | | | | | | | | | | | |
| 32 Stone, Clay, Glass, Concrete | 1 | 5 | | | 3 | 1 | | 2 | | | | | | | | | | |
| 33 Primary Metals | | | | | | | | | | | | | | | | | | |
| 331 Blast Furnace | | | 1 | | | | 1 | 2 | | | | | | | | | | |
| 332 Iron and Steel | | | | | 1 | | | | | | | | | | | | | |
| 333 Primary Smelting | | 1 | | | | | | | | | | | | | | | | |
| 334 Secondary Smelting | | | | | | | | | | | | | | 1 | | | | |
| 335 Rolling, etc. | | 1 | 1 | 1 | | 1 | | 1 | | | | | | | | | | |
| 336 Nonferrous | | 1 | 1 | 4 | | | | | | | | | | | | | | |
| 339 Miscellaneous | 1 | | | | | | 1 | 1 | | | | | | | | | | |
| 34 Fabricated Metal | | 5 | 2 | | 2 | 1 | 5 | 4 | | | | | | 1 | | | 1 | |
| 35 Machinery, except Electrical | | | 1 | 1 | 2 | 1 | 1 | 4 | | | | | | | | | | |
| 36 Electrical & Electronic Equipment | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 5 | | | | | | | | | | |
| 37 Transportation Equipment | | 1 | | | | 1 | 2 | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | | |
| Non-manufacturing | | | | | | | | | | | | | | | | | | |

## TABLE 59C. TOXIC SUBSTANCE WASTE DISCHARGERS UNDER NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM, HUDSON-RARITAN ESTUARY, 1980 – CYANIDE

| | County | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | New York City | | | | | | |
| | Monmouth | Middlesex | Morris | Union | Essex | Hudson | Bergen | Passaic | Rockland | Westchester | Brooklyn | Bronx | Manhattan | Queens | Staten Island | Nassau | Suffolk |
| SIC Code | | | | | | | | | | | | | | | | | |
| Manufacturing: | | | | | | | | | | | | | | | | | |
| 20 Food and Kindred Products | | | | | | | | | | | | | | | | | |
| 201 Meat | | | | | | | | | | | | | | | | | |
| 202 Dairy | | | | | | | | | | | | | | | | | |
| 203 Vegetable | | | | | | | | | | | | | | | | | |
| 204 Grain | | | | | | | | | | | | | | | | | |
| 205 Bakery | | | | | | | | | | | | | | | | | |
| 206 Sugar | | | | | | | | | | | | | | | | | |
| 207 Fats and Oils | | | | | | | | | | | | | | | | | |
| 208 Beverages | | | | | | | | | | | | | | | | | |
| 209 Miscellaneous | | | | | | | | | | | | | | | | | |
| 22 Textiles | | | | | | | | | | | | | | | | | |
| 226 Dyeing and Finishing | | | | | | | | | | | | | | | | | |
| 23 Apparel | | | | | | | | | | | | | | | | | |
| 24 Lumber and Wood | | | | | | | | | | | | | | | | | |
| 25 Furniture | | | | | | | | | | | | | | | | | |
| 26 Paper | | | | | | | | | | | | | | | | | |
| 261 Pulp Mills | | | | | | | | | | | | | | | | | |
| 262 Paper Mills | | | | | | | | | | | | | | | | | |
| 263 Paperboard | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| 27 Printing, Publishing | | | | | | | | | | | | | | | | | |
| 28 Chemicals | | | | | | | | | | | | | | | | | |
| 281 Industrial, Inorganic | | | | | | | | | | | | | | | | | |
| 282 Plastics, Synthetic | | | | | | | | | | | | | | | | | |
| 283 Drugs | | | 1 | | | | | | | | | | | | | | |
| 284 Soaps | | | | | | | | | | | | | | | | | |
| 285 Paints | | | | | | | | | | | | | | | | | |
| 286 Industrial, Organic | | | | 1 | | | | | 1 | | | | | | | | |
| 287 Agricultural | | | | | | | | | | | | | | | | | |
| 2879 Pesticides | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| 289 Miscellaneous | | | | | | | | | | | | | | | | | |
| 29 Petroleum Refining | | | | | | | | | | | | | | | | | |
| 291 Petroleum Refining | | | | | | | | | | | | | | | | | |
| 292 Paving and Roofing | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| 30 Rubber, etc. | | | | | | | | | | | | | | | | | |
| 31 Leather | | | | | | | | | | | | | | | | | |
| 32 Stone, Clay, Glass, Concrete | | | | | | | | | | | | | | | | | |
| 33 Primary Metals | | | | | | | | | | | | | | | | | |
| 331 Blast Furnace | | | | | | | | | | | | | | | | | |
| 332 Iron and Steel | | | | | | | | | | | | | | | | | |
| 333 Primary Smelting | | | | | | | | | | | | | | | | | |
| 334 Secondary Smelting | | | | | | | | | | | | | | | | | |
| 335 Rolling, etc. | | | | | | | | | | | | | | | | | |
| 336 Nonferrous | | | | | | | | | | | | | | | | | |
| 339 Miscellaneous | | | | | | | | | | | | | | | | | |
| 34 Farbricated Metal | | 1 | | | | | | | | | | | | | | | |
| 35 Machinery, except Electrical | | | 1 | | | | | | | | | | | | | | |
| 36 Electrical & Electronic Equipment | 1 | | 1 | | | | 1 | | | | | | | | | | |
| 37 Transportation Equipment | | | | | 1 | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| Non-manufacturing | | | | | | | | | | | | | | | | | |

## TABLE 59D. TOXIC SUBSTANCE WASTE DISCHARGERS UNDER NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM, HUDSON-RARITAN ESTUARY, 1980 — PHENOLS

| | County | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | New York City | | | | | | |
| | Monmouth | Middlesex | Morris | Union | Essex | Hudson | Bergen | Passaic | Rockland | Westchester | Brooklyn | Bronx | Manhattan | Queens | Staten Island | Nassau | Suffolk |
| SIC Code | | | | | | | | | | | | | | | | | |
| Manufacturing: | | | | | | | | | | | | | | | | | |
| 20 Food and Kindred Products | | | | | | | | | | | | | | | | | |
| 201 Meat | | | | | | | | | | | | | | | | | |
| 202 Dairy | | | | | | | | | | | | | | | | | |
| 203 Vegetable | | | | | | | | | | | | | | | | | |
| 204 Grain | | | | | | | | | | | | | | | | | |
| 205 Bakery | | | | | | | | | | | | | | | | | |
| 206 Sugar | | | | | | | | | | | | | | | | | |
| 207 Fats and Oils | | | | | | 1 | | | | | | | | | | | |
| 208 Beverages | | | | | | | | | | | | | | | | | |
| 209 Miscellaneous | | | | | | | | | | | | | | | | | |
| 22 Textiles | | | | | | | | | | | | | | | | | |
| 226 Dyeing and Finishing | | | | | | 1 | | | | | | | | | | | |
| Other | | | | | | | | 1 | | | | | | | | | |
| 23 Apparel | | | | | | | | | | | | | | | | | |
| 24 Lumber and Wood | | | | | | | | | | | | | | | | | |
| 25 Furniture | | | | | | | | | | | | | | | | | |
| 26 Paper | | | | | | | | | | | | | | | | | |
| 261 Pulp Mills | | | | | | | | | | | | | | | | | |
| 262 Paper Mills | | | | | | | | | | | | | | | | | |
| 263 Paperboard | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| 27 Printing, Publishing | | | | 1 | | | | | | | | | | | | | |
| 28 Chemicals | | | | | | | | | | | | | | | | | |
| 281 Industrial, Inorganic | | | | 1 | | 1 | | | | 1 | | | | | | | |
| 282 Plastics, Synthetic | 1 | | | | | | | | | | | | | | | | |
| 283 Drugs | | 1 | | | | | | | | | | | | | | | |
| 284 Soaps | | | | | | | | | | | | | | | | | |
| 285 Paints | | | | | | | 1 | | | | | | | | | | |
| 286 Industrial, Organic | | | | 1 | | 1 | 1 | | | | | | | | | | |
| 287 Agricultural | | | | | | | | | | | | | | | | | |
| 2879 Pesticides | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| 289 Miscellaneous | | | | | | | | | | | | | | | | | |
| 29 Petroleum Refining | | | | | | | | | | | | | | | | | |
| 291 Petroleum Refining | | 1 | | 1 | | | | | | | | | | | | | |
| 292 Paving and Roofing | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| 30 Rubber, etc. | | | | | | | | | | | | | | | | | |
| 31 Leather | | | | | | | | | | | | | | | | | |
| 32 Stone, Clay, Glass, Concrete | | | | | | | | | | | | | | | | | |
| 33 Primary Metals | | | | | | | | | | | | | | | | | |
| 331 Blast Furnace | | | | | | | | | | | | | | | | | |
| 332 Iron and Steel | | | | | | | | | | | | | | | | | |
| 333 Primary Smelting | | | | | | | | | | | | | | | | | |
| 334 Secondary Smelting | | | | | | | | | | | | | | | | | |
| 335 Rolling, etc. | | 1 | | | | | | | | | | | | | | | |
| 336 Nonferrous | | | | | | | | | | | | | | | | | |
| 339 Miscellaneous | | | | | | | | | | | | | | | | | |
| 34 Fabricated Metal | | | | | | | | | | | | | | | | | |
| 35 Machinery, except Electrical | | | | | | | | | | | | | | | | | |
| 36 Electrical & Electronic Equipment | | | | | | | | | | | | | | | | | |
| 37 Transportation Equipment | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| Non-manufacturing | | | | | | | | | | | | | | | | | |

## TABLE 59E. TOXIC SUBSTANCE WASTE DISCHARGERS UNDER NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM, HUDSON-RARITAN ESTUARY, 1980 – ZINC

| | County | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | New York City | | | | | | |
| | Monmouth | Middlesex | Morris | Union | Essex | Hudson | Bergen | Passaic | Rockland | Westchester | Brooklyn | Bronx | Manhattan | Queens | Staten Island | Nassau | Suffolk |
| SIC Code | | | | | | | | | | | | | | | | | |
| Manufacturing: | | | | | | | | | | | | | | | | | |
| 20 Food and Kindred Products | | | | | | | | | | | | | | | | | |
| 201 Meat | | | | | | | | | | | | | | | | | |
| 202 Dairy | | 1 | 1 | | | | 1 | 1 | | | | | | | | | |
| 203 Vegetable | | | | | 1 | | 1 | | | | | | | | | | |
| 204 Grain | | | | | | | | | | | | | | | | | |
| 205 Bakery | | | | | | | 2 | | | | | | | | | | |
| 206 Sugar | | | | | | 1 | | | | | | | | | | | |
| 207 Fats and Oils | 1 | | | | | | | | | | | | | | | | |
| 208 Beverages | | | 1 | 1 | 1 | | 2 | | | | | | | | | | |
| 209 Miscellaneous | | | | | 1 | 1 | 1 | | | | | | | | | | |
| 22 Textiles | | | | | | | | | | | | | | | | | |
| Other | | | | | | 1 | 3 | 2 | | | | | | | | | |
| 23 Apparel | | | | | | | | | | | | | | | | | |
| 24 Lumber and Wood | | | 1 | | | | | | | | | | | | | | |
| 25 Furniture | | | | 1 | | | | | | | | | | | | | |
| 26 Paper | | | | | | | | | | | | | | | | | |
| 261 Pulp Mills | | | | | | | | | | | | | | | | | |
| 262 Paper Mills | | | 1 | | | | | | | | | | | | | | |
| 263 Paperboard | | | 2 | | | | | 1 | | | | | | | | | |
| Other | | 2 | | 1 | | | 1 | | | | | | | | | | |
| 27 Printing, Publishing | | | | 1 | | | 1 | | | | | | | | | | |
| 28 Chemicals | | | | | | | | | | | | | | | | | |
| 281 Industrial, Inorganic | | 5 | 2 | 3 | 2 | | 4 | 1 | | 1 | | | | 1 | | | |
| 282 Plastics, Synthetic | | 2 | 1 | | | | 3 | 1 | | | | | | | | | |
| 283 Drugs | 1 | 1 | 2 | 3 | 1 | | | 2 | | | | | | | | | |
| 284 Soaps | | 1 | 1 | | 1 | | 1 | 2 | | | | | | | | | |
| 285 Paints | | 1 | 1 | | 1 | | 1 | 2 | | | | | | | | | |
| 286 Industrial, Organic | | 5 | 1 | 2 | 1 | | 7 | 2 | | | | | | | | | |
| 287 Agricultural | | | | | | | | | | | | | | | | | |
| 2879 Pesticides | | | | | | | | | | | | | | | | | |
| Other | | | | | | | 1 | | | | | | | | | | |
| 289 Miscellaneous | | 1 | | | 3 | | 2 | 4 | | | | | | | | | |
| 29 Petroleum Refining | | | | | | | | | | | | | | | | | |
| 291 Petroleum Refining | | 1 | | 1 | | | | | | | | | | | | | |
| 292 Paving and Roofing | | | | | | | | | | | | | | | | | |
| Other | | | | 1 | | | 1 | | | | | | | | | | |
| 30 Rubber, etc. | | 3 | 6 | 2 | 6 | 1 | 6 | 5 | | | | | | | | | |
| 31 Leather | | | | | | | | | | | | | | | | | |
| 32 Stone, Clay, Glass, Concrete | 1 | 4 | | | 3 | 1 | | 2 | | | | | | | | | |
| 33 Primary Metals | | | | | | | | | | | | | | | | | |
| 331 Blast Furnace | | | 1 | | | | 1 | 2 | | | | | | | | | |
| 332 Iron and Steel | | | | | 1 | | | | | | | | | | | | |
| 333 Primary Smelting | | 1 | | | | | | | | | | | | | | | |
| 334 Secondary Smelting | | | | | | | 1 | | | | | | | 1 | | | |
| 335 Rolling, etc. | | 1 | 1 | 1 | | | | 1 | | | | | | | | 1 | |
| 336 Nonferrous | | 2 | | 1 | | | | | | | | | | | | | |
| 339 Miscellaneous | 1 | | | | | | 1 | | | | | | | | | | |
| 34 Fabricated Metal | | 7 | 3 | | 1 | 1 | 4 | 3 | | | | | | 1 | | | 1 |
| 35 Machinery, except Electrical | | | 2 | 1 | 2 | 1 | 1 | 4 | | | | | | | | | |
| 36 Electrical & Electronic Equipment | 1 | 1 | 1 | 1 | 1 | 1 | | 6 | | | | | | | | | |
| 37 Transportation Equipment | | 1 | | | 1 | 1 | 2 | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | |
| Non-manufacturing | | | | | | | | | | | | | | | | | |

TABLE 60

AGE AND VOLUME OF SELECTED PERMIT PROGRAMS, New Jersey and New York State

| Name of Permit & Date[1] | Volume of Permits Processed[2] 1977 | 1978 | 1979 | |
|---|---|---|---|---|
| NEW JERSEY:[3] | | | | |
| Riparian (1864,1877) | 667 | 808 | 521 | |
| Wetlands (1970) | 49 | 66 | 45 | |
| CAFRA (1973/1977) | 61 | 84 | 56 | |
| Stream Encroachment (1929/1976) | 729 | 567 | 469 | |
| Sewer Line Extension (1975/1979) | 474 | 583 | 609 | |
| Water Diversion for Public Supply[4] | 25 | 24 | 31 | |
| Surface Water Diversion for Private Water Supply[4] | ---------130---------- | | | |
| Subsurface/Percolating Water Diversion for Private Use[4] | 43 | 32 | 39 | |
| Well Drilling[4] (1947) | 9673 | 10383 | 9663 | |
| Public Potable Water Works Construction Approval[5] (1967) | | | | |
| Physical water connections (1966) | 284 | 278 | | |
| Treatment Works Approval[6] | 47 | 75 | | |
| Sewer System Extensions | | | | |
| Dam Construction[7] | - | 6 | | |
| Collector/hauler Certificate[8] (1970) | ---------- | | 3689 | |
| Solid Waste Disposal Facility Registration (1970) | ---------- | | 566 | |
| NEW YORK STATE:[9] | | | | |
| PDES[10] (1972/1975) | | | | |
| Industrial/Municipal (Albany) | - | 368 | 461 | (FY) |
| Non-industrial/Non-municipal (Regions) | 1464 | 977 | 953 | (FY) |
| Public Water Supply Application (1905) | | | | |
| Long Island Wells (1933) | | | | |
| Water Supply Completed Works | | | | |
| Public Water Supply Connection | | | | |
| Freshwater Wetlands (1975)[11] | -------- | 720 | --------- | |
| Tidal Wetlands (1973) | 397 | 400 | 800 | |
| Protection of Waters (1966/1979) | | | | |
| Stream disturbance | | | | |
| Docks and Dams | | | | |
| Excavation and Fill | | | | |
| Solid Waste Transport (est.)[12] | 750 | 800 | 1000 | |
| Solid Waste Disposal Facility (1977)[13] | | | | |
| Operation | -- | 137 | 193 | |
| Construction | 5 | 17 | 16 | |

NOTES TO TABLE 60. Age and Volume of Selected Permit Programs

1. Where a single date is given, it indicates the effective date of the statute. Where two dates are given, the second date indicates, in addition to the effective statute date, the effective date of the last major administrative reference as of 1980.

Permit figures were not generally available for those programs that are either regionalized (e.g., in New York State) or delegated down to county or local agencies. Realty subdivision water and sewer system reviews generally fall into this category.

2. The numbers given generally indicate the number of applications processed in any given year, rather than those approved. The figures are given for calendar years unless specified otherwise.

3. The first five New Jersey permits are those covered by the 90-Day Act. The volume of permits processed represent those applications on hand at the start of the calendar year plus those new applications received and accepted during the calendar year. It does not include those applications that were returned to the applicant.

Source: NJ DEP. "Status of Application Permits. Yearly Reports." 1977-1979.

4. Source: NJDEP, Div. Water Resources, Bureau of Water Allocation. 4/80.

5. Source: NJDEP, Div. Water Resources, Bureau of Potable Water.

6. 1978 figure is for a two stage approval. In 1977 a Construction and Operation Permit was issued in one stage only. 1978 fig. is for 9 mos.

Source: NJDEP, Div. Water Resources. NJ Water Resources Program for Fiscal Year 1978-79. Trenton, NJ: DEP, DWR, 1979 (VI-3).

7. Source: NJDEP, Division of Water Resources, op. cit., p. VII-9. Less than 10% are original applications, the rest are renewals.

8. Figure is for those currently active - licenses are renewed annually; Disposal facility registrations are for the total currently active (9 types). Source: NJDEP, Solid Waste Administration. Trenton, NJ, April 1980.

9. Regionalization of many of the permits, especially those issued by the Division of Regulatory Affairs, prevents a total statewide aggregation of permits from being available. A quarterly report submitted by the regional offices during 1979 has been discontinued.

10. Source: PDES Section, Bureau of Permits & Compliance, Division of Water, NY Dept. of Environmental Conservation. 4/80.

11. This figure for freshwater wetlands permits represents an aggregate for all regions for all permits issued between 9/1/75 and 10/1/79.

Source: NYS DEC, Division of Regulatory Affairs, "Freshwater Wetlands Regulatory Program Actions", Albany, NY: DEC, 1979.

Notes to Table 60. (continued)

12. These are approximately annual renewals for permits. Temporarily the renewals are being staggered, and actually occur between 9 and 21 months. In late 1980, the renewals will be back to one year terms. Source: NYSDEC, Division of Solid Waste, Bureau of Hazardous Wastes, April, 1980.

13. The current total for operation totals is 353 and for construction 38 (as of April 1980). The figure of 137 for operation permits for 1977 is a running total, including some permits actually issued in 1977 - the bulk of the permits were issued in 1978. These figures do not include the "hold and haul" and "store and remove" permits on Long Island. Source: NYSDEC, Division of Solid Waste, Bureau of Waste Disposal, April, 1980.

Source: R. Zimmerman, 1980: 38-40.

TABLE 61

NUMBER OF PERMIT HOLDERS FOR FIVE PERMIT TYPES BY COUNTY (For counties in the HRE area), New Jersey: 1979 (through September 1979) *

| County | Type of State Permit | | | | |
|---|---|---|---|---|---|
| | Riparian | Stream Encroachment | Sewer Extension | CAFRA** | Wetlands |
| Bergen | 24 | 64 | 31 | n.a. | n.a. |
| Essex | 6 | 16 | 19 | n.a. | n.a. |
| Hudson | 35 | 1 | 7 | n.a. | n.a. |
| Middlesex | 25 | 30 | 51 | 3 | 0 |
| Monmouth | 74 | 38 | 49 | 17 | 4 |
| Union | 14 | 17 | 17 | n.a. | n.a. |
| Statewide Totals | 521 | 469 | 609 | 56 | 45 |

Note: * These five permits are covered under the NJ 90-Day Act requiring a 90-Day processing time for an agency decision once the application is considered to be complete.

** CAFRA permits are only applicable to less than 1% of Middlesex County (Old Bridge Twp.) and part of Monmouth.

TABLE 62

STATE ENVIRONMENTAL PERMITS ISSUED BY COUNTY,
New York State: 1977

Type of Permit

| County | Stream Protection | 401 | Freshwater Wetland | Tidal Wetland | SPDES | Solid Waste-(facility) | Solid Waste (transport) | Mining | Sewage Disposal | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Nassau | | | | | 60 | | | 1 | | |
| Suffolk | | | | 2 | 303 | 1 | | 1 | | |
| New York City: | | | | | | | | | | |
| Bronx | | | | 1 | | | | | | |
| Brooklyn | 2 | | | | 1 | | | | | |
| Manhattan | 1 | | 1 | | 1 | | | | | |
| Queens | | | | 1 | 3 | | | | | |
| Staten Island | | | | 3 | 2 | | | | | |
| Westchester | 6 | | 5 | | 70 | | | | | |
| Putnam | 1 | | 6 | | 19 | | | | | |
| Dutchess | 1 | | 2 | | 88 | | | | | |
| Rockland | 4 | 2 | 3 | | 4 | | | | | |
| Orange | 2 | | 5 | | 53 | | | | | |
| Ulster | 9 | | 4 | | 60 | | | | | |

Source: Tabulated from NYS DEC. Environmental Notice Bulletin.

TABLE 63

STATE ENVIRONMENTAL PERMITS ISSUED BY COUNTY,
New York State: 1978

Type of Permit

| County | Stream Protection | 401 | Freshwater Wetland | Tidal Wetland | SPDES | Solid Waste-(facility) | Solid Waste (transport) | Mining | Sewage Disposal | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Nassau | 16 | | 2 | 19 | 190 | 10 | | 2 | 15 | 3* |
| Suffolk | 50 | | 9 | 104 | 359 | 11 | | | 51 | 5* |
| New York City: | | | | | | | | | | |
| Bronx | 2 | | | 2 | | 1 | | | | |
| Brooklyn | 4 | | | 2 | 1 | 7 | | | | |
| Manhattan | 3 | | | 1 | 1 | 5 | | | | |
| Queens | 1 | | | | | 1 | | | | 2* |
| Staten Island | 1 | | 4 | 1 | 5 | 2 | | | | |
| Westchester | 18 | 2 | 3 | 5 | 64 | 26 | | 1 | | |
| Putnam | 3 | | 1 | | 20 | 3 | | 1 | | |
| Dutchess | 11 | 3 | 1 | n.a. | 55 | 5 | | 4 | | |
| Rockland | 6 | 1 | 3 | 1 | 13 | 3 | | 1 | | |
| Orange | 5 | 1 | 3 | | 51 | 1 | | 3 | | |
| Ulster | 18 | | | | 36 | 5 | | 3 | | |

Source: Tabulated from NYS DEC. Environmental Notice Bulletin.

*These other permits are Long Island Well permits.

TABLE 64

STATE ENVIRONMENTAL PERMITS ISSUED BY COUNTY,
New York State: 1979

Type of Permit

| County | Stream Protection | 401 | Freshwater Wetland | Tidal Wetland | SPDES | Solid Waste (facility) | Solid Waste (transport) | Mining | Sewage Disposal | Other* |
|---|---|---|---|---|---|---|---|---|---|---|
| Nassau | 8 | | 4 | 23 | 97 | 7 | | | | 15 |
| Suffolk | 92 | | 11 | 168 | 260 | | | 10 | | 92 |
| New York City: | | | | | | | | | | |
| Bronx | 1 | | | 1 | 3 | 1 | | | | |
| Brooklyn | 7 | | 1 | 5 | 12 | 1 | | | | 1 |
| Manhattan | 2 | | | 1 | 1 | | | | | |
| Queens | 6 | | | 6 | 9 | 2 | | | | |
| Staten Island | 3 | | 1 | 4 | 14 | 2 | | | | |
| Westchester | 5 | | 4 | | 62 | 5 | | | | 1 |
| Putnam | 1 | | 3 | | 18 | 2 | | | | |
| Dutchess | 5 | | 4 | | 89 | 18 | | 13 | | |
| Rockland | 5 | | | | 10 | 1 | | | | |
| Orange | 3 | | 1 | | 61 | 1 | 2 | 2 | | |
| Ulster | 6 | | 1 | | 29 | 3 | | 5 | | |

Source: Tabulated from NYS DEC. Environmental Notice Bulletin.
*Other permits are water quality permits; in addition, there were 2 Long Island Well applications in Suffolk and Brooklyn.

TABLE 55

STATE ENVIRONMENTAL PERMITS ISSUED BY COUNTY, (For counties in the HRE area), New York State: January 1980-September 1980

| County | Type of Permit | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stream Protection | 401 | Freshwater Wetland | Tidal Wetland | SPDES | Solid Waste Facility | Solid Waste (Transport) | Mining | Sewage Disposal | Other | Sanitary Waste |
| Nassau | 9 | 9 | 4 | 14 | 34 | 3 | | | | 2 | |
| Suffolk | 53 | 52 | 7 | 86 | 151 | 1 | | 2 | | 6 | 6 |
| New York City: | | | | | | | | | | | |
| Bronx | | | | | | | | | | | |
| Brooklyn | | | | | | | | | | | |
| Manhattan | | | | | | | | | | | |
| Queens | | | | | | | | | | | |
| Staten Island | | | | | | | | | | | |
| Westchester | 2 | 0 | 6 | 0 | 29 | | | | | 5 | |
| Putnam | 2 | 0 | 2 | 0 | 15 | | | | | 1 | 1 |
| Dutchess | 4 | 0 | 5 | n.a. | 35 | 3 | | 2 | | 10 | 15 |
| Rockland | 1 | 1 | 0 | n.a. | 3 | | | | | | |
| Orange | 6 | 1 | 1 | n.a. | 27 | | | 1 | | 14 | 1 |
| Ulster | 6 | 0 | 0 | n.a. | 11 | 1 | | 4 | | 6 | 19 |

Source: Tabulated from NYS DEC. Environmental Notice Bulletin.

# TABLE 66

LOCATION OF SIGN-OFF AND ISSUANCE AUTHORITY FOR WATER RESOURCE RELATED PERMITS, New York State, 1979

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

| Name of Organizational Unit | Sign-off (approval) and/or Issuing Authority | |
|---|---|---|
| **Division of Water** | | |
| Water Quality Subdivision | | |
| Bureau of Permits and Compliance PDES Section | 401 Water Quality Certifications | A |
| | N/PDES - municipal, industrial | A* |
| Bureau of Industrial Programs | Certification of compliance for Industrial Tax Exemption | A |
| Bureau of Municipal Operations | None | |
| Bureau of Monitoring and Surveillance Oil Response Group | Oil Facility Certifications | A |
| Water Management Subdivision | | |
| Bureau of Flood Protection Flood Control Projects Section | Flood Control Permits | A |
| Bureau of Water Resources | None | |
| Bureau of Water Research | None | |
| Project Development Subdivision | | |
| Bureau of Wastewater Management | None | |
| Bureau of Program Services | None | |
| Bureau of Facilities Development | | |
| **Division of Regulatory Affairs** | | |
| | Freshwater Wetlands | R |
| | Protection of Waters | R |
| | Stream Encroachment | |
| | Dams & Docks | |
| | Excavation and Fill | |
| | Public Water Supply Application | R** |
| | Tidal Wetlands (issuing authority) | R |
| | LI Well Permit | R |

Table 66 (Cont'd)

| Name of Organizational Unit | Sign-off (approval) and/or Issuing Authority | |
|---|---|---|
| **Division of Marine Resources** (Reg. 1) | | |
| Bureau of Tidal Wetlands | Tidal Wetlands (sign-off) | R |
| **Solid Waste Division** | | |
| Bureau of Waste Disposal | Construction and Operation of solid waste management facilities (domestic, non-hazardous) | R |
| Bureau of Hazardous Wastes | Septic Tank Cleaners | R |
| | Industrial waste haulers | A or R |
| **Division of Fish & Wildlife** | | |
| Bureau of Environmental Protection | None | |
| Bureau of Wildlife | (Wildlife protection permits only) | |
| Bureau of Fisheries | " | |
| **Division of Land Resources and Forest Management** | | |
| | Certificate of Registration for Pesticides | |
| | 24(c) Reg. for Reg. of a Pesticide. Product based on a Special Local Need | |
| | Form B Purchase Permit for Purchase and Use of a Very Highly Toxic Restricted Pestic. | |
| | Restricted Pestic. Commercial Permit | |
| | Pesticide Applicator Business Registration | |
| | Pesticide Applicator Certificate | |
| | Pesticide Applicator Identification | |
| | Special Certification Permit for Purch. and Use of a Restricted Pesticide | |
| | Permit to use Chemicals for the Control and Extermination/or Elimination of Undesirable Fish, Aquatic Veg., Aquatic Insects. | |
| | Mining Permit | |
| | Plug and Abandon Oil, Gas & Solution Mining Wells | |
| | Underground/as Storage Permit | |
| | Drill, Deepen, Plug Back or Convert Oil, Gas & Solution Mining Wells | |

Table 66 (Cont'd)

| Name of Organizational Unit | Sign-off (approval) and/or Issuing Authortiy |
|---|---|
| | Certificate of Environmental Safety LNG |
| Division of Air | |
| | Permit for the addition of radioactive tracers to the environment<br>Permit for the discharge of radioactive waste to sanitary sewers<br>Permit for the burial of radioactive wastes |
| DEPARTMENT OF HEALTH | |
| Office of Public Health | |
| Division of Environmental Health | |
| Bureau of Public Water Supply | |
| Design Section | Water Supply Completed Works Approval<br>-construction plan approval<br>-operation (completed works approval)<br>Connection to Public Water Supplies<br>Flouridation Approval |
| Groundwater Protection Section | (no permits)<br>(Underground injection program possibly to be integrated with DEC SPDES permit) |
| Bureau of Community Sanitation and Safety | Realty Subdivision approvals-water |
| | On-site disposal systems (less than 1000 gpd) |
| Bureau of Radiological Health | |

Key : A=issued in headquarters (Albany); R= issued in the regional offices.
Notes: *Non-municipal, non-industrial PDES permits are issued in the regions;
**This permit will be issued in the regions as of Spring, 1980.

Source: Compiled from - NYS DEC. Delegation Memoranda. Departmental Reorganization.
May 31, 1979; NYS Health Department. Organization Charts, 9/77, 6/79, 10/79.

Reproduced from R. Zimmerman,"The Administration of Regulation" (Springfield, Va.:NTIS, April 1980), Table 8, pp. 45-47.

TABLE 67

LOCATION OF SIGN-OFF AND ISSUANCE AUTHORITY FOR
WATER RESOURCE RELATED PERMITS,
DEPARTMENT OF ENVIRONMENTAL PROTECTION
New Jersey, 1979 and 1980

| Name of Organizational Unit | Sign-Off (Approval) and/or Issuing Authority |
|---|---|
| **Division of Water Resources** | |
| **A. 1979 DWR Organization** | |
| Water Policy and Supply Council | -Water Supply Diversions for Public or Private Use<br>-Approval of water distribution contracts among municipalities |
| Water Resources Planning & Management Element | |
| Bureau of Water Supply Planning and Management | -Public Water Supply Diversion Approval<br>-Subsurface or percolating water diversion approval for private use<br>-Surface water diversion for private use |
| Bureau of Water Quality Planning & Management | None |
| Water Supply and Flood Plain Management Element | |
| Bureau of Flood Plain Management | |
| -Dam Section | -Dam Construction and Repair |
| -Stream Encroachment | -Stream Encroachment |

Table 67 (Cont'd)

| Name of Organizational Unit | Sign-Off (Approval) and/or Issuing Authority |
|---|---|
| Bureau of Potable Water | -Water Works Facility Approval (treatment)<br>-Water Supply Connections (distribution)<br>-Changes or Extensions in Water Supply Systems |
| Bureau of Water Facilities Operations | -Approval to Purchase Water<br>-Special Use permits to construct, operate and maintain a facility on water supply property (within D & R Canal Commission jurisdiction) |
| Public Wastewater Facilities Element | -Treatment works approval (municipal) |
| Monitoring, Surveillance and Enforcement Element (Basin Managers) | -Treatment works approval (municipal)<br>-Water Quality Certification<br>-Exemption from Sewer Ban<br>-Certification of sewerage and water supplies in realty improvements of 50+ units requiring subdivision approvals<br>-Certification of sewerage systems in realty improvements (miscellaneous institutional, commercial facilities) requiring building permits<br>-Certification of sewerage facilities for realty improvement in critical areas requiring building permits |
| Office of Hazardous Substances Control | -Registration for Spill Cleaning Organizations<br>-Registration for major facilities handling hazardous substances |

Table 67 (Cont'd)

| Name of Organizational Unit | Sign-Off (Approval) and/or Issuing Authority |
|---|---|
| **B. 1980 DWR Organization** | |
| Water Policy and Supply Council | -Water Supply Diversions for Public or Private Use<br>-Approval of water distribution contracts among municipalities |
| Water Quality Management Element | -Realty subdivisions; Individual subsurface sewage disposal systems in Pine Barrens |
| Bureau of Groundwater Management | -Pollution Control Permits (PCPs-groundwater NJPDES permits) |
| Bureau of Industrial Waste Management | -Treatment Works Approval (Industrial)<br>-Pretreatment Permits |
| Bureau of Municipal Waste Management | -Treatment Works Approval (Municipal)<br>-Sewer Extension Permits (Exemption from Sewer Ban) |
| Water Supply Facilities Element | |
| Business Management Office | -Approval to Purchase Water<br>-D & R Canal Use Permits |
| Other Bureaus | -None |
| Water Supply and Floodplain Management Element | |
| Bureau of Flood Plain Regulation | |
| -Dam Section | -Dam Construction and Repair |
| -Stream Encroachment Section | -Stream Encroachment |
| Bureau of Flood Plain Management | -None |

Table 67 (Cont'd)

| Name of Organizational Unit | Sign-Off (Approval) and/or Issuing Authority |
|---|---|
| Bureau of Potable Water | -Water Works Facility Approval<br>-Water Supply Connections<br>-Changes or Extensions in Water Supply Systems |
| Bureau of Water Supply Planning | -None |
| Bureau of Water Allocation | -Public Water Supply Diversion Approval<br>-Subsurface or percolating water diversion approval for private use<br>-Surface water diversion for private use<br>-Well Drilling Permits |
| **Division of Coastal Resources (formerly Marine Services)** | |
| Bureau of Coastal Projects Review<br>North shore (Monmouth, Ocean)<br>South shore (S. Burlington, Cape May, Cumberland)<br>Waterfront Development | CAFRA, Riparian and Wetlands |
| Bureau of Coastal Planning and Development | None |
| Bureau of Tidelands | None |
| Bureau of Engineering (formerly Bureau of Shore Protection) | None |
| Bureau of Enforcement and Field Services | None |
| **Bureau of Geology & Topography** | -Well Drilling Permit |

Table 67 (Cont'd)

| Name of Organizational Unit | Sign-Off (Approval) and/or Issuing Authority |
|---|---|
| **Environmental Quality Division** | |
| Pesticides Bureau | -Pesticide applicator certifications |
| Bureau of Radiation Protection | -Registration for the use, possession and receipt, storage and transfer of radioactive material |
| **Solid Waste Administration** | |
| Bureau of Solid Waste Management | -Registration for solid waste disposal facilities<br>-Collector hauler registration<br>-Disruption of landfill approval |
| **Fish, Game & Shell Fisheries Division** | |
| Bureau of Law Enforcement | -Water Lowering Permit |
| DEPARTMENT OF TRANSPORTATION | |
| Regional Offices | -Drainage Permit |

Source: Compiled from-
N.J.A.C. 7:8-11 et seq. (Feb. 6, 1978); NJDEP, DWR, Division Order Nos. 14 and 15, 1979 and 1980; and State of New Jersey, Dept. of Labor and Industry, Office of Business Advocacy. Directory of State Programs for Regulatory Construction. Trenton, New Jersey: DLI, March 1979.

Reproduced from: R. Zimmerman, "The Administration of Regulation" (Springfield, Va.:NTIS, April 1980), Table 9, pp. 48-52.

TABLE 68

ACTIONS TAKEN UNDER THE NEW YORK STATE ENVIRONMENTAL QUALITY REVIEW ACT, by County (for counties in the HRE area): November 1978-August 15, 1979

| DEC Region and County | Type of Action and Outcome | | | | | Type of Administering Agency and Outcome | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Type I | | Unlisted | | Final EIS | State | | Local | |
| | + | - | + | - | | + | - | + | - |
| Region I | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Nassau | 5 | 5 | 4 | 42 | 1 | 3 | 17 | 6 | 30 |
| Suffolk | 5 | 24 | 35 | 238 | 3 | 9 | 90 | 31 | 172 |
| Region II | 0 | 1 | 0 | 7 | 0 | 0 | 3 | 0 | 5 |
| Bronx | 1 | 1 | 0 | 2 | 0 | 0 | 3 | 1 | 0 |
| Manhattan | 0 | 1 | 0 | 8 | 0 | 0 | 3 | 0 | 6 |
| Brooklyn | 0 | 2 | 1 | 5 | 1 | 0 | 1 | 1 | 6 |
| Queens | 0 | 1 | 2 | 5 | 0 | 0 | 1 | 1 | 6 |
| Richmond | 1 | 0 | 2 | 8 | 0 | 2 | 2 | 1 | 6 |
| Region 3 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| Dutchess | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 4 |
| Orange | 4 | 2 | 2 | 5 | 2 | 2 | 3 | 4 | 4 |
| Putnam | 0 | 4 | 0 | 2 | 0 | 0 | 2 | 0 | 4 |
| Rockland | 1 | 1 | 0 | 4 | 0 | 1 | 2 | 0 | 3 |
| Sullivan | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Ulster | 2 | 2 | 1 | 3 | 0 | 2 | 1 | 1 | 4 |
| Westchester | 6 | 4 | 7 | 33 | 1 | 0 | 10 | 13 | 27 |
| New York State -total | 87 | 166 | 77 | 704 | 24 | 70 | 409 | 94 | 461 |

Note: Positive and negative signs refer to the Determinations of Significance under Part 617.10.

Source: NYS DEC, Division of Regulatory Affairs. "State Environmental Quality Review Act Interim Monitoring Report". Albany, NY: DEC, 1979.

TABLE 69

TOTAL PERMITS ISSUED AND INCIDENCE OF PERMIT DENIALS BY TYPE OF PERMIT FOR SELECTED ENVIRONMENTAL PERMITS, New Jersey: 1977-1979

| | 1977 | | 1978 | | 1979 | |
|---|---|---|---|---|---|---|
| Type of Permit | Total | Denials | Total | Denials | Total | Denials |
| Riparian | 667 | 28 | 808 | 27 | 779 | 24 |
| Wetlands | 49 | 3 | 66 | 1 | 51 | 2 |
| CAFRA (Coastal Area Facilities) | 61 | 6 | 84 | 4 | 89 | 9 |
| Stream Encroachments | 729 | 40 | 567 | 31 | 507 | 35 |
| Sewer Line Extensions | 474 | 23 | 583 | 44 | 611 | 37 |
| Total | 1,980 | 100 | 2,108 | 107 | 2,037 | 107 |

Note: The "total" columns represent those applications on hand at the start of the calendar year plus those new applications received and accepted during the calendar year. It does not include those applications that were returned to the applicant.

Source: NJ Department of Environmental Protection. "Status of Application Permits. Yearly Reports." 1977-1979; Reported in R. Zimmerman, "The Administration of Regulation" (Springfield, Va.: NTIS, April 1980), p.5. Updated to reflect all of the 1979 figures.

TABLE 70

PERMIT COORDINATION MECHANISMS: A FRAMEWORK

1. Communication and information networks - notifications initiated by the permitting agency or other agencies of permit applications, hearings, preparation of draft permit or completed permit for the purpose of:

   (1) information
   (2) review and comment

   -as informational input into the decision
   -advisory capacity
   -cooperative agreements
   -veto power

2. Joint processing procedures

   (1) Joint application submission (joint application forms)
   (2) Joint listing of permits on a single application
   (3) Joint submission of environmental assessments or impact statements
   (4) Joint hearings
   (5) Joint preparation and issuance of the permit (joint permit forms) and setting of conditions

3. Routing

   (1) Permit hierarchies and systems of succession or substitution
   (2) Convergence points

Source: R. Zimmerman (1980): 123.

Table 71

Number of Development Projects Requiring Multiple Permits Under Executive Order #57, New Jersey: 1977-1980

| County | Project Cost: Up to $500,000 | Project Cost: More than $500,000 | Total |
|---|---|---|---|
| Bergen | 7 | 12 | 19 |
| Essex | 2 | 4 | 6 |
| Hudson | 2 | 2 | 4 |
| Middlesex | 10 | 22 | 32 |
| Monmouth | 1 | 13 | 14 |
| Morris | 7 | 11 | 18 |
| Union | 6 | 9 | 15 |

Source: Tabulated from data provided by the N.J. Department of Labor and Industry, Office of Business Advocacy. Trenton, N.J.

Table 72

Building Permits By County in the HRE
New York and New Jersey: 1974-1979

| County | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|
| New Jersey | | | | | | |
| Bergen | 1,576 | 1,408 | 1,765 | 2,348 | 2,244 | |
| Essex | 1,375 | 1,148 | 2,510 | 2,741 | 1,613 | |
| Hudson | 2,604 | 990 | 1,527 | 693 | 875 | |
| Middlesex | 1,287 | 2,147 | 3,640 | 3,267 | 3,492 | |
| Monmouth | 1,277 | 997 | 2,537 | 2,863 | 3,161 | |
| Union | 544 | 448 | 693 | 966 | 1,013 | |
| New York | | | | | | |
| New York City | 15,743 | 3,810 | 5,434 | 7,639 | 11,096 | 14,524 |
| Nassau | 1,632 | 1,414 | 1,402 | 2,534 | 1,690 | 1,169 |
| Rockland | 1,107 | 545 | 796 | 863 | 1,223 | 1,146 |
| Suffolk | 8,427 | 7,880 | 6,302 | 7,607 | 4,422 | 3,032 |
| Westchester | 2,383 | 1,369 | 1,425 | 1,691 | 2,748 | 2,612 |

TABLE 73

TYPOLOGY OF LOCAL WATER RESOURCE RELATED
PERMITS, LICENSES, AND APPROVALS

A. Critical Areas/Land Disturbance/General Environmental Protection

1. Woodland protection or preservation ordinance
2. Tree removal ordinance
3. Hillside protection ordinance
4. Erosion and sediment control ordinance
5. Timber harvesting ordinance
6. Wetlands protection ordinance
7. Waterfront, shoreline protection ordinances(often incorporated as special use areas in the zoning code)

B. Land Development

1. Ordinances or zoning codes specifying density and use, specifically oriented to environmental protection: e.g., large lot zoning, density zoning, planned unit development ordinance (PUD)
2. Building or development permits, ordinance, or codes
3. Use, construction on, and maintenance of waterfront or shoreline properties
4. Subdivision/site plan approvals

C. Land Maintenance, Material Stockpiling and Transport

1. Property maintenance ordinance or code, including residential properties
2. On-site storage of industrial materials ordinances or code, including regulations on subsurface disposal of waste material, cover and drainage requirements for outdoor storage of raw materials
3. Hazardous waste storage and transport regulations
4. Utility rights-of-way usage and maintenance

D. Drainage/Flood Hazards

1. Building permits specifying flood elevations
2. Flood protection ordinance
3. Stagnant waters control
4. Runoff control ordinance
5. Aquifer recharge/groundwater protection ordinance

Table 73. (continued)

E. Water Supply Systems

1. Approval of on-site wells or water supplies for individual users
2. Water usage or withdrawal for street cleaning (Hydrants), demolition of buildings, etc.

F. Wastewater Disposal

1. Sewer use ordinance, including banning of cross-connections and bypass flows
2. Industrial waste ordinance
3. Sewer hook-up or connection regulation
4. Septic tank construction

G. Sanitation

1. Solid waste disposal ordinance, registrations for dump sites, etc.
2. Dumping of snow and ice in waterways

Source: R. Zimmerman, 1980.

TABLE 74

SPECIAL MUNICIPAL ORDINANCES AND REGULATIONS PERTAINING TO ENVIRONMENTALLY SENSITIVE AREAS, Westchester County, NY: 1979

| | Sign Control | Excavation | Tree Removal | Fresh Water Wetlands | Topsoil Removal | Flood Hazard | Steep Slope | Historic Dist. | SEQR |
|---|---|---|---|---|---|---|---|---|---|
| **CITIES** | | | | | | | | | |
| MOUNT VERNON | X* | | | + | | | | | |
| NEW ROCHELLE | X(B) | X(B) | X | + | | | | | |
| PEEKSKILL | X | X* | X* | X | X* | X* | X* | | |
| RYE | X* | X | X | X | | | | X | X |
| WHITE PLAINS | X | X(B) | X | X | X | | | | X |
| YONKERS | X | X | | + | X | | | | X |
| **VILLAGES** | | | | | | | | | |
| ARDSLEY | X | X | | | X | X | X | | X |
| BRIARCLIFF MANOR | X* | X | | X | X | X | X | | X |
| BRONXVILLE | X | X(B) | | | | X | | | |
| BUCHANAN | X* | X | X | | X | | X | | |
| CROTON-ON-HUDSON | X* | X | X | | X | | | | X |
| DOBBS FERRY | X | X | X | X | X | X | | | X |
| ELMSFORD | X | X | | X | X | | | | X |
| HARRISON | X* | X | X | X | X | | | | X |
| HASTINGS-ON-HUDSON | X* | X* | X(S) | | | | X* | | X |
| IRVINGTON | X* | X | | | X | | | | X |
| LARCHMONT | X | | | + | | | | | |
| MAMARONECK | X | X | X | X | X | X | | | X |
| MOUNT KISCO | X | X | | X | X | | | | |
| NORTH TARRYTOWN | X | X | | | X | | | | X |
| OSSINING | X* | X | X | X | X | X | X | X | X |
| PELHAM | X | | | | | | | | |
| PELHAM MANOR | X | X | X | | X | | | | X |
| PLEASANTVILLE | X | X | | | X | X | | | |
| PORT CHESTER | X | X* | | | X* | | X | | X |
| SCARSDALE | X* | X | | X | X | | | | X |
| TARRYTOWN | X | X | X | X | X | | | X | X |
| TUCKAHOE | X* | X(B) | | X | | X | | | |
| **TOWNS** | | | | | | | | | |
| BEDFORD | X | X | | X | X | | | X | X |
| CORTLANDT | X | X | X | | X | X | | | X |
| EASTCHESTER | X | X(B) | | X | X* | | X(B) | | |
| GREENBURGH | X | X | X | X | X | X | | | X |
| LEWISBORO | X* | X* | X | X* | X* | | X* | X* | X |
| MAMARONECK | X | | | + | | | | | |
| MOUNT PLEASANT | X* | X | X(S) | X | X | | | | X |
| NEW CASTLE | X* | X* | | X | | X* | | | X |
| NORTH CASTLE | X* | X | X | X | X | X | X | X* | X |
| NORTH SALEM | X* | X* | X* | | X* | | | | |
| OSSINING | X* | X | | X | X | | | X | X |
| POUND RIDGE | X | X* | | X | X* | | | X | |
| RYE | X* | X | | | X* | X | X(S) | | X |
| SOMERS | X* | X* | X | X | X* | X | X* | X* | |
| YORKTOWN | X* | X | X | X | X | | X | X | X |

*contained in zoning ordinance
(B) contained in building code
(S) contained in subdivision regulations

2/79

Note: A (+) indicates additional municipalities cited in the 208 plan.
Source: Westchester County Planning Department. "Planning in Westchester-A Status Report Update". White Plains, NY: WCPD, Winter 1979. P. 10.

TABLE 75

SPECIAL MUNICIPAL ORDINANCES AND REGULATIONS PERTAINING TO DRAINAGE AND FLOOD CONTROL, Westchester County, NY: 1979

| | Planning Bd. Approvals | General & Supplemental Regulations | Drainage Related Excavation Ord. | Storm Intensity Yr. Specified | Water Removal | Zero Runoff Increase |
|---|---|---|---|---|---|---|
| CITIES | | | | | | |
| MOUNT VERNON | | | | | X | |
| NEW ROCHELLE | X | X | | | X | |
| PEEKSKILL | X | | | | | |
| RYE | | | | | X | |
| WHITE PLAINS | | | | | | |
| YONKERS | X | | | | | |
| VILLAGES | | | | | | |
| ARDSLEY | | | | | | |
| BRIARCLIFF MANOR | | | | | X | |
| BRONXVILLE | | | | | X | |
| BUCHANAN | X | | | | | |
| CROTON-ON-HUDSON | X | | | | | |
| DOBBS FERRY | X | | | | | |
| ELMSFORD | | | | | | |
| HARRISON | X | | | | | |
| HASTINGS ON HUDSON | | | | | | |
| IRVINGTON | | | | | | |
| LARCHMONT | | | | | | |
| MAMARONECK | X | | | | X | |
| MOUNT KISCO | | | | | | |
| NORTH TARRYTOWN | X | X | | | | |
| OSSINING | X | | | | | |
| PELHAM | | | | | | |
| PELHAM MANOR | | | | | | |
| PLEASANTVILLE | | X | | | | |
| PORT CHESTER | | | | | | |
| SCARSDALE | X | | | | | |
| TARRYTOWN | X | | | | X | |
| TUCKAHOE | | | | | | |
| TOWNS | | | | | | |
| BEDFORD | X | | | | | |
| CORTLANDT | | | | | | |
| EASTCHESTER | | | | | | |
| GREENBURGH | | | | | | |
| LEWISBORO | X | X | | | | |
| MAMARONECK | | | | | | |
| MOUNT PLEASANT | | | | X | | X |
| NEW CASTLE | | X | | X | | |
| NORTH CASTLE | | X | | | X | |
| NORTH SALEM | | X | | X | | |
| OSSINING | | | | X | X | |
| POUND RIDGE | | X | | | | |
| RYE | | | | | | |
| SOMERS | | | | | X | |
| YORKTOWN | X | | | X | | |

Source: Summarized from data in the-Westchester County Planning Board. Draft WQMP. White Plains, NY: WCPB, 1979. Pp. III-29 to III-31.

TABLE 76.

EXISTING LOCAL POWERS RELATED TO ENVIRONMENTAL PROTECTION, Land Use Controls in New York City: 1979

| Authority | | Agency | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | COMMUNITY/BOROUGH BOARDS | CITY PLANNING COMMISSION/ DEPT OF CITY PLANNING | BOARD OF STANDARDS AND APPEALS | DEPT. OF BUILDINGS | DEPT. OF SANITATION | DEPT OF GENERAL SERVICES | BOARD OF HEALTH / DEPT. OF HEALTH | DEPT. OF PARKS AND RECREATION | LANDMARKS PRES COMM. | DEPT. OF ENVIRONMENTAL PROTECTION | DEPT. OF PORTS AND TERMINALS | DEPT. OF TRANSPORTATION | ENVIRONMENTAL CONTROL BOARD | CITY COUNCIL | BOARD OF ESTIMATE | NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION | NEW YORK STATE LEGISLATURE |
| ZONING | ENFORCEMENT | | ● | ● | ● | | | | | | | ● | | | | | | |
| | ENACTMENT | | ● | ● | | | | | | | | | | | | ● | | |
| FLOOD PLAIN REGULATION | ENFORCEMENT | | | | ● | | | | | | | ● | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | ● | | | |
| ENV. PERFORM. ZONING | ENFORCEMENT | | | | ● | | | | | | | ● | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | | ● | | |
| SUBDIVISION REGULATION (CITY MAP CH.) | ENFORCEMENT | | ● | | ● | | | | | | | | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | | ● | | |
| PUD REGULATION | ENFORCEMENT | | ● | | ● | | | | | | | | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | | ● | | |
| BUFFER ZONES | ENFORCEMENT | | | | | | | | | | | | | | | | | |
| | ENACTMENT | | | | | | | | | | | | | | | | | |
| CONSERVATION EASEMENTS | ENFORCEMENT | | ● | | ● | | | | | | | ● | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | | ● | | |
| SCENIC EASEMENTS | ENFORCEMENT | | ● | | ● | | | | | | | ● | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | | ● | | |
| DENSITY BONUSES | ENFORCEMENT | | ● | | | | | | | | | | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | | ● | | |
| HOUSING CODES | ENFORCEMENT | | | | ● | | | | | | | ● | | | | | | |
| | ENACTMENT | | | | | | | | | | | | | | ● | | | ● |
| BUILDING CODES | ENFORCEMENT | | | | ● | | | | | | | ● | ● | | | | | |
| | ENACTMENT | | | | | | | | | | | | | | ● | | | |
| CONSTRUCTION PERMITS | ENFORCEMENT | | | | ● | | | | | | | ● | ● | | | | | |
| | ENACTMENT | | | | | | | | | | | | | | ● | | | |
| DEVELOPMENT PERMITS | ENFORCEMENT | | ● | | ● | | | | | | | ● | ● | | | | ● | |
| | ENACTMENT | | ● | | | | | | | | | | | | ● | ● | | ● |
| TDR | ENFORCEMENT | | ● | | ● | | | | | ● | | ● | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | | ● | | |
| HILLSIDE DEVELOPMENT REGULATION | ENFORCEMENT | | ● | | ● | | | | | | | | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | | ● | | |
| DRAINAGE REGULATION | ENFORCEMENT | | | | ● | | | ● | | | ● | | | ● | | | | |
| | ENACTMENT | | | | | | | ● | | | ● | | | | ● | | | |
| GRADING REGULATION | ENFORCEMENT | | ● | | ● | | | | | | | | | | | | | |
| | ENACTMENT | | ● | | | | | | | | | | | | ● | ● | | |
| SOIL EROSION CONTROL | ENFORCEMENT | | | | ● | | | | | | | | | | | | | |
| | ENACTMENT | | | | | | | | | | | | | | ● | | | |
| SOLID WASTE CONTROL | ENFORCEMENT | | | | | ● | | | | | | | | ● | | | | |
| | ENACTMENT | | | | | | | | | | | | | | ● | | | |
| SEPTIC TANK REGULATION | ENFORCEMENT | | | | ● | | | ● | | | | ● | ● | | | | | |
| | ENACTMENT | | | | | | | ● | | | | | | | ● | | | |
| CAPITAL BUDGET | ENFORCEMENT | ● | ● | | | | | | | | | | | | | ● | | |
| | ENACTMENT | | | | | | | | | | | | | | ● | | | ● |
| LAND MANAGEMENT | ENFORCEMENT | | | | | ● | ● | | ● | | ● | | ● | | | | | |
| | ENACTMENT | | | | | | | | | | | | | | ● | | | |
| DISCHARGE PERMITS | ENFORCEMENT | | | | | | | ● | | | | | | ● | | | ● | |
| | ENACTMENT | | | | | | | ● | | | | | | | | | | ● |
| TAXATION | ENFORCEMENT | | | | | | | | | | | | | | | | | |
| | ENACTMENT | | | | | | | | | | | | | | ● | | | ● |

Source: NYC Dept. of Environmental Protection. Draft 208 Plan. Executive Summary. New York: NYC DEP, March 1979. Figure 2.4.

TABLE 77

EXISTING LOCAL ORDINANCES RELATED TO ENVIRONMENTAL PROTECTION , Long Island: 1979

| Town | Stormwater Runoff/Drainage | Chemical Storage[1] | Development Related Erosion Control[2] | Vegetation Removal[3] | Wetlands | Flood-plains[4] | Environmental Impact Assessments[5] |
|---|---|---|---|---|---|---|---|
| **Suffolk** | | | | | | | |
| Babylon | X | X | | | X | | |
| Brookhaven | | | | X | X | X | X |
| E. Hampton | | | | X | X | X | |
| Huntington | X | | X | X | | | |
| Islip | X | X | X | | X | X | |
| Riverhead | X | | | | X | X | X |
| Shelter Is. | | | | | X | | |
| Smithtown | X | | X | X | X | | X |
| Southampton | X | | X | X | X | X | X |
| Southold | | | | | X | | |
| **Nassau** | | | | | | | |
| Hempstead | | X | X | | X | | X |
| No. Hempstead | X | X | X | | | | |
| Oyster Bay | | | X | X | | | |

Notes:

[1]Usually part of the fire code.

[2]This usually appears in the form of a topsoil removal restriction.

[3]Tree removal or beach grass removal restriction.

[4]A requirement of the National Flood Insurance Program for program participants.

[5]Usually delegated from the SEQRA process.

Source: Compiled from town codes, ordinances, and laws.

TABLE 78

COUNTY PERMITS AND APPROVALS RELATED TO ENVIRONMENTAL PROTECTION, New Jersey: 1979
(for counties in the Hudson-Raritan Estuary area)

| Name of County & Agency | Type of Permit or Approval* | | | |
|---|---|---|---|---|
| | Water Diversion | County Storm Drainage Connection | Shade Tree Removal or Trim | Sewage |
| Bergen | | | | |
| Dept. of Public Works, Operations Division | | X | X | |
| Essex | | | | |
| Supervisor of Roads | | X | | |
| Shade Tree Commission | | | X | |
| Hudson | | | | |
| Middlesex | | | | |
| Monmouth | | | | |
| Health Department | X | | | X |
| Shade Tree Commission | | | X | |
| Union | | | | |
| Engineering Dept. | | X | | |
| Public Works Dept. | | | X | |

Source: Tabulated from - NJ Dept. of Labor and Industry, Office of Business Advocacy. "Guide to Local Permitting" . Trenton, NJ: OBA, July 1979.
*Subdivision and Site Plan approvals are not included since every county does these through planning boards.

TABLE 79

SUMMARY OF
LOCAL RESPONSIBILITIES IN SELECTED WATER POLLUTION RELATED SERVICE AREAS,
Hudson-Raritan Estuary: 1979

| Locality | Selected Water Pollution Related Service | | | |
|---|---|---|---|---|
| | Street Cleaning | Street Maintenance | Catchbasin Maintenance | Road Salting |
| Bergen County | Road supervisor, county engineer | Road supervisor county engineer | Public Works, Operations Div.; Utilities Author. | Public Works |
| Edgewater | Public Works | Public Works | Sewage Treatment Plant Operator | |
| Essex County | Roads & Bridges (county engineer) | Roads & Bridges (county engineer) | Roads & Bridges (county engineer) | Roads & Bridges (county engineer) |
| Newark | Sanitation | Sanitation | Sewers | Sanitation |
| Hudson County | | | | |
| Bayonne | Public Works | | Public Works | |
| Hoboken | Public Works | Public Works | Public Works | |
| Jersey City | Public Works | Public Works, Streets & Sewers Div. | Public Works Streets & Sewers Div. | |
| Kearny | Public Works | Public Works | Public Works | |
| West New York | Public Works | Public Works | Public Works | |

Table 79
(continued)

| | | | | |
|---|---|---|---|---|
| Union County | Public Works, Roads Div. | Public Works, Roads Div. | Public Works Roads Div. | |
| Elizabeth | Public Works | Public Works | Water & Sewers | |
| Linden | Public Works | Public Works | Public Works | |
| NEW YORK: | | | | |
| New York City | Sanitation | Highways | Environmental Protection | Highways |
| Nassau County | Public Works, Road & Bridge Maintenance Div. | Public Works, Road & Bridge Maintenance Div. | Public Works, Sanitation and Water Supply Div. | |
| Hempstead | Highways | Highways | Highways | |
| Suffolk County | Environmental Control | Environmental Control | | |
| Westchester County | Public Works | Public Works | Public Works | * |

Source: Summarized (and updated) from - R. Zimmerman, "Institutional Constraints on Land Management for Water Resource Protection in Urban and Suburban Watersheds," Springfield, Va.: NTIS, July 1979. Appendix 5.

Note: *Road salting is the responsibility of municipalities, and is done under contract to the county.

TABLE 80

INNOVATIVE APPROACHES SPECIFIC TO ZONING FOR THE PURPOSE OF PRESERVING WATERFRONTS AND OTHER ENVIRONMENTALLY SENSITIVE AREAS

Zoning mechanisms for lands adjacent to the water

Waterfront Zone -

Other water related zone that is indirectly environmentally oriented, such as a park zone

Overlay or floating zone - an area with no specific location that specifies restricted uses; the forms are:

a. regulations on use or physical characteristics of structures

b. special uses

c. interim development controls that freeze land use in undeveloped or rapidly developing areas

Incentive zoning-provision of public benefits (e.g., parkland, public access, open space) in exchange for private benefits (e.g., bonuses for increased building capacity, infrastructure improvements) for the developer

Zoning mechanisms for the waterways

Water Management Zones -

a. fixed area zoning: restricted use of the waterway by type of activity or location;

b. time area zoning: restrictions on the time during which an activity is conducted;

c. separation distance zoning: physical separation of water uses (by a buffer-like zone) for uses that are potentially in conflict with one another; this is a zoning version of various regulations that have existed for a long time, such as the separation of sewage outfalls from water supply intakes.

Source: U.S. Department of Commerce, NOAA. Improving Your Waterfront: A Practical Guide. Washington, D.C.: NOAA, 1980. Pp.29-36.
U.S. HUD, "Innovative Zoning: A Local Official's Guidebook". Washington, D.C.: HUD, Office of Policy Development and Research, 1977.

TABLE 81

WATERFRONT ZONING IN THE HUDSON-RARITAN ESTUARY AREA

New York

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Nassau County (Composite Zoning Map, 11/78) | | |
| A. North Shore of Long Island (going east from the N.Y.C. border) | | |
| T. of North Hempstead | | |
| V. of Great Neck Estates | R-5<br>Park | R-4 |
| V. of Saddle Rock | R-4 | R-4 |
| V. of Kings Point | R-3 | R-3 |
| V. of Plandome Heights | R-4 | R-4 |
| V. of Plandome | R-4 | R-4 |
| V. of Plandome Manor | R-4 | R-4<br>R-3 |
| V. of Baxter Estates | R-5<br>Commercial<br>R-6 | R-5<br>Commercial |
| V. of Manor Haven | Industry<br>R-5<br>Commercial | Industry<br>R-5 |
| V. of Sands Point | R-2<br>R-3<br>Parkland | R-2<br>R-3<br>R-4 |
| T. of Oyster Bay | | |
| V. of Roslyn Harbor | Industry<br>Parkland | R-5 |
| V. of Sea Cliff | R-5<br>R-4 | R-5<br>R-4 |
| V. of Glen Cove | R-3<br>R-4<br>Industry | R-4<br>R-5 |
| V. of Lattingtown | R-1<br>R-2 | R-1<br>R-2 |
| V. of Bayville | R-5<br>R-4 | R-5 |
| V. of Centre Island | R-1<br>R-4 | R-1 |
| V. of Mill Neck | R-1<br>Parkland<br>Industry<br>R-5 | R-1 |

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Nassau County (Cont'd) | | |
| V. of Oyster Bay Cove | R-2 | R-2 |
| V. of Cove Neck | R-1 | R-1 |
| V. of Laurel Hollow | R-2 | R-2 |
| B. South Shore of Long Island (going east from N.Y.C. border) | | |
| T. of Hempstead | | |
| V. of Atlantic Beach | Commercial<br>R-5 | R-5 |
| V. of Lawrence | R-3<br>R-5 | R-3 |
| V. of Long Beach | R-6<br>R-5<br>Commercial | R-5 |
| V. of Island Park | R-5<br>Industry | R-5 |
| Unincorporated area | Parkland<br>R-5 | Park |
| T. of Oyster Bay | Parkland<br>R-5 | Water<br>R-5 |
| Suffolk County (1972) | | |
| | R-3<br>R-2 | I<br>R-4 |
| | R-3 | |
| | R-2 | R-3 |
| | R-1<br>R-2<br>R-3<br>R-6<br>Park and Conservation | R-2<br>R-3<br>R-6 |
| Westchester County (from composite county map-"Generalized Zoning 1971") | | |
| A. Municipalities adjacent to the Hudson River (going north from the Bronx border) | | |
| Yonkers | Manufacturing** | R-3<br>Business Office and Commercial<br>R-6<br>R-5 |

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Westchester County (Cont'd) | | |
| Hastings-on-Hudson | Manufacturing** | R-3<br>Business, Office and Commercial |
| Dobbs Ferry | R-3<br>R-6 | R-3<br>Other non-residential (e.g. parks, institutional, urban renewal)<br>Business, Office and Commercial |
| Irvington | R-3<br>Manufacturing**<br>R-2 | R-3<br>Business, Office and Commercial |
| Northern boundary of the HRE Primary Area | | |
| Tarrytown | Other non-residential (e.g., parks, institutional, urban renewal)<br>R-3<br>Manufacturing**<br>Industrial/Office Park | R-3<br>Industrial/Office Park<br>R-5<br>Business, Office and Commercial |
| North Tarrytown | R-2<br>Other non-residential<br>Manufacturing** | R-2<br>Other non-residential<br>R-5<br>Business, Office and Commercial |
| Mount Pleasant | Industrial/Office Park | R-2<br>Business, Office and Commercial |
| Briarcliff Manor | R-3 | R-2<br>R-1 |
| Ossining | Industrial/Office Park<br>Manufacturing<br>Other non-residential | R-3<br>Business, Office and Commercial |
| Croton-on-Hudson | Manufacturing<br>R-2 | R-2<br>R-3<br>Business, Office and Commercial |
| Cortland | R-3<br>Manufacturing<br>Other non-residential<br>R-2<br>Business, Office and Commercial | R-3<br>R-2<br>Other non-residential<br>Waterbody |

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Westchester County (Cont'd) | | |
| Buchanan | Manufacturing | Manufacturing<br>R-2 |
| Peekskill | R-2<br>Manufacturing<br>Industrial/Office Park<br>Business, Office and Commercial | R-2<br>R-3<br>Industrial/Office Park<br>Business, Office and Commercial |
| B. Municipalities adjacent to Long Island Sound (going northeast from the Bronx border) | | |
| New Rochelle | R-3 | R-5<br>R-3<br>Business, Office and Commercial |
| Larchmont | R-2 | R-3 |
| Mamaroneck | R-3 | Business, Office and Commercial |
| Rye | R-1<br>R-2<br>Business, Office and Commercial<br>Industrial/Office Park | R-3 |
| Port Chester | R-3<br>Manufacturing** | Manufacturing** |
| Rockland County (from Composite County Zoning Map, last revision 4/76)* | | |
| T. of Orangetown | | |
| Palisades | R-1(R-80,R-40)<br>R-4(R-15) | R-1(R-40) |
| Tallman | R-1(R-80) | |
| Piermont | Waterfront (WF-2)<br>R-4(R-7.5)<br>Bus A | R-4(R-15) |
| Grand View | | R-3(R-22) |
| South Nyack | R-4(R-12)<br>R-5,6 (HRA) | R-4,5,6 (RG-6)<br>R-4,5,6 (RG-0) |

*Note: The Rockland County composite zoning map does not contain standardized codes for the municipalities.

**Note: Manufacturing category includes industrial, warehousing, storage and public utilities.

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Rockland County (Cont'd) | | |
| T. of Clarkstown | | |
| Nyack V. | R-5(R-3)<br>R-6(R-2)<br>M | R-6(R-2) |
| Upper Nyack | R-3(R-2)<br>R-3(R-1)<br>R-4(R-40)<br>R-4(R-4) | R-3(R-1,R-3)<br>R-2(R-2) |
| Unincorporated area | R-1(R-80) | Light Industrial, Office (LIO)<br>R-4(R-15)<br>Laboratory Office (L-O)<br>Regional Shopping (RS) |
| T. of Haverstraw | | |
| Haverstraw | Planned Industrial (PI)<br>R-4(R-1)<br>R-4(R-2) | PI(M)<br>R-2<br>R-3 |
| Town of Stony Point | Business (BU)<br>Manufacturing (M)<br>Industrial (I)<br>Commercial/recreation (CR)<br>Planned Industrial (PI) | R-1(PR)<br>R-4(R-1)<br>R-4(R-2)<br>Business (BU) |
| Town of Ramapo (does not front on the HRE) | | |
| Dutchess County (from composite zoning pattern map, 1974) | | |
| T. of Fishkill | Industry<br>R-5<br>R-3 | R-1<br>R-3<br>R-6 |
| T. of Wappinger | R-3<br>R-5<br>Industry | R-3 |
| T. of Poughkeepsie | Industry<br>R-4<br>Business<br>R-5 | R-4<br>R-6 |
| T. of Hyde Park | R-3<br>Industry | R-3 |
| T. of Rhinebeck | Unzoned<br>R-3 | Unzoned<br>Land Conservation/ floodplain |
| T. of Red Hook | Unzoned<br>Land Conservation/ floodplain | R-4 |

Key to Residential Use Classifications, in New York State Counties

| Code | County | | | | | |
|---|---|---|---|---|---|---|
| | Dutchess | Nassau | Rockland | Suffolk | Westchester | |
| | | | | | D.U./Acre | Minimum lot size |
| 1 | Greater than 120,000 sq.ft./d.u. | 3-5 acre estates (R-E) | Greater than 120,000 sq. ft./d.u. | 2 acre | Less than 1 | Over 1-4 acres |
| 2 | 41,000-120,000 sq. ft./d.u. | 2 acre open density (R-O) | 41,000-120,000 sq.ft./d.u. | 1 acre | 1-2 | ½-1 acre |
| 3 | 20,000-40,000 sq.ft./d.u. | 1 acre low density (R-L) | 20,000-40,000 sq.ft./d.u. | ½ acre | 2-8.9 | 4,900-20,000 sq.ft. |
| 4 | Less than 20,000 sq.ft./d.u. | More than 10,000 sq.ft., Less than 1 acre-medium density (R-M) | 1,2 Family, Less than 20,000 sq.ft./d.u. | ½ acre (agri-culture) | 9-19.9 | 2,200-4,800 sq.ft. |
| 5 | MF, Less than 10 d.u.'s/acre | 10,000 sq.ft. or less-high density (R-H) | Multi-family | Less than ½ acre | 20-49.9 | 870-2,100 sq.ft. |
| 6 | MF, 11 or more d.u.'s/acre | Apartment/PUD | Multi-family | MF | 50 or over | Less than 870 sq.ft. |

Abbreviations:
SF = single family
MF = multi-family
DU = dwelling unit

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Manhattan | | |
| A. Hudson River | NA-2 | R1-2 |
| | NA-2 | R1-2 |
| | | R4 |
| | | R6 |
| | C3 | R7-2 |
| | | C8-3 |
| | | C4-4 |
| | M1-1 | C4-4 |
| | C8-3 | R8 |
| | | R7-2 |
| | | C8-3 |
| | M1-1 | D-33 |
| | M2-3 | M1-2 |
| | | R8 |
| | | R7-2 |
| | R8 | R8 |
| | | R10 |
| | | C4-6 |
| | | R9 |
| | | C2-7 |
| | | C2-8 |
| | | C1-9 |
| | M2-3 | M1-5 |
| | M2-3 | M1-5 |
| | M3-2 | R8 |
| | | R7-2 |
| | | RC |
| | | C8-4 |
| | M2-3 | M3-2 |
| | | M1-4 |
| | | M1-6 |
| | M2-3 | C6-3 |
| | D-6 | M1-5 |
| | | C1-7 |
| | | M2-4 |
| | | C6-4 |
| | | C8-4 |
| | C6-4 | M1-5 |
| | | C5-3 |
| | | C5-5 |
| | | C6-4 |
| B. East River | M2-3 | R7-2 |
| | C2-7 | C1-8 |
| | M3-2 | |
| | M1-2 | |
| | M1-4 | C6-4 |
| | C2-8 | R7-2 |
| | M3-2 | C6-4 |
| | C5-2 | R7-2 |
| | R10 | C6-6CR |
| | C8-4 | C5-3CR |
| | M1-5 | C1-8 |
| | R8 | C6-1 |
| | | C6-3 |

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| B. East River (Cont'd) | M1-1 | R8 |
| | M3-1 | D4 |
| | R6 | C8-4 |
| | R10 | R7-2 |
| | R9 | R10 |
| | M1-4 | |
| | M3-1 | R5 |
| | | M2-1 |
| | | M1-2 |
| | | R6 |
| C. Harlem River | R8 | M1-2 |
| | M1-1 | R7-2 |
| | M2-2 | C8-3 |
| | M2-1 | R8 |
| | M3-1 | |
| | R1-2 | R6 |
| | R7-2 | R1-2 |
| | | R2 |
| | C3 | R7 |
| | M3-1 | C4-4 |
| | M1-1 | |
| | C8-3 | R7-2 |
| | | C4-4 |
| | | C8-3 |
| | | R8 |
| Bronx | | |
| A. Hudson River | R1-2 | NA-2 |
| | | R4 |
| | none | NA-2 |
| | | R1-2 |
| | | R4 |
| | | R2 |
| | | R7-1 |
| | | R6 |
| B. Harlem River | M1-1 | C8-3 |
| | M3-1 | R7-2 |
| | C3 | C4-4 |
| | C8-3 | R8 |
| | | R7-2 |
| | | C8-3 |
| | R8 | M1-2 |
| | M1-1 | R7-2 |
| | M2-2 | C8-3 |
| C. East River | M3-1 | M1-1 |
| | | M1-3 |
| | | C8-3 |
| | | M1-2 |
| | C3 | R4 |
| | C3 | R3-1 |
| | R4 | C3 |

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Long Island Sound | none | R3-2 |
| | | R4 |
| | | R7-1 |
| | R3-2 | R6 |
| | C3 | |
| | M1-1 | |
| | R3-2 | R2 |
| | M1-1 | C3 |
| | D-52 | R4 |
| | R3-1 | C3 |
| | | R4 |
| Queens | | |
| A. East River | M2-1 | D-21 |
| | | R3-2 |
| | | R-2 |
| | | R1-2 |
| | | C3 |
| | | R4 |
| | D-46 | R2 |
| | R3-2 | R4 |
| | M1-1 | R3-2 |
| (by Flushing Bay) | M2-1 | M1-1 |
| | | R4 |
| | M3-1 | M1-2 |
| | C8-2 | |
| | M1-1 | R5 |
| | D-4 | R6 |
| | R6 | |
| | M3-1 | M1-1 |
| (East Channel) | M3-1 | R6 |
| | | M3-1 |
| B. Jamaica Bay | M1-1 | R2 |
| | R2 | M3-1 |
| | M1-1 | - |
| | R3-2 | - |
| Brooklyn | | |
| A. East River | M3-1 | M1-2 |
| | M2-1 | R6 |
| | | R7 |
| | | M1-1 |
| | | M1-2 |
| | | R6 |
| | | R7-1 |
| B. Upper Bay | M2-1 | M3-1 |
| | | M1-2 |
| | | R5 |
| | | R6 |
| | | M1-1 |

| County and Municipality | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| B. Upper Bay (cont'd) | M3-1 | M1-2 |
| | | R6 |
| | M2-1 | R3-1 |
| | R6 | R2 |
| | | R3-2 |
| | | M3-1 |
| | R7-1 | R6 |
| | R3-1 | R2 |
| | | R3-2 |
| C. Lower Bay | M3-1 | R5 |
| | M1-1 | R6 |
| | C3 | R4 |
| | | C8-1 |
| | R3-1 | R6 |
| | | R5 |
| D. Jamaica Bay | M1-1 | C3 |
| | | R2 |
| | R5 | M3-1 |
| | | C4-3 |
| | | C3 |
| | - | R2 |
| | | R3-1 |
| | | C3 |
| | | R3-2 |
| | | M1-1 |
| | M1-1 | - |
| | R3-2 | - |
| E. Atlantic Ocean | D-30 | R6 |
| | C-7 | C3 |
| | R5 | C8 |
| | R7-1 | D-8 |
| | R3-1 | R6 |
| (Rockaway Inlet) | C3 | C8-1 |
| | R7-1 | |
| (Rockaway Inlet) | R4 | - |
| | M1-1 | |
| | R5 | R2 |
| | | R4 |
| | | M1-1 |
| | | M2-1 |
| | | R3-1 |
| | | R1-2 |
| | R6 | R4 |
| | R5 | C8 |
| | | C3 |
| | | C4-1 |
| | | M1-1 |
| | | C8-1 |
| | R4 | - |
| | R6 | R5 |
| | | R4 |
| | | R3-2 |
| | | R3-1 |

| County and Municipality | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Staten Island | | |
| A. Upper Bay | M1-1 | C4-2 |
| | M2-1 | R6 |
| | M3-1 | R2 |
| | C4-2 | R3-2 |
| | | C4-2 |
| | R1-2 | R3-2 |
| | R6 | M3-1 |
| | M2-1 | R5 |
| | M3-1 | R2 |
| B. Lower Bay | R3-1 | R1-2 |
| | | R3-1 |
| | | R2 |
| | M3-1 | R3-2 |
| | R3-2 | |
| C. Arthur Kill | M3-1 | M2-1 |
| | | M1-1 |
| | | R3-2 |
| | M1-1 | R3-2 |
| | M3-1 | R3-1 |
| | | M1-1 |
| | M3-1 | M2-1 |
| | | M1-1 |
| | | R3-2 |
| | M3-1 | M2-1 |
| | | M1-1 |
| | | M3-2 |
| | M3-1 | M2-1 |
| | M3-1 | M2-1 |
| | | M1-1 |
| D. Kill Van Kull | M3-1 | M1-1 |
| | M1-1 | R3-1 |
| | | R3-2 |
| | | R5 |
| | | C4-2 |
| | M3-1 | R5 |
| | M1-1 | R4 |
| | M2-1 | |
| | M3-1 | |
| | R3-2 | R3-2 |
| | | R3-1 |
| | M1-2 | M1-1 |
| | R1-2 | R3-2 |
| | R3-2 | C3 |
| | C3 | |

## New Jersey

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| **Bergen County** (from composite county zoning map, 7/75) | | |
| Alpine | Single family | Single family |
| Tenafly | Single family | Single family |
| Englewood Cliffs | Light Industry<br>and Office | Single family<br>Commercial |
| Fort Lee | Single family | Medium Density Residential |
| Edgewater | Heavy Industry<br>Commercial<br>High Density Residential | Medium Density Residential<br>High Density Residential<br>Commercial |
| **Hudson County** | | |
| North Bergen | M3-Special Development Area | M1-Light Industry |
| Guttenberg | Unavailable | |
| West New York (11/78) | CWD-Controlled Water-front Development | R-M Medium Density Residential<br>R-H High Density Residential |
| Weehawken (8/80) | I-Industrial Park<br>B-2-Outdoor Recreation<br>B-3-Office Park<br>SW-Special Waterfront Zone | B-2-Outdoor Recreation<br>R-1, R-2, R-3, R-4 Residential |
| Hoboken (11/78) | W-Waterfront District<br>I-1-Industrial (light manufacturing) | CBD-Central Business District<br>R(E)-Educational<br>R-1-Residence District (conservation) |
| Jersey City (4/77) | I-3-Industrial Park<br>I-2-Intensive Industrial<br>R-1-Low Density Residential<br>C-4-Finance and Business District | I-2-Intensive Industrial<br>R-4-High Density Residential<br>R-2-Low Density Residential |
| Bayonne (2/79) | Heavy Industry<br>Multi Family | Heavy Industry |

| County & Municipality | Zoned Waterfront Used | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Middlesex County (Composite Municipal Zoning Map, June 1980, unless otherwise indicated) | | |
| Carteret Boro. | Heavy Industry<br>Urban | Urban<br>Commercial |
| Woodbridge Twp. | Light Industry<br>Heavy Industry | Light Industry<br>Suburban<br>Urban |
| Perth Amboy City | Heavy Industry<br>Urban | Urban |
| Sayreville Boro. (5/78) | M-2 Heavy Industry<br>M-1 PUD option<br>Light Industry<br>B-4 Marine Business | R-7 Residential<br>M-1 PUD option<br>M-2 Heavy Industry |
| South Amboy City | Light Industry<br>Heavy Industry<br>Commercial | Urban |
| Old Bridge Twp. | Public open space<br>Urban<br>Commercial | Urban |

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Monmouth County (from County Composite Zoning Map, March 1980) | | |
| Keyport | R-5<br>Conservation/ Recreation<br>Commercial<br>Industrial | R-5<br>Commercial |
| Union Beach | Industrial<br>R-5 | R-5<br>Industrial |
| Keansburg | Commercial<br>R-5 | R-5 |
| Atlantic Highlands | Industrial<br>R-4<br>Commercial | Industrial<br>R-4<br>R-5 |
| Highlands | Commercial<br>R-5 | R-5 |
| Sea Bright | R-5<br>Commercial | R-2 (in a different town) |
| Monmouth Beach | R-4 | R-5 |
| Long Branch | Commercial<br>R-4 | R-5<br>R-4 |
| Deal | R-4 | R-4 |
| Allenhurst | R-5 | R-5 |
| Loch Arbour | Public Lands | R-5 |
| Asbury Park | Public Lands | Commercial<br>R-5 |
| Bradley Beach | Commercial<br>Unzoned Area | R-5 |
| Avon | Public Lands | R-5 |
| Belmar | Commercial | R-5<br>R-4 |
| South Belmar | Commercial | R-5 |
| Spring Lake | R-4<br>R-5 | R-4<br>R-5 |

| County and Municipalities | Zoned Waterfront Use | Zoned Use of Strip Adjacent to Waterfront |
|---|---|---|
| Monmouth County (continued) | | |
| Sea Girt | Public Lands<br>Unzoned Area | R-5 |
| Manasquan | R-5<br>Commercial | R-5<br>Public Lands |

Key to Residential Usage in Monmouth County (see next page)

| | | |
|---|---|---|
| Union County | | |
| Elizabeth (going east from the westernmost point of the Arthur Kill bordering Elizabeth)<br>(2/71) | | |
| | M-2-Medium Industrial | M-2-Medium Industrial<br>M-1-Light Industrial<br>R-3-Multi family Residential<br>R-2-Two family Residential |
| Linden (going north along the Arthur Kill from the southern boundary of the city) | | |
| | H-1 Heavy Industry | H-1-Heavy Industry |

Key to Residential Usage in Monmouth County

| | | |
|---|---|---|
| 1 = | Rural density | 80,000 sq. ft. |
| 2 = | Low density | 40,000-75,000 sq. ft. |
| 3 = | Medium | 20,000-39,000 sq. ft. |
| 4 = | Medium | 10,000-19,999 sq. ft. |
| 5 = | High | Up to 9,999 |
| 6 = | Multi-family | |

TABLE 82

EXAMPLE OF THE PRESERVATION OF ENVIRONMENTALLY SENSITIVE LANDS THROUGH WATERFRONT DISTRICTING: Hoboken, NJ, 1978

(Districting through the Zoning Ordinance)

W Waterfront District

| | |
|---|---|
| Purpose: | The purpose of this district is to acknowledge the traditional uses of the riverfront; to ensure visual and physical access to the waterfront; to encourage a mixture of appropriate uses at high design standards; to subject all new uses to special site and performance review. |
| Principal Permitted Uses: | Marine shipping terminals<br>Public uses such as schools, parks and playgrounds<br>Educational uses |
| Accessory Uses: | Uses customarily incident to principal permitted uses and on the same lot |
| Conditional Uses: (subject to special review) | Marinas and related uses such as storage, repair and outfitting of small boats.<br>Research laboratories<br>Planned unit residential development<br>Planned commercial development |
| Lot Area, Minimum: | 40,000 square feet |
| Lot Width, Minimum: | 400 feet |
| Lot Depth, Minimum: | 100 feet |
| Lot Coverage, Maximum: | For principal buildings, 30 percent<br>For accessory buildings, 10 percent |
| Building Height, Maximum: | For principal permitted uses, 2 stories but not more than 35 feet<br>For conditional uses, subject to special review |
| Off-Street Parking and Loading: | See Article VIII |

Source: City of Hoboken Zoning Ordinance, November, 1978. P. 4-17.

TABLE 83

# EXAMPLE OF THE PRESERVATION OF ENVIRONMENTALLY SENSITIVE LANDS THROUGH WATERFRONT DISTRICTING: West New York, NJ, 1978.
## (Districting through the Zoning Ordinance)

**4:200 CONTROLLED WATERFRONT DEVELOPMENT DISTRICT**

**4.210 Purposes**

In order that the future development of the Town of West New York's waterfront be controlled to ensure the preservation of the environment and to prevent negative impacts on the physical, social and esthetic elements of the environment; and to ensure that a reasonable portion of the waterfront remain unbuilt and will be used for public parks; and in order that the public health, safety, morals and general welfare be furthered in an era of increasing urbanization and of growing demand for housing of all types; to provide for necessary commercial and educational facilities that will be compatible and conveniently located to such housing; to provide for well-located, clean, safe sites for compatible industrial uses of land involving a minimum of strain on public services and transportation facilities; to encourage the planning of new neighborhoods; to support the objectives of zoning in general; to encourage innovations in the design of residential, commercial and industrial development and renewal so that the growing demands of the population may be met by greater variety in type, design and layout of buildings and by the conservation and more efficient use of open space and ancillary to said buildings; so that greater opportunities for better housing and recreation, shops and industrial plants conveniently located to each other may extend to all citizens and residents of this Town; and in order to encourage a more efficient use of land and of public services, or private services in lieu thereof, and to reflect changes in the technology of land development so that resulting economies may inure to the benefit of those who need homes; to lessen the burden of traffic on streets and highways; to conserve the value of land; and, in aid of these purposes, to provide a procedure which can relate the type, design and layout of residential, commercial, and industrial development to the particular site and the particular demand for housing and other facilities including the foregoing at the time of development in a manner consistent with the preservation of the property values within established residential areas and to ensure that the increased flexibility of substantive regulations of land development authorized herein is subject to such administrative standards and procedures as shall encourage the disposition of proposals for land development without undue delay.

**4.220 Objectives**

The Board of Commissioners of the Town of West New York desires to ensure a controlled development of the waterfront while ensuring the conservation and environmental protection of that area; the Board desires to take full advantage of modern design, construction, technology and planning methods as will advance and promote the sound growth and general welfare of the Town; strengthen and sustain its economic potentials; provide safe, sufficient and economic municipal services; and establish appropriate patterns for the distribution of population, commerce and industry in a variety of accommodations which are compatible with a modern way of life, coordinated with the protection and enhancement of natural beauty and resources of that section of the Town of West New York known as the waterfront and in harmony with their surroundings both within and without the Town; and in order to provide for a variety of service activities, school (if any), parks, playgrounds, recreational areas, parking and other open space in orderly relationship to each other and in conformity to the development of the Town as a whole with special emphasis on the conservation and protection of the waterfront and its unique physical attributes and the setting aside reasonable proportions for future public park use.

The objectives of the Controlled Waterfront Development District are to encourage innovations in residential, commercial, public and industrial development and redeveopment to achieve greater variety in type, layout and siting of buildings, and the conservation and more efficient use of open space ancillary to said buildings on tracts of land under a comprehensive plan of development rather than as piecemeal unrelated parts. Such comprehensive control over an entire development, rather than lot-by-lot regulations, should produce a well-designed development that will have a beneficial effect upon the preservation of West New York's waterfront and upon the health, safety, general welfare and morals of the Town and the neighboring area.

**4.230 Municipal Authority**

The Municipal Authority designated to act under this Ordinance shall be the Board of Commissioners of West New York, N.J., hereafter called "Town" or "Commissioners."

The Planning Board thereof shall examine all plans and submissions for completeness, clarity and documentation prior to filing with the Town.

**4.240 Standards and Conditions**

A. Permitted Uses

The uses permitted in the Controlled Waterfront Development District may include and shall be limited to (1) dwelling units in detached, semi-detached, attached, groups of attached or clustered or multi-family structures, or any combination thereof provided that they do not exceed a height of 4 stories and shall not exceed 32 ft.; and (2); any nonresidential use, to the extent such nonresidential use is designed and intended to be compatible with residential uses in this and other adjoining districts and will not exert a deleterious impact on the waterfront; and such other uses as exist or may reasonably be expected to exist in the future, and (3) public and private educational facilities, (4) public parks and other Town-wide recreational facilities, and semi-public uses.

B. Area

No Controlled Waterfront Development District plan shall be approved which contains less than 10 acres; or less than 50 dwelling units.

C. Overall Residential Density

In the Controlled Waterfront Development District, no residential subsection shall contain more than 20 dwelling units per acre. Residential densities are applicable to the specific subsections within the overall site of development that are shown on the Overall Site Plan for residential use.

D. Commercial Land Uses

Commercial land uses shall be permitted provided that:

1. the types of commercial establishments and their sizes and locations will be appropriate and compatible with all existing and proposed land uses; they shall be of a neighborhood (i.e., daily needs) type or of a special purpose that would be expressly suited to the waterfront.
2. there will be provided separate on-site parking and loading facilities for said commercial facilities according to the "Schedule of Parking Spaces Required" and the "Schedule of Loading Spaces Required" of the Zoning Ordinance of the Town of West New York; and that signs will be provided according to Zoning Ordinance.
3. that said commercial land uses will not occupy more than 10 percent of the gross area of the Controlled Waterfront Development District.

E. Light Impact Industrial Land Uses

Light Impact Industrial land uses shall be permitted provided that:

1. the types of industrial establishments, their sizes and locations will be appropriate and compatible with the other predominantly public/conservation and low density residential uses of land that are permitted in the district. Factories shall not be permitted.
2. that no deleterious impact from the daily operation of the industry, including traffic, will be made on the waterfront environment and surrounding areas.
3. that there will be provided on-site parking and loading facilities according to the "Schedule of Parking Spaces Required" and the "Schedule of Loading Spaces Required" of the Zoning Ordinance of the Town of West New York; and that signs shall be provided according to the requirements of the Zoning Ordinance respective to the land use.
4. that said industrial uses will not occupy more than 20 percent of the gross area of the Controlled Waterfront Development District.

F. Public Open Space

There shall be provided at least 30 percent of the gross area of an Overall Development Area for public park and other recreational or open space use, in such dimensions and locations as to be utilized to the maximum extent for active and passive recreation facilities. Said open space lands shall consist of property contiguous to the Hudson River but shall not include lots under water in achieving the required 30%.

G. Other Standards and Conditions

1. Waiver of Commercial and Industrial Use Percentages
   If upon submittal of evidence by the developer that less or no part of the minimum percentage requirement for commercial (10%) and industrial development (20%) of the Overall Development Area will be necessary to sustain an economic balance, a desirable physical design, the provision of utilities, or such other requirements for public and private convenience, comfort and welfare, such minimum requirements may be waived by resolution of the Commissioners.
2. Height, Bulk, Coverage, Location of Land Uses
   In order to encourage and enable a Controlled Waterfront Development District development of desirable and imaginative design and to maintain a flexibility of this Ordinance, it is required that all stages of a Controlled Waterfront Development Plan be developed according to a comprehensive final plan for the overall development for the property, as approved by the Commissioners, which shall conform to the requirements of this Ordinance and, in addition, shall be compatible with the requirements of the Town of West New York's Zoning Ordinance for the specific residential, commercial and industrial buildings or other land uses contemplated or by common good practice. Said comprehensive final plan shall conform to the Master Plan for the Town of West New York.

   In no case shall the height of any building in the Controlled Waterfront District be greater than 4 stories and in addition, shall not exceed 32 ft. in height. Structures shall be sited to prevent

Table 83 (continued)
Waterfront Districting, West New York, NJ (continued)

obscuring the view of the Waterfront and from the Palisades.

3. Open Space, Streets and Other Requirements
All open spaces between buildings shall be protected by fully recorded covenants running with the land, conveyances or dedications. The right-of-way and pavement widths for all internal streets, roads, or other accessways for vehicles and/or pedestrians shall be determined on the basis of sound planning and engineering standards and shall be based on the projected needs of the full development of all land uses, proposed in the comprehensive final plan, and the traffic to be generated by such land uses as well as the need for access for fire fighting, ambulances and other emergency vehicles.

4. Common Open Space and Other Common Uses
Every structure, use or land designated for common private usage or in common ownership or control by occupants or which functions as an independent corporate property owner or agent of management shall be located on a plot of land which shall be fully dimensioned and designated as representing the area of responsibility and extent of such ownership or management on the final plan or a plan for a section or stage of a Controlled Waterfront Development District property.
The landowner shall provide for and establish an organization for the ownership of any common open space; such organization shall not be dissolved nor shall it dispose of any common open space by sale or otherwise (except to an organization established to own and maintain open space) without first offering to dedicate it to the town or any other government agency. In the event that the organization established to own and maintain common open space fails to maintain it in reasonable order and condition in accordance with the plan, the town may serve written notice on such organization or owners setting forth their failures to maintain the common open space, and a demand that the deficiencies be cured within 35 days thereof, and shall state the date, place and time of a hearing thereon, which shall be held within 15 days of notice. At said hearing the terms of the notice and the conditions and the timing of their resolution may be modified according to the procedures provided in Chapter 291, Laws of New Jersey.

5. Utilities and Services to be Provided by Developer
The developer shall furnish, install and pay the cost of water facilities, sanitary and storm water sewer facilities, including the connection of same to all structures built by the developer, and on-site lighting, paved streets, and on-site parking and loading facilities, as determined by the Town Engineer and approved by the Board of Commissioners of the Town of West New York. The developer shall furnish maintenance to indemnify the Town of West New York from all cost of said improvements direct and indirect.

4.250 Enforcement and Modification

To further the mutual interest of the residents and owners of the Controlled Waterfront Development District property and of the public in the preservation of the objectives of the plan, as finally approved, and to insure that modifications, if any, do not result in changes that adversely affect the public interest, no modifications, removal or release of the provisions of the plan as finally approved, whether recorded by plat, covenant, easement or otherwise, shall be permitted except upon a finding by the Commissioners following a public hearing called and held in accordance with the provisions of paragraph 4.270 of this Ordinance, that the same is consistent with the efficient development and preservation of the entire Controlled Waterfront Development and does not adversely affect either the abutting land or adjacent area or the public interest, and is in conformity with the Master Plan for the Town.

4.260 Application Procedures

A. Pre-Application Conference
Prior to official submittal of an application for consideration of a Controlled Waterfront Development, the applicant shall meet with the Commissioners or duly designated representative thereof, for a pre-application conference as to the location, scope, and nature of the proposed development.
B. Application for Tentative Approval
1. Following the pre-application conference with the Commissoners or duly designated representative thereof, formal application shall be filed by or on behalf of the landowner as hereinafter defined, and a copy of the plan and application shall be forwarded to the Division of State and Regional Planning in the New Jersey Department of Community Affairs. The application shall be accompanied by documentation indicating that all taxes on the subject property owed to the Town of West New York have been paid.
2. All planning and subdivison data relating to the platting, use and development of the Controlled Waterfront Development and subsequent modifications of the regulations relating thereto, shall be determined and established by the Planning Board.
3. The application and development plan for tentative approval shall include, as a minimum, the following information:
a. Location and size of the site and the nature of the applicant's interest in the land proposed to be developed:
b. an accurate topographic and boundary line map of the site; if applicable, areas to be filled and evidence that such treatment would be according to the standards of the Town of West New York;

c. density computations of all land uses proposed for various parts of the site, number of dwelling units, and other similar data pertinent to a comprehensive evaluation of the proposed development;
d. use, type, approximate bulk, height and location of proposed structures;

Source: Town of West New York. Hudson County, NJ. Ordinance No. 1326. Public Notice. The Wednesday Dispatch, Hudson/Bergen Counties, NJ (December 27, 1978). P. 27.

TABLE 84

CHARACTERISTICS AND PROVISIONS OF SELECTED LOCAL ZONING ORDINANCES,
Variations in local zoning ordinances, Westchester County, NY

| | LAST YEAR IN WHICH ZONING ORDINANCE OFFICIALLY ADOPTED | PERFORMANCE STANDARDS | SITE PLAN REVIEW |
|---|---|---|---|
| CITIES | | | |
| MOUNT VERNON | 1963 | | X |
| NEW ROCHELLE | 1955 | X | X |
| PEEKSKILL | 1977 | | X |
| RYE | 1942(R) | X | X |
| WHITE PLAINS | 1949(R) | | X |
| YONKERS | 1968 | | X |
| VILLAGES | | | |
| ARDSLEY | 1959 | | X(B) |
| BRIARCLIFF MANOR | 1953 | | X |
| BRONXVILLE | 1958 | | X(O) |
| BUCHANAN | 1969 | X | X |
| CROTON-ON-HUDSON | 1961(R) | X | X |
| DOBBS FERRY | 1965 | | X(O) |
| ELMSFORD | 1930 | | |
| HARRISON | 1974 | | X |
| HASTINGS-ON-HUDSON | 1960 | | X |
| IRVINGTON | 1958 | | X(S) |
| LARCHMONT | 1954 | | X |
| MAMARONECK | 1968 | | X |
| MOUNT KISCO | 1962(R) | | X |
| NORTH TARRYTOWN | 1964 | X | X |
| OSSINING | 1970 | X | X |
| PELHAM | * | | |
| PELHAM MANOR | 1954 | | X |
| PLEASANTVILLE | 1974 | | X |
| PORT CHESTER | 1975 | | X |
| SCARSDALE | 1966 | | X |
| TARRYTOWN | 1959 | | X |
| TUCKAHOE | 1960 | X | X |
| TOWNS | | | |
| BEDFORD | 1946 | | X |
| CORTLANDT | 1951(R) | (P) | X(O) |
| EASTCHESTER | 1955 | | X |
| GREENBURGH | 1957(R) | | X |
| LEWISBORO | 1977 | X | X |
| MAMARONECK | 1959 | | |
| MOUNT PLEASANT | 1958 | | X |
| NEW CASTLE | 1971 | | X |
| NORTH CASTLE | 1977 | X | X |
| NORTH SALEM | 1965 | X | X(S) |
| OSSINING | 1970 | X | X |
| POUND RIDGE | 1959 | | X |
| RYE | 1954 | | X |
| SOMERS | 1959(R) | | X |
| YORKTOWN | 1958 | | X |

* the more strict regulations in either the North Pelham or Pelham Ordinance.
(B) site plan review in building code
(O) separate site plan review ordinance
(P) proposed in new zoning ordinance
(S) site plan review contained in subdivision regulations
(R) proposed zoning ordinance revision

Source: WEstchester County Department of Planning. "Planning in Westchester - A Status Report Update". White Plains, NY: Planning Dept., Winter 1979. P. 7.